

SOΦΦIA

Philosophy of Education Collection

Issue 30 / January-June 2021

Print ISSN 1390-3861 / Electronic ISSN 1390-8626



UNIVERSIDAD POLITÉCNICA SALESIANA DEL ECUADOR

SOPHIA, Collection of Philosophy of Education is a philosophical-scientific publication of the Salesian Polytechnic University (UPS), has a bi-annual periodicity, whose first number appeared in June of 2006. The objective of SOPHIA is to theorize the education from a philosophical point of view, with data from individual and collective psychology, teaching-learning experiences, sociology, culture and the development of the empirical sciences, to renew, update and better articulate the conceptual, procedural and experiential level of the education sciences. The journal promotes the dissemination of monographic articles that are unpublished, scientifically constructed, with a method that adequately articulates analysis and synthesis; that are propositive, in the nucleus of the Philosophy of Education. It is published in printed version (ISSN: 1390-3861) and electronic (ISSN: 1390-8626).

The management of SOPHIA is performed through the following parameters:

The journal uses anti-plagiarism systems  **Crossref**
Similarity Check
Powered by iThenticate 

The articles have identification code (*Digital Object Identifier*)



The editorial process is managed through the *Open Journal System* 
Open Journal Systems

It is an *Open Access* publication with a
Creative Commons license



The *copyright* and *post-print* policies are published in the *SHERPA/ROMEO* Auto-archive Policy Repository.

The articles of the present edition can be consulted in:

- <http://revistas.ups.edu.ec/index.php/sophia>
- <http://www.ensayistas.org/critica/revistas.htm>
- <https://www.redib.org>
- <http://www.iissue.unam.mx/iresie>
- <http://iresie.unam.mx>
- <http://clase.unam.mx>

Sophia is indexed in the following
Databases and scientific information systems

SELECTIVE DATABASES



JOURNAL EVALUATION PLATFORMS



SELECTIVE DIRECTORIES



SELECTIVE PERIODICALS AND NEWSPAPERS LIBRARIES



OPEN ACCESS SCIENTIFIC LITERATURE SEARCH ENGINES



AUTO-ARCHIVE OF EDITORIAL COPYRIGHT POLICIES



OTHER BIBLIOGRAPHIC DATABASES



CATALOG OF INTERNATIONAL UNIVERSITY LIBRARIES





Wageningen University



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA



Maastricht University



SOCIAL AND ACADEMIC NETWORKS



Facebook: <https://www.facebook.com/SophiaUPS/>



Twitter: <https://twitter.com/RevistSophiaUPS>



Google: <https://plus.google.com/u/0/105223710240103280296>



LinkedIn: <https://www.linkedin.com/in/revista-sophia-ups-150108132?trk=hp-identity-name>



Academia.edu: <https://independent.academia.edu/SophiaColeccióndeFilosofíadelaEducación>



ResearchGate: https://www.researchgate.net/profile/Sophia_Upss

Sophia: Collection of Philosophy of Education, bi-annual publication, No. 30, January-June 2021. Responsible Editor: Floralba del Rocío Aguilar Gordón.

Place of publication: Salesian Polytechnic University of Ecuador. Postbox: 2074, Cuenca-Ecuador. Telephone: (+5397) 2831745, Cuenca-Ecuador. E-mail: revista-sophia@ups.edu.ec

© SOPHIA. Collection of Philosophy of Education.

Printed in Ecuador

The concepts expressed in the articles are the responsibility of the authors. It is allowed to reproduce the texts by citing the source.

EDITOR-IN-CHIEF / EDITORA JEFA

Post. Dra. Floralba del Rocío Aguilar Gordón
Universidad Politécnica Salesiana, Quito/Ecuador

ASSOCIATE EDITORS / EDITORES ASOCIADOS

Dr. José Manuel Touriñán López
Universidad de Santiago de Compostela, Galicia/España

Dr. Lorenzo García Aretio
Profesor Emérito de la Universidad Nacional
de Educación a Distancia (UNED), Madrid/España

INTERNATIONAL COEDITORS / COEDITORES INTERNACIONALES

- Dr. William Darío Ávila Díaz, Fundación Observatorio Multidisciplinario para la Construcción del Conocimiento, Bogotá/Colombia
Dr. Javier Collado Ruano, Centre International de Recherches et études Transdisciplinaires, París/Francia
Dr. Carlos Jesús Delgado Díaz, Universidad de La Habana, La Habana/Cuba
Dra. Virginia Gonfiantini, Universidad Nacional de Rosario, Rosario/Argentina
Dra. Martha Esther Guerra, Universidad Popular del Cesar, Valledupar, Cesar/Colombia
Dr. Mauro Mantovani, Universidad Pontificia Salesiana de Roma, Roma/Italia
Dr. Julio Alberto Márquez Landa, Grupo Qualinet, Universidad Edgar Morín y Tecnológico de Monterrey, Monterrey/México
Dr. Dulio Oseda Gago, Universidad Nacional de Cañete, Lima/Perú
Dr. Rigoberto Pupo Pupo, Universidad José Martí de Latinoamérica, Monterrey/México; Multiversidad: Mundo Real Edgar Morin, Hermosillo/México y Universidad de La Habana, La Habana/Cuba
Dr. Héctor Marcelo Rodríguez Mancilla, Universidade Federal do Rio de Janeiro, Río de Janeiro/Brasil.
Dr. Jaime Yanes Guzmán, Academia de Estudios e Investigación Complexus Edgar Morin (AEICEM), Santiago/Chile

SCIENTIFIC COMMITTEE / CONSEJO CIENTÍFICO

- Dr. Rómulo Ignacio Sanmartín García, Universidad Politécnica Salesiana, Quito/Ecuador
Dr. Giuseppe Abbá, Universidad Pontificia Salesiana de Roma, Roma/Italia
Dr. Fernando Acevedo Calamet, Universidad de la República, Montevideo/Uruguay
Dr. Gustavo Altamirano Tamayo, Universidad Central del Ecuador, Quito/Ecuador
Dr. Jorge Antonio Balladares Burgos, Universidad Andina Simón Bolívar, Quito/Ecuador
Dr. Esteban Bara Francisco, Universidad de Barcelona, Barcelona/España
Dr. Antonio Bernal Guerrero, Universidad de Sevilla, Sevilla/España
Dr. Luis Antonio Hermosa Andújar, Universidad de Sevilla, Sevilla/España
Dra. Aurora Bernal Martínez De Soria, Universidad de Navarra, Navarra/España
Dr. Mauricio Hardie Beuchot Puente, Universidad Nacional Autónoma de México, Ciudad de México/México

Dra. Patricia Cecilia Bravo Mancera, Universidad Nacional de Chimborazo, Riobamba/Ecuador
Dr. Fabián Castiglione, Instituto Superior de Formación Docente Espíritu Santo, Quilmes/Argentina
Dra. Ana Castro Zubizarreta, Universidad de Cantabria, Cantabria/España
Dr. José Cavalcante Lacerda Junior, Universidad del Estado de Amazonas (UEA), Manaus/Brasil
Dr. Jesús Conill Sancho, Universidad de Valencia, Valencia/España
Dr. Carlos A. Cullen Soriano, Universidad de Buenos Aires, Buenos Aires/Argentina
Dr. Raimundo De Teixeira Barradas, Universidad del Estado de Amazonas (UEA), Manaus/Brasil
Dr. Enrique Domingo Dussel Ambrosini, Universidad Nacional Autónoma de México, Ciudad de México/México
Dr. Juan Escamez Sánchez, Universidad Católica de Valencia, Valencia/España
Dr. José Ramón Fabelo Corzo, Universidad Autónoma de Puebla, Puebla/México
Dr. Ramón F. Ferreiro, Nova Southeastern University (NSU), Florida/Estados Unidos
Dra. Claudia Figueroa, Universidad Pedagógica y Tecnológica de Colombia, Tunja/Colombia
Dr. Juan Luis Fuentes, Universidad Complutense de Madrid, Madrid/España
Dra. María García Amilburu, Universidad Nacional de Educación a Distancia, Madrid/España
Dr. Fernando Gil Cantero, Universidad Complutense de Madrid, Madrid/España
Dr. José Enrique Gómez Álvarez, Universidad Panamericana y Asociación Filosófica, Ciudad de México/México
Dr. José Luis Gómez Martínez, Universidad de Georgia, Athens/Estados Unidos
Dr. Vicent Gozávez Pérez, Universidad de Valencia, Valencia/España
Dr. José Luis Guzón Nestar, Centro Educativo Salesiano Don Bosco, adscrito a la Universidad Complutense de Madrid, Madrid/España
Dr. Pablo Manuel Guadarrama González, Universidad Central de las Villas, Santa Clara/Cuba
Dra. Lucila Gutiérrez Santana, Universidad de Colima, Colima/México
Dra. Ruth Heilbronn, Sociedad de Filosofía de la Educación de Gran Bretaña, Wycombe/ Gran Bretaña y UCL Institute of Education, London, London/United Kindom
Dr. Pádraig Hogan, National University of Ireland, Maynooth/Irlanda
Dr. Kureethadam Joshrom, Universidad Pontificia Salesiana de Roma, Roma/Italia
Dr. Gonzalo Jover Olmeda, Universidad Complutense de Madrid, Madrid/España
Dr. Sebastián Kaufmann Salinas, Universidad Alberto Hurtado, Santiago/Chile
Dr. José Antonio Lago Formoso, Universidad Pedagógica Experimental Libertador, Venezuela
Dr. Jorge Luis León González, Universidad de Cienfuegos “Carlos Rafael Rodríguez”, Cienfuegos/Cuba
Dr. Ramón Lucas Lucas, Pontificia Universidad Gregoriana de Roma, Italia
Dr. Walter Marcelo Madueña, Instituto Superior Don Bosco, Unidad orgánica de la Universidad Católica de Angola, Luanda/Angola/Costa Atlántica de África
Dr. Jair Miranda De Paiva, Universidad Federal de Espíritu Santo (UFES) Centro Universitario Norte de Espíritu Santo, San Mateo/Brasil
Dr. Agustín Domingo Moratalla, Universidad de Valencia, Valencia/España
Dr. Juan Antonio Nicolás Marín, Universidad de Granada, Granada/España
Dra. Nancy Ochoa Antich, Investigadora Independiente, Quito/Ecuador
Dr. Dieudonné Oteko Olabiyi Eniyankitan, Institut Supérieur de Philosophie et des sciences humaines Don Bosco. Instituto Superior de Filosofía y de Ciencias Humanas Don Bosco, Togo/ República Togolesa/África
Dra. Ruth Enriqueta Páez Granja, Universidad Central del Ecuador, Quito/Ecuador
Dra. Cruz Pérez Pérez, Universidad de Valencia, Valencia/España
Dr. Luis Porta, Universidad Nacional de Mar de la Plata, Buenos Aires/Argentina
Dr. Rafael Repiso Caballero, Universidad Internacional de la Rioja (UNIR), Logroño/España

Dr. Carlos Alberto Ramos Galarza, Pontificia Universidad Católica del Ecuador, Quito-Ecuador
Dr. Alberto Isaac Rincón, Observatorio Multidisciplinario para la construcción del Conocimiento- OBSKNOW, Bogotá/Colombia
Dr. Luis Rosón Galache, Universidad Pontificia Salesiana de Roma, Roma/Italia
Dr. Damian Salcedo Megales, Universidad Complutense de Madrid, Madrid/España
Dr. Pier Cesare Rivoltella, Universidad Católica de S. Cuore di Milano é CREMIT, Milán/Italia
Dr. Miguel Ángel Santos Rego, Universidad de Santiago de Compostela, Compostela/España
Dr. Santiago De Pablo Contreras, Universidad de País Vasco, Bilbao/España
Dr. Ralph Weber, Universidad de Basilea, Basilea/Suiza
Dr. Alejandro José De Oto, Consejo Internacional de Investigaciones Científicas y Técnicas (CONICET), Buenos Aires/Argentina
Dr. Babu Thaliath, Jawaharlal Nehru University, New Delhi/India
Dr. José Tranier, Universidad Nacional de Rosario, Rosario/Argentina
Dra. Teresa Yurén, Universidad Autónoma del Estado de Morelos, Morelos/México
Dr. Haibo Zeng, Communication University of China, Beijing /China

INTERNATIONAL REVIEWERS BOARD / CONSEJO INTERNACIONAL DE REVISORES

Dr. (c) William Fredy Aguilar Rodríguez, Universidad Técnica de Ambato, Ambato/Ecuador
Dr. Jorge Alarcón Leiva, Universidad de Talca, Maule/Chile
Dr. Mauricio Albornoz Olivares, Universidad Católica del Maule, Maule/Chile
Dr. Miguel Aldama Del Pino, Universidad de Matanzas, Matanzas/Cuba
Dra. Harlene Anderson, International Summer Institute, Estados Houston/Unidos
Dra. Ximena Del Consuelo Andrade Cáceres, Universidad Politécnica Salesiana, Quito/Ecuador
Dr. José Antonio Antón Amiano, IES Jiménez de Quesada de Santa Fe, Granada/España
Dr. Abel Aravena Zamora, Universidad de Barcelona, Barcelona/España
Dr. Carlos Ángel Arboleda Mora, Universidad Pontificia Bolivariana, Medellín/Colombia.
Dr. Carlos Arturo Arias Sanabria, Pontificia Universidad Javeriana, Bogotá/Colombia
Dra. María Milagros Armas Arráez, CPEI Multilingüe Minicole, Arrecife/España
Dra. María Elena Arriagada Arriagada, Universidad Metropolitana de Ciencias de la Educación, Ñuñoa/Chile
Mstr. Jorge Aros Vega, Pontificia Universidad Católica de Valparaíso, Valparaíso/Chile
Dr. Alfonso Ávila Del Palacio, Universidad Autónoma de México, Ciudad de México/México
Mstr. José Alcides Baldeón Rosero, Universidad San Jorge de Zaragoza, España.
Dr. Lorena Basualto Porra, Universidad Católica Silva Henríquez, Santiago/Chile
Dra. Dulce María Bautista Luzardo, Universidad Central de Colombia, Bogotá/Colombia
Dr. Cristian Eduardo Benavides, Universidad de Cuyo, Mendoza/Argentina
Dr. Rodolfo Mauricio Bicocca, Universidad Nacional de Cuyo, Mendoza/Argentina
Dr. Robert Fernando Bolaños Vivas, Universidad Politécnica Salesiana, Quito/Ecuador
Dra. Alcira Beatriz Bonilla, Consejo Internacional de Investigaciones Científicas y Técnicas (CONICET), Buenos Aires/Argentina
Dr. Carmen Gloria Burgos Videla, Universidad Autónoma de México (UNAM), Ciudad de México/México
Dra. Martha Burguet Arfelis, Universidad de Barcelona, Barcelona/España
Dra. Elizabeth Cabalé Miranda, Universidad de La Habana, La Habana/Cuba
Dra. Isabel Cantón Mayo, Universidad de León, León/España

Dra. María José Caram, Universidad Católica de Córdoba, Córdoba/España
Dra. Elsa Beatriz Cárdenas Sempértégui, Universidad Técnica Particular de Loja, Loja/Ecuador
Dr. Pablo Carranza, Universidad Nacional de Río Negro, Río Negro/Argentina
Dr. Carlos Augusto Casanova Guerra, Centro de Estudios Tomistas, Universidad Santo Tomás, Santiago/Chile
Dra. María Inés Castellaro, Centro de Estudios Filosóficos y Teológicos, Córdoba/Argentina
Dr. Demian Casaubon, Universidad de Buenos Aires, Buenos Aires/Argentina
Mstr. José Antonio Castorina, Universidad de Buenos Aires, Buenos Aires/Argentina
Dr. Juan H. Cepeda, Universidad Santo Tomás, Bogotá/Colombia
Dr. Vinicio Alexander Chávez Vaca, Universidad Internacional del Ecuador, Quito/Ecuador
Dr. Mauricio Chaspal Escudero, Universidad de Santiago de Chile, Santiago/Chile
Dr. Francisco Alonso Chica Cañas, Universidad Santo Tomás, Santiago/Chile
Dr. Maximiliano Basilio Cladakis, Universidad de San Martín, Buenos Aires /Argentina
Mstr. Francisco Cordero, Universidad Tecnológica de Chile, Santiago/Chile
Dra. Yoskira Naylett Cordero De Jiménez, Universidad Politécnica Estatal de Carchi/Ecuador
Dr. Javier Corona Fernández, Universidad de Guanajuato, Guanajuato/México
Dr. Antonio Correa Iglesias, Universidad de Miami, Miami/Estados Unidos
Dr. Antonio Cremades Begines, Universidad de Sevilla, Sevilla/España.
Dr. Miguel Francisco Crespo, Escuela Latinoamericana de Pensamiento y Diseños Sistémicos, Coahuila/México
Dr. Richard De La Cuadra, Xavier Educational Academy, Houston/Estados Unidos
Dra. Janice Defehr, The Taos Institute, Winnipeg/Canada
Dr. Balaganapathi Devarakonda, Dravidian University, Kuppam/India
Dr. Jorge Aurelio Díaz, Universidad Católica de Colombia, Bogotá/Colombia
Dra. Andrea Alejandra Díaz, Universidad Nacional del Centro de la Provincia de Buenos Aires, Buenos Aires/Argentina
Dr. Javier Echenique Sosa, Universidad Andrés Bello, Santiago/Chile
Dr. Javier Echeverría, Universidad Politécnica de Madrid, Madrid/España
Dr. Omar Escalona Vivas, Universidad Nacional Experimental de los Llanos Occidentales Ezequiel Zamora, Barinas/Venezuela
Dra. Chaxiraxi María Escuela Cruz, Universidad de La Laguna, Tenerife/España
Dr. Luciano Espinoza Rubio, Universidad de Salamanca, Salamanca/España
Dr. Javier Alejandro Espinoza San Juan, Universidad Católica de la Santísima Concepción, Concepción/Chile
Post. Dr. Francisco Farnum Castro, Universidad de Panamá, Bella Vista/Panamá
Dra. Inés Fernández Mouján, Universidad de Buenos Aires, Buenos Aires/Argentina
Dr. Horacio Ferreyra, CONICET, Buenos Aires/Argentina
Dr. Rodrigo Figueroa Weitzman, Universidad Andrés Bello, Santiago/Chile
Dr. Ernesto Flores Sierra, Pontificia Universidad Católica del Ecuador, Quito/Ecuador
Dr. Cristóbal Friz Echeverría, Universidad de Santiago de Chile, Santiago/Chile
Dr. Roberto Agustín Follari, Universidad Nacional de Cuyo, Mendoza/Argentina
Dr. Dante Augusto Galeffi, Universidad Federal de Bahía, Salvador/Brasil
Dr. Wenceslao García Puchades, Universidad de Valencia, Valencia/España
Dr. Jonathan García Campos, Universidad Juárez del Estado de Durango, Durango/México
Dra. Teresa Gargiulo, Universidad de Congreso, Mendoza/Argentina
Dra. Aleidá Carolina Gelpí Acosta, Universidad de Puerto Rico en Bayamón, Bayamón/Puerto Rico
Dr. Fabián Giménez Gatto, Instituto de Profesores Artigas, Montevideo/Uruguay
Dra. Laura Gioscia Villar, Universidad de la República, Montevideo/Uruguay.

Dr. Facundo Giuliano, Universidad de Buenos Aires, Buenos Aires/Argentina
Dr. Juan David Gómez Osorio, Universidad de Antioquia, Antioquia/Colombia
Dr. José Domingo Gómez Rozas (Txomin), Universidad de País Vasco, Bilbao/España
Dr. José Luis González Geraldo, Universidad de Castilla - La Mancha, Toledo/España
Dra. Lucero González, Universidad Nacional Autónoma de México, Ciudad de México/México
Dr. Javier González Solas, Universidad Complutense de Madrid, Madrid/España
Dra. Yuliana Gómez Zapata, Tecnológico de Antioquia, Antioquia/Colombia
Dra. Cristiane María Cornelia Gottschalk, Universidade de São Paulo, São Paulo/Brasil
Dr. Javier García Calandín, Universidad de Valencia, Valencia/España
Dra. Gabriela Grajales García, Universidad Autónoma de Chiapas (UNACH), Chiapas/México
Dr. Javier Guardado Mendoza, Instituto de Investigaciones en Educación de la Universidad Veracruzana, Veracruz/México
Dr. Samuel Guerra Bravo, Investigador Independiente, Quito/Ecuador
Dr. Jónas Gustafsson, Investigador Independiente, Dinamarca
Dr. Ernesto Andrés Hermann Acosta, Universidad Tecnológica Equinoccial, Quito/Ecuador
Mstr. Nadia Hernández Soto, Normal de Especialización Humberto Ramos Lozano, Monterrey/México
Dr. Francisco Javier Herrero Hernández, Universidad Pontificia de Salamanca (UPSA), Salamanca/España
Dr. Édison Francisco Higuera Aguirre, Pontificia Universidad Católica del Ecuador, Quito/Ecuador
Dr. José Ramón Holguín Brito, Asociación de Rectores de Universidades del Caribe y América, ARCA, Santo Domingo/República Dominicana
Dr. André Hubert Robinet, Universidad Católica del Norte-Antofagasta, Antofagasta/Chile
Dr. Felipe Martín Huete, Universidad de Granada, Granada/España
Dr. Damián Islas Mondragón, Universidad Juárez del Estado de Durango, Durango/México
Mstr. Lilian Jaramillo Naranjo, Universidad Central del Ecuador, Quito/Ecuador
Dr. John Christopher Kommalapudi, Ethiopian Civil Service University, Adís Adeba/Etiopía
Dr. Guillermo Lariguet, Universidad Nacional de Córdoba, Córdoba/España
Dr. Camilo Larrea Oña, Investigador Independiente, Quito/Ecuador.
Dr. Xavier Laudo, Universitat Oberta de Catalunya, Catalunya/España
Dr. Heber Leal Jara, Universidad de Concepción, Concepción/Chile.
Dra. Natalia Lerussi, Universidad de Buenos Aires, Buenos Aires/Argentina
Dr. Orlando Lima, Universidad Autónoma de México (UNAM), Ciudad de México/México
Dr. Idalmis López Sanchez, Instituto Latinoamericano y Caribeño, La Habana/Cuba
Mstr. Luis Rodolfo López Morocho, Ministerio de Educación, Quito/Ecuador
Dr. (c) Cristian López, Universidad de Buenos Aires, Buenos Aires/Argentina
Dr. Julio López Saco, Universidad Central de Venezuela, Caracas/Venezuela
Dra. Inmaculada López Francés, Universidad de Valencia, Valencia/España.
Dr. Samuel López Olvera, Universidad Pedagógica Nacional, Ciudad de México/México
Dra. María Del Mar Lorenzo Moledo, Universidad de Santiago de Compostela, Coruña/España
Dr. José Feliz Lozano Aguilar, Universidad Politécnica de Valencia, Valencia/España
Dra. María Luján Christiansen, Universidad de Guanajuato, Guanajuato/México
Dra. Gloria Luque Moya, Centro María Zambrano Asociado a la UNED, Madrid/España.
Dra. Delia Manzanero, Red Europea de Alumni, Madrid/España
Dra. Josselin Jasenka Marcano Ortega, Instituto Universitario de Tecnología de Puerto Cabe-
llo, Carabobo/Venezuela.
Dra. Inés Márquez, Universidad Federal de Bahía, Salvador/Brasil
Dr. Xicoténcatl Martínez Ruiz, Revista Innovación Educativa, Ciudad de México/México

Dr. Jethro Masís, Universidad de Costa Rica, San Pedro/Costa Rica
Dra. Claudia María Maya Franco, Universidad de Medellín, Medellín/Colombia.
Dr. Eloy Maya Pérez, Universidad de Guanajuato, Campus Celaya-Salvatierra, Guanajuato/México
Dr. Itzel Mayans, Universidad Autónoma de México (UNAM), Ciudad de México/México
Dr. Aquiles José Medina Marín, Universidad Bolivariana de Venezuela, Caracas/Venezuela
Dr. Aquiles Meduba, Universidad Bolivariana de Venezuela, Caracas/Venezuela
Dr. Oscar Mejía Quintana, Universidad Nacional de Colombia, Bogotá/Colombia
Dra. Juliana Merçon, Universidad Veracruzana, Veracruz/México
Dra. Paula Cristina Mira Bohórquez, Universidad de Antioquia, Antioquia/Colombia
Dr. Jesús Molina, Universidad de Murcia, Murcia/España
Dr. Mauricio Molina Gallardo, Universidad de Costa Rica, San Pedro/ Costa Rica
Dr. Eduardo Gabriel Molino, Instituto Alicia M. de Justo, Buenos Aires/Argentina
Dr. Agostino Molteni, Universidad Católica de la Santísima Concepción, Concepción/Chile.
Dra. Laura Elizabeth Montenegro, Universidad Politécnica Salesiana, Quito/Ecuador
Dr. Juan Diego Moya, Universidad de Costa Rica, San Pedro/ Costa Rica
Dr. Enrique V. Muñoz Pérez, Universidad Católica de Maule, Maule/Chile.
Dr. Rafael Niño De Zepeda G., Universidad Católica Silva Henríquez, Santiago/Chile
Dr. Matías Oroño, Universidad de Buenos Aires, Buenos Aires/Argentina
Dra. Andrea Paula Orozco, Corporación Universitaria Minuto de Dios, Bogotá/Colombia
Dr. Delfín Ortega Sánchez, Universidad de Burgos, Burgos/España.
Dra. Dorys Noemi Ortiz Granja, Pontificia Universidad Católica del Ecuador, Quito/Ecuador
Dr. José Manuel Osorio, Universidad San Ignacio de Loyola, La Molina/Perú
Dra. Yanet Padilla Cuellar, Universidad Central “Marta Abreu”, Santa Clara/Cuba
Dr. Daniel Vicente Pallares Domínguez, Universitat Jaime I, Castelló/España
Dra. Diana Melisa Paredes Oviedo, Universidad de Antioquia, Antioquia/Colombia
Dr. Álvaro Julio Peláez Cedrés, Universidad Autónoma Metropolitana, Ciudad de México/México
Dr. Luigi Pellegrino, Diócesis de Zacapa, Guatemala.
Dr. Sergio Pérez Cortés, Universidad Autónoma de México, Iztapalapa/México.
Dra. Andrea Verónica Pérez, Universidad Nacional de Quilmes, Quilmes/Argentina
Dr. Alipio Omar Pérez Jacinto, Universidad de Ciencias Pedagógicas Rubén Martínez Villena de La Habana, La Habana/Cuba
Dr. Antonio Pérez, Universidad Nacional Experimental Simón Rodríguez de Venezuela, Caracas/Venezuela
Dra. Isis Angélica Pernas Álvarez, Universidad de Cuenca, Cuenca/Ecuador
Dra. Michael A. Peters, University of Waikato, Hamilton/Nueva Zelanda.
Dr. Edgar Osvaldo Pineda, Universidad Santo Tomas de Villavicencio, Villavicencio/Colombia
Dr. Iván Alfonso Pinedo Cantillo, Universidad Nacional de Colombia, Bogotá/Colombia
Dr. Edward Andrés Posada Gómez, Pontificia Universidad Bolivariana, Antioquia/Colombia
Dra. Miriam Prieto, Universidad Autónoma de Madrid, Madrid/España
Dr. Xavier Puig Peñalosa, Universidad del País Vasco, Bilbao/España.
Dr. Luis Guillermo Quijano Restrepo, Universidad Tecnológica de Pereira, Pereira/Colombia
Dr. Pablo Hernando José Quintanilla Pérez, Universidad Católica del Perú, San Miguel/Perú
Dr. Ciro Diego Radicelli García, Universidad Nacional de Chimborazo, Riobamba/Ecuador
Dr. Vicente Raga Rosaleny, Universidad de Antioquia, Antioquia/Colombia
Mstr. Sandra Ligia Ramírez Orozco, Universidad Católica de Colombia, Bogotá/Colombia
Dr. José Antonio Ramírez Díaz, Centro Universitario de Ciencias Sociales y Humanidades, Guadalajara/México
Dra. Eva Reyes Gacitúa, Universidad Católica del Norte, Antofagasta/Chile

Dr. Javier Gustavo Río, Universidad Nacional de San Martín, Buenos Aires/Argentina
Dra. Ruth Selene Ríos Estrada, Universidad Autónoma Metropolitana Unidad Xochimilco, Xochimilco/México
Dra. Susie Riva Mossman, Creighton University, Omaha/United States
Dr. José Alberto Rivera Piragaula, Universidad Rovira i Virgili de Tarragona, Tarragona/España
Dra. Angélica María Rodríguez Ortiz, Universidad Autónoma de Manizales, Manizales/Colombia
Dr. Mariano Luis Rodríguez González, Universidad Complutense de Madrid, Madrid/España
Dr. Francisco Rodríguez Lestegas, Universidad de Santiago de Compostela, Coruña/España
Dr. Pedro Rodríguez Rojas, Universidad Simón Rodríguez, Caracas/Venezuela.
Dra. Laura Graciela Rodríguez, Universidad Nacional de La Plata, La Plata/Argentina
Dr. Miguel Giovanni Romero Flores, Instituto de Altos Estudios Nacionales (IAEN), Quito/ Ecuador.
Dr. Javier Romero, Universidad de Salamanca, Salamanca/España.
Dra. Clara Romero Pérez, Universidad de Huelva, Huelva/España
Dr. Julio Ernesto Rubio Barrios, Tecnológico de Monterrey, Monterrey/México
Dra. María José Rubio, Pontificia Universidad Católica del Ecuador, Ibarra/Ecuador.
Dr. Adelmo Sabogal Padilla, Academir Charter School Miami, Miami/Estados Unidos
Dr. Carlos Skliar, Facultad Latinoamericana de Ciencias Sociales (FLACSO) y Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), Buenos Aires/Argentina.
Dr. Carlos Sanhueza, Universidad de Chile, Santiago/Chile
Dr. Freddy Orlando Santamaría Velasco, Pontificia Universidad Bolivariana, Medellín/Colombia
Dr. Jacir Sansón Junior, Universidad Espírito Santo, San Mateo/Brasil
Dra. Nancy Santana, Revista Ágora-Trujillo, Trujillo/Venezuela
Mstr. Dalia Santa Cruz Vera, Universidad Católica de Colombia, Bogotá/Colombia
Dr. Ricardo Florentino Salas Astraín, Universidad Católica de Temuco, Temuco/Chile
Dr. Ángel Alonso Salas, Colegio de Ciencias y Humanidades Plante Azcapotzalco de la Universidad Nacional Autónoma de México, Ciudad de México/México
Dr. Raúl Francisco Sebastián Solanes, Universidad de Valencia, Valencia/España.
Dr. Vicente Serrano Marín, Universidad Autónoma de Chile, Providencia/Chile
Dra. Natalia Sgreccia, Universidad Nacional de Rosario, Rosario/Argentina
Dr. José Emilio Silvae Aparisi, Universidad de Valencia, Valencia/España
Mstr. Verónica Patricia Simbaña Gallardo, Universidad Central del Ecuador, Quito/Ecuador
Mstr. Sandra Siqueira, Facultad Salesiana Don Bosco Manaus –Amazonas-, Manaus/Brasil
Dr. Orlando Solano Pinzón, Pontificia Universidad Javeriana, Bogotá/Colombia
Dr. David Alfonso Solís Nova, Universidad Católica de la Santísima Concepción, Concepción/Chile
Dra. Carol Del Carmen Terán González, Universidad de Los Andes, Mérida/Venezuela
Dr. Iván Gregorio Torres Pacheco, Universidad de Carabobo, Carabobo/Venezuela
Dr. Jesús Turiso Sebastián, Universidad Veracruzana, Veracruz/México.
Mstr. Manuel Antonio Unigarro Gutiérrez, Universidad Cooperativa de Colombia, Medellín/ Colombia
Dr. Mariano Ernesto Ure, Universidad Católica Argentina, Buenos Aires/Argentina
Dra. Mónica Elizabeth Valencia, Universidad de Carabobo, Carabobo/Venezuela.
Dr. Iván Daniel Valenzuela Macareno, Universidad Libre, Bogotá/Colombia
Dr. Carlos Eduardo Valenzuela, Universidad Pedagógica Nacional de Colombia, Bogotá/Colombia
Dr. Jesús Valverde Berrocoso, Universidad de Extremadura, Badajoz/España
Dr. Sergio Octavio Valle Mijangos, Universidad Tecnológica de Tabasco, Tabasco/México.
Mstr. Mirta Ala Vargas Pérez, Universidad del Valle de Puebla, Puebla/México.
Mstr. Anabella Beatriz Vázquez Morales, Universidad de la República, Montevideo/Uruguay

Dra. Victoria Vásquez Verdera, Universidad de Valencia, Valencia/España.
Post. Dra. Dolores Vélez Jiménez, Universidad España (UNES), Durango, México
Dra. Marcela Venebra Muñoz, Universidad Autónoma del Estado de Toluca/México,
Dra. Jessica Lourdes Villamar Muñoz, Universidad Politécnica Salesiana, Quito/Ecuador
Dr. Marcelo Villamarín Carrascal, Pontificia Universidad Católica de Ecuador, Quito/Ecuador
Dra. Carmen Vállora Sánchez, Centro de Enseñanza Superior en Humanidades y Ciencias de la Educación Don Bosco, Madrid/España.
Dr. Juan Pablo Viola, Universidad de Piura, Piura/Perú.
Dr. Frank Bolívar Viteri Bazante, Universidad Politécnica Salesiana, Quito/Ecuador
Mstr. Eduard Mauricio Wong Jaramillo, Universidad La Gran Colombia Seccional Armenia, Quindío/Colombia
Dr. Jaime Yáñez Canal, Universidad Nacional de Colombia, Bogotá/Colombia
Dr. José María Zamora Calvo, Universidad Autónoma de Madrid, Madrid/España

THE BOARD OF MANAGEMENT / CONSEJO TÉCNICO

Abya-Yala Coordination: Hernán Hermosa Mantilla

Correction and style: Paulina Torres Proaño

Layout: Martha Vinueza Manosalvas

Cover design: Marco Vinicio Gutiérrez Campos

OJS support: Angel Luis Torres Toukoumidis; Carmen Soledad Aguilar Loja;
Christian Gabriel Arpi Fernández y Wilson Verdugo

Technical management and diffusion: Jefferson Alexander Moreno Guaicha

PUBLISHING BOARD / CONSEJO DE PUBLICACIONES

Juan Cárdenas, sdb

Juan Pablo Salgado

Juan Bottasso Boetti, sdb (+)

José Juncosa Blasco

Floralba Aguilar Gordón

René Unda Lara

Jaime Padilla Verdugo

Sheila Serrano Vincenti

Jorge Cueva

John Calle Sigüencia

Betty Rodas Soto

Mónica Ruiz Vásquez

Luis Álvarez Rodas

GENERAL EDITOR

SALESIAN POLYTECHNIC UNIVERSITY OF ECUADOR

Juan Cárdenas, sdb

Rector

© Salesian Polytechnic University
Turuhuayco 3-69 and Calle Vieja
Postbox 2074
Cuenca, Ecuador.
Telephone: (+593 7) 2 050 000
Fax: (+593 7) 4 088 958
E-mail: srector@ups.edu.ec

EXCHANGE

Exchange is accepted with other periodicals.

Address to:

Technical Secretariat for Communication and Culture
Salesian Polytechnic University
Av. Turuhuayco 3-69 y Calle Vieja
Postbox 2074
Cuenca, Ecuador.
PBX: (+593 7) 2 050 000 - Ext. 1182
Fax: (+593 7) 4 088 958
E-mail: rpublicas@ups.edu.ec
www.ups.edu.ec
Cuenca - Ecuador

Sophia: Collection of Philosophy of Education, bi-annual publication,
No. 30, January-June 2021.

Chief Editors:

Post. Dra. Floralba del Rocío Aguilar Gordón

Design: Abya-Yala University Press.

Av. 12 de Octubre N22-22 and Wilson UPS-Bloque A.

Tel.: (+593 2) 2 506 247, Quito-Ecuador.

E-mail: editorial@abyayala.org

Print: Centro Gráfico Salesiano (Antonio Vega Muñoz 10-68 and General Torres).

Tel.: (+593 7) 2 831 745, Cuenca-Ecuador.

E-mail: centrograficosalesiano@lms.com.ec

CODE OF CONDUCT

«Sophia» as a publication that seeks the highest international excellence, is inspired by the ethical code of the Committee on Publications Ethics (COPE), aimed at publishers, reviewers and authors.

Authors' commitments

- **Originality and fidelity of the data:** The authors of originals sent to «SOPHIA» attest that the work is original and unpublished, which does not contain parts of other authors or other fragments of works already published by the authors. In addition they confirm the veracity of the data, that is, that the empirical data have not been altered to verify hypotheses.
- **Multiple and/or repetitive publications:** The author should not publish articles in which the same results are repeated in more than one scientific journal or any other non-academic publication. The simultaneous proposal of the same contribution to multiple scientific journals is considered an ethically incorrect and reprehensible practice.
- **Attributions, quotations and references:** The author must always provide the correct indication of the sources and contributions mentioned in the article.
- **Authorship:** The authors guarantee the inclusion of those people who have made a significant scientific and intellectual contribution in the conceptualization and planning of the work as in the interpretation of the results and in the writing of it. At the same time the order of appearance of the authors has been ranked according to their level of responsibility and involvement.
- **Access and retention:** If the members of the Editorial Board consider it appropriate, the authors of the articles should also make available the sources or data on which the research is based, which can be kept for a reasonable period of time after publication and possibly becoming accessible.
- **Conflict of Interest and Disclosure:** All authors are required to state explicitly that there are no conflicts of interest that may have influenced the results obtained or the proposed interpre-

tations. Authors should also indicate any funding from agencies and/or projects from which the research article arises.

- **Errors in published articles:** When an author identifies an important error or inaccuracy in his/her article, he/she should immediately inform the editors of the journal and provide them with all the information necessary to list the relevant corrections at the bottom of the article (always in a Note to the margin, not to alter the publication).
- **Responsibility:** The responsibility of the content of the articles published in «SOPHIA» is exclusive of the authors. The authors also commit themselves to a review of the most current and relevant scientific literature on the analyzed subject, taking into accounts in a plural form the different streams of knowledge.



Commitments of reviewers

- **Contribution to editorial decision:** Peer review is a procedure that helps publishers make decisions about proposed articles and also allows the author to improve the quality of articles submitted for publication. The reviewers undertake a critical, honest, constructive and unbiased review of both the scientific quality and the literary quality of writing in the field of their knowledge and skills.
- **Respect of review times:** The reviewer who does not feel competent in the subject to review or who cannot finish the evaluation in the scheduled time must notify the publishers immediately. The reviewers commit to evaluate the manuscripts in the shortest possible time in order to comply with the deadlines, since in «Sophia» the limits of custody of the waiting manuscripts are limited and inflexible due to respect of the authors and their work.
- **Confidentiality:** Each assigned manuscript must be considered confidential. Therefore, these texts should not be discussed with other people without the express consent of the publishers.
- **Objectivity:** Peer review should be done objectively. Reviewers are required to give sufficient reasons for each of their assessments, always using the review template. The reviewers will submit a complete critical report with appropriate references according to the «Sophia» revision protocol and the public gui-

delines for the reviewers; especially if it is proposed that the work be rejected. They are required to advise editors if substantial portions of the work have already been published or are under review for another publication.

- **Text visualization:** The reviewers commit to indicate precisely the bibliographic references of fundamental works possibly forgotten by the author. The reviewer should also inform editors of any similarity or overlap of the manuscript with other published works.
- **Anonymity:** To ensure that the review process is as objective, unbiased and as transparent as possible, the identity of the authors is deleted before the papers are submitted for peer review. If, for any reason, the identity of the authors, their institutional affiliations or any other information that jeopardizes the anonymity of the document has been compromised, the reviewer must notify the publishers immediately.

Commitment of publishers

- **Decision of publication:** The editors will guarantee the selection of the most scientifically qualified reviewers and specialists to express a critical and expert appreciation of the work, with the least possible biases. «Sophia» chooses between 2 and 3 reviewers for each work so as to ensure greater objectivity in the review process.
- **Honesty:** Publishers evaluate articles submitted for publication on the basis of scientific merit of the contents, without discrimination of race, gender, sexual orientation, religion, ethnic origin, nationality, and political opinion of the authors.
- **Confidentiality:** Publishers and members of the working group agree not to disclose information relating to submitted articles for publication to persons other than authors, reviewers and publishers. The editors and the Editorial Committee commit themselves to the confidentiality of the manuscripts, their authors and reviewers, so that anonymity preserves the intellectual integrity of the whole process.
- **Conflict of interests and disclosure:** publishers commit not to use in their own research content of articles submitted for publication without the written consent of the author.

-
- **Respect of the review times:** Publishers are responsible for compliance with the time limits for revisions and publication of accepted manuscripts, to ensure a rapid dissemination of their results. They commit themselves to complying with published times (maximum of 60 days in the estimation/rejection from receipt of the manuscript in the Review Platform) and a maximum of 150 days from the beginning of the scientific review process by experts).

**«Sophia» adheres to the Code of Conduct
Committee on Publication Ethics (COPE):**

<http://publicationethics.org/resources/code-conduct>



CÓDIGO ÉTICO

«Sophia» como publicación que busca la máxima excelencia internacional, se inspira en el código ético del Comité de Ética de Publicaciones (COPE), dirigido tanto a editores como a revisores y autores.

Compromisos de los autores

- **Originalidad y fidelidad de los datos:** Los autores de originales enviados a «Sophia» atestiguan que el trabajo es original e inédito, que no contiene partes de otros autores o de otros fragmentos de trabajos ya publicados por los autores. Además confirman la veracidad de los datos, esto es, que no se han alterado los datos empíricos para verificar hipótesis.
- **Publicaciones múltiples y/o repetitivas:** El autor no debe publicar artículos en los que se repitan los mismos resultados en más de una revista científica o cualquier otra publicación de carácter o no académica. La propuesta simultánea de la misma contribución a múltiples revistas científicas es considerada una práctica éticamente incorrecta y reprobable.
- **Atribuciones, citas y referencias:** El autor debe suministrar siempre la correcta indicación de las fuentes y los aportes mencionados en el artículo.
- **Autoría:** Los autores garantizan la inclusión de aquellas personas que han hecho una contribución científica e intelectual significativa en la conceptualización y la planificación del trabajo como en la interpretación de los resultados y en la redacción del mismo. Al mismo tiempo se ha jerarquizado el orden de aparición de los autores conforme a su nivel de responsabilidad e implicación.
- **Acceso y retención:** Si los miembros del Consejo Editorial lo consideran apropiado, los autores de los artículos deben poner a disposición también las fuentes o los datos en que se basa la investigación, que puede conservarse durante un período razonable de tiempo después de la publicación y posiblemente hacerse accesible.
- **Conflicto de intereses y divulgación:** Todos los autores están obligados a declarar explícitamente que no hay conflictos de

intereses que puedan haber influido en los resultados obtenidos o las interpretaciones propuestas. Los autores también deben indicar cualquier financiación de agencias y/o de proyectos de los que surge el artículo de la investigación.

- **Errores en los artículos publicados:** Cuando un autor identifica en su artículo un importante error o una inexactitud, deberá inmediatamente informar a los editores de la revista y proporcionarles toda la información necesaria para listar las correcciones pertinentes en la parte inferior del mismo artículo (siempre en nota al margen, para no alterar la publicación).
- **Responsabilidad:** La responsabilidad del contenido de los artículos publicados en «Sophia» son exclusivas de los autores. Los autores se comprometen también a que se ha realizado una revisión de la literatura científica más actual y relevante del tema analizado, teniendo presente de forma plural las diferentes corrientes del conocimiento.

Compromisos de los revisores

- **Contribución a la decisión editorial:** La revisión por pares es un procedimiento que ayuda a los editores para tomar decisiones sobre los artículos propuestos y también permite al autor mejorar la calidad de los artículos enviados para su publicación. Los revisores asumen el compromiso de realizar una revisión crítica, honesta, constructiva y sin sesgo, tanto de la calidad científica como de la calidad literaria del escrito en el campo de sus conocimientos y habilidades.
- **Respeto de los tiempos de revisión:** El revisor que no se sienta competente en la temática a revisar o que no pueda terminar la evaluación en el tiempo programado, deberá notificar de inmediato a los editores. Los revisores se comprometen a evaluar los trabajos en el menor tiempo posible para respetar los plazos de entrega, dado que en «Sophia» los límites de custodia de los manuscritos en espera son limitados e inflexibles por respeto a los autores y sus trabajos.
- **Confidencialidad:** Cada manuscrito asignado debe ser considerado como confidencial. Por lo tanto, estos textos no se deben discutir con otras personas sin el consentimiento expreso de los editores.

- **Objetividad:** La revisión por pares debe realizarse de manera objetiva. Los revisores están obligados a dar razones suficientes para cada una de sus valoraciones, utilizando siempre la plantilla de revisión. Los revisores entregarán un informe crítico completo con referencias adecuadas según protocolo de revisiones de «Sophia» y las normativas públicas para los revisores; especialmente si se propone que el trabajo sea rechazado. Están obligados a advertir a los editores si partes sustanciales del trabajo ya han sido publicadas o están bajo revisión para otra publicación.
- **Visualización de texto:** Los revisores se comprometen a indicar con precisión las referencias bibliográficas de obras fundamentales posiblemente olvidadas por el autor. El revisor también debe informar a los editores de cualquier similitud o solapamientos del manuscrito con otros trabajos publicados.
- **Anonimidad:** Para garantizar que el proceso de revisión sea lo más objetivo, imparcial y transparente posible, la identidad de los autores se suprime antes de ser enviados los trabajos a revisión por pares. Si se da el caso de que por alguna causal se ha visto comprometida la identidad de los autores, sus filiaciones institucionales o algún otro dato que ponga en riesgo la anonimidad del documento, el revisor debe notificar de inmediato a los editores.



Compromiso de los editores

- **Decisión de publicación:** Los editores garantizarán la selección de los revisores más cualificados y especialistas científicamente para emitir una apreciación crítica y experta del trabajo, con los menores sesgos posibles. «Sophia» opta por seleccionar entre 2 y 3 revisores por cada trabajo de forma que se garantice una mayor objetividad en el proceso de revisión.
- **Honestidad:** Los editores evalúan los artículos enviados para su publicación sobre la base del mérito científico de los contenidos, sin discriminación de raza, género, orientación sexual, religión, origen étnico, nacionalidad, opinión política de los autores.
- **Confidencialidad:** Los editores y los miembros del grupo de trabajo se comprometen a no divulgar información relativa a los artículos enviados a la publicación a otras personas que no sean autores, revisores y editores. Los editores y el Comité Edi-

torial se comprometen a la confidencialidad de los manuscritos, sus autores y revisores, de forma que el anonimato preserve la integridad intelectual de todo el proceso.

- **Conflicto de intereses y divulgación:** Los editores se comprometen a no utilizar en sus investigaciones contenidos de los artículos enviados para su publicación sin el consentimiento por escrito del autor.
- **Respeto de los tiempos:** Los editores son responsables máximos del cumplimiento de los límites de tiempo para las revisiones y la publicación de los trabajos aceptados, para asegurar una rápida difusión de sus resultados. Se comprometen fehacientemente a cumplir los tiempos publicados (máximo de 60 días en la estimación/desestimación desde la recepción del manuscrito en la Plataforma de Revisión) y máximo 150 días desde el inicio del proceso de revisión científica por expertos).



«Sophia» se adhiere a las normas de código de conductas del **Committee on Publication Ethics (COPE)**:
<http://publicationethics.org/resources/code-conduct>

OPEN SOCIAL POLICY

«Sophia» Is an open access journal entirely free for readers and authors that encourage the re-use and self-archiving of articles in databases, repositories, directories and international information systems. In this sense, «Sophia» has a Creative Commons 3.0 License of Non-Commercial Recognition and is included in the directory of Open Access DOAJ. The magazine only retains the rights to publish the works, both in print and digital formats.



1. Copyright

The work published in the «Sophia» Journal are subject to the following terms:

- 1.1. The Universidad Politécnica Salesiana (RUC: 0190151530001) Preserves the copyrights of the published works, and favors and allows their re-use under the Creative Commons Attribution-Non-commercial-No Derivative Works 3.0 Ecuador license, for which they may be copied, used, distributed, transmitted And publicly display, provided that:
 - 1.1.a. The authorship and original source of their publication is cited (magazine, editorial, URL and DOI of the work).
 - 1.1.b. Do not use for commercial or onerous purposes.
 - 1.1.c. The existence and specifications of this license are mentioned.
- 1.2. The publication will grant each item a Digital Object Identifier (DOI). Example:

2. Open Access policy

2.1. «Sophia» Is an open access journal, available in open access with no time restrictions, and is included in the Directory of Open Access Journals (DOAJ).

2.2. Self-archiving conditions: Authors are allowed to re-use published works, that is, post-print (or the final post-peer review or PDF version of the publisher) may be archived for non-commercial purposes, including their deposit in institutional repositories, thematic or personal web pages. Color Sherpa/Romeo: Blue.

3. Right of readers

3.1. Readers have the right to read all of our articles for free immediately after publication. This publication does not have any economic charge for the publication or for access to the material.



4. Automatic publishing

«Sophia» Makes its articles available in trusted third-party repositories (i.e. Redalyc, Latindex, institutional repositories...) immediately after publication.

5. Archiving

This journal uses different national and international repositories such as Redalyc, Latindex, Dialnet, REDIB... The Portico repository and the Institutional Repository of the SUniversidad Politécnica Salesiana (Ecuador) are digitally archived and indexed.

6. Machine readability and interoperability

Full text, metadata, and citations of articles can be traced and accessed with permission. Our open social policy also allows the readability of the files and their metadata, facilitating interoperability under the OAI-PMH protocol of open data and open source. Files from both full-length publications and their article segmentation are available in open HTML, XML, but also PDF, E-Pub and ISSUU formats, making it easy to read on any device and computing platform.

POLÍTICA SOCIAL ABIERTA

«Sophia» es una revista de acceso abierto enteramente gratuita para lectores y autores que favorece la reutilización y el auto-archivado de sus artículos en bases de datos, repositorios, directorios y sistemas de información internacionales. En este sentido, «Sophia» cuenta con una Licencia Creative Commons 3.0 de Reconocimiento No-Comercial y se encuentra incluida en el directorio de Acceso Abierto DOAJ. La revista solo conserva los derechos de publicación de las obras, tanto de la versión impresa como las digitales.



1. Derechos de autor

Las obras que se publican en la Revista «Sophia» están sujetas a los siguientes términos:

- 1.1. La Universidad Politécnica Salesiana (RUC: 0190151530001) conserva los derechos patrimoniales (copyright) de las obras publicadas, y favorece y permite la reutilización de las mismas bajo la licencia Creative Commons Reconocimiento-No-Comercial-Sin Obra Derivada 3.0 Ecuador, por lo cual se pueden copiar, usar, difundir, transmitir y exponer públicamente, siempre que:
 - 1.1.a. Se cite la autoría y fuente original de su publicación (revista, editorial, URL y DOI de la obra).
 - 1.1.b. No se usen para fines comerciales u onerosos.
 - 1.1.c. Se mencione la existencia y especificaciones de esta licencia de uso.
- 1.2. La publicación otorgará a cada artículo un Digital Object Identifier (DOI). Ejemplo: Valdés-Pérez, D. (2016). Incidencia de las Técnicas de Gestión en la mejora de las decisiones administrativas. *Sophia*, 6(12), 199-213. <https://doi.org/10.17163/ret.n12.2016.05>

2. Política de Acceso Abierto

2.1. «Sophia» es una revista de Acceso Abierto, disponible en acceso libre (open Access) sin restricciones temporales, y se encuentra incluida

en el Directorio de Revistas de Acceso Abierto (Directory of Open Access Journals-DOAJ).

2.2. Condiciones de auto-archivo: Se permite a los autores la reutilización de los trabajos publicados, es decir, se puede archivar el post-print (o la versión final posterior a la revisión por pares o la versión PDF del editor), con fines no comerciales, incluyendo su depósito en repositorios institucionales, temáticos o páginas web personales. Color Sherpa/Romeo: Azul.

3. Derecho de los lectores

3.1. Los lectores tienen el derecho de leer todos nuestros artículos de forma gratuita inmediatamente posterior a su publicación. Esta publicación no efectúa cargo económico alguno para la publicación ni para el acceso a su material.



4. Publicación automática

«Sophia» hace que sus artículos estén disponibles en repositorios confiables de terceros (p.ej. Redalyc, Latindex, repositorios institucionales...) inmediatamente después de su publicación.

5. Archivado

Esta revista utiliza diferentes repositorios nacionales como internacionales donde se aloja la publicación, tales como Redalyc, Latindex, Dialnet, REDIB... El repositorio Portico y el Repositorio Institucional de la Universidad Politécnica Salesiana (Ecuador) archivan digitalmente y garantizan a su vez la indización.

6. Legibilidad en las máquinas e interoperabilidad

El texto completo, los metadatos y las citas de los artículos se pueden rastrear y acceder con permiso. Nuestra política social abierta permite además la legibilidad de los archivos y sus metadatos, propiciando la interoperabilidad bajo el protocolo OAI-PMH de open data y código abierto. Los archivos, tanto de las publicaciones completas, como su segmentación por artículos, se encuentran disponibles en abierto en formatos HTML, XML, pero también en PDF, E-Pub e ISSUU, lo que facilita la lectura de los mismos en cualquier dispositivo y plataforma informática.

SOΦΦIA

PHILOSOPHY OF COGNITIVE SCIENCES
AND EDUCATION
FILOSOFÍA DE LAS CIENCIAS
COGNITIVAS Y EDUCACIÓN

SUMMARY

Editorial 33-40

ARTICLES/ARTÍCULOS

ARTICLES RELATED TO THE CENTRAL THEME

Artículos relacionados con el tema central

COGNITIVE SCIENCES AND EDUCATION: A PROPOSAL FOR DIALOGUE
Ciencias cognitivas y educación: Una propuesta de diálogo
*Adela Fuentes Canosa, Jennifer Paola Umaña,
Alicia Risso Migues and David Facal Mayo* 43-69

DIALOGUE IN COGNITIVE SCIENCES IN THE FACE
OF THE COEDUCATION CONTROVERSY
El diálogo en las ciencias cognitivas frente a la controversia
de la coeducación
Sonia Reverter-Bañón 71-92

THE INDISPENSABILITY OF LAWS IN COGNITIVE SCIENCE
La indispensabilidad de las leyes
en ciencias cognitivas
Sergio Daniel Barberis Almirón..... 93-119

RE-THINKING THE SUBJECT IN THE FIELD OF COGNITIVE SCIENCES
Re-pensar al sujeto en el campo de las ciencias cognitivas
Jonathan Cepeda Sánchez 121-149

JERRY FODOR'S PHILOSOPHY OF MIND
La filosofía de la mente de Jerry Fodor
Leopoldo Edgardo Tillería Aqueveque..... 151-171

MISCELLANEOUS/MISCELÁNEOS

MEETING POINTS BETWEEN CRITICAL THINKING AND METACOGNITION
TO RETHINK THE TEACHING OF ETHICS
Puntos de encuentro entre pensamiento crítico y metacognición
para pensar la enseñanza de ética
Ernesto Joaquín Suárez Ruiz and Leonardo Martín González Galli . 175-195



| | |
|---|---------|
| DIDACTICAL PROJECTIONS OF THE ARGUMENTATIVE THEORY OF REASONING Proyecciones didácticas de la teoría argumentativa de la razón <i>Rodrigo Sebastián Braicovich</i> | 197-215 |
| THE MODES OF ATTENTION Los modos de la atención <i>Daniel Eduardo Chaves Peña and Jaime Yáñez Canal</i> | 217-235 |
| PHILOSOPHY AND PANDEMIC Filosofía y pandemia <i>Samuel Madrid Guerra Bravo</i> | 237-263 |
| THE COVID-19 PANDEMIC AS A LIMIT EXPERIENCE OF THE SENSE OF EXISTENCE OF THE POST-MODERN HUMAN BEING La pandemia del Covid-19 como experiencia límite del sentido de la existencia del ser humano posmoderno <i>Remberto Ortega Guizado</i> | 265-287 |
| EDITORIAL GUIDELINES / NORMAS EDITORIALES | 291-335 |
| ANNOUNCEMENTS 2021-2025/ CONVOCATORIAS 2021-2025 | 342-345 |



EDITORIAL

The issue 30 of the Sophia Journal: Collection of Philosophy of Education, reflects on the philosophy of cognitive sciences and its links with education.

In order to establish some guidelines for understanding the subject, it has been deemed convenient to carry out a brief conceptual approach to what is understood by cognitive science. As a general rule, most researchers such as Medina (2008) coincide in calling cognitive science the scientific study of the mind and its processes, it is an interdisciplinary field that examines the nature, tasks, and functions of cognition in a broad sense. According to Medina (2008), “cognitive science conceives that human knowledge is a system that is always collecting, storing, recovering, transforming, transmitting and acting on information” (p. 188). This is how cognitive scientists seek to study intelligence and behavior, focusing on the way in which the nervous systems represent, process, and transform information.

Cognitive sciences have as their object of study the internal process that originates cognoscibility, the cognizant subject, the cognoscible, and what is known as intercognizability, aspects that, according to Medina (2008), would respond to the very nature of the knowledge process, so that, from this point of view, “it can be said that the human being, as a knowing being, acts on the basis of his representations” (p. 188), an important aspect in the cognitive process. In addition, it is necessary to consider that according to the purposes of cognitive science: “human cognitive representation is described in terms of symbols, schemes, images, ideas and other forms of mental representation” (Medina, 2008, p. 188), and these together allow the subject to act. In other words, an organism’s experience in relation to information-laden objects or events results in the formation of a cognitive representation. These aspects lead us to think that endogenous and exogenous factors intervene in the construction of knowledge that explain the multidimensionality and complexity of knowledge; furthermore, they allow us to consider that, in this construction of knowledge, two perspectives coexist: one of an individual or psychologist nature and the other of a cultural or sociological nature. As cited in Aguilar (2012), the first one, has the subject as the main protagonist in the construction of knowledge, since through the subject’s

interaction with the physical and social world, their cognitive capacities develop, and reality is built through the application and readjustment of the cognitive schemes that are permanently carried out in the cognizant subject; the second, establishes that “knowledge has a socio-cultural origin, it conceives knowledge as an “artifact of social communities” (Aguilar, 2012, p. 14).

From the perspective of cognitive sciences, thought is understood as a series of structures and mental representations on which computational processes operate, so that in the representational-computational model of the mind, for the most part, a clear symbolic link between mind, brain, and computer is evidenced.

Despite this, coinciding with the study carried out by José María Zumalabe (2014), it is important to note that “there are also non-symbolic representational models (connectionism) and non-representational cognitive models of the mind” (p. 125). Along this same line of analysis, it is found that, for cognitive sciences, according to Zumalabe (2014), “information in an internal representation can refer to everything that we can know about the world. When we think, we manipulate the mental representations of objects, activities, and situations” (p. 126). Which means that a representation is a structure that tends to symbolize something as a product of “relationships of similarity, causality or links with other representations. It is about a structure or a symbolic activity that is constructed to encode the experience” (p. 126).

Rethinking cognitive sciences implies considering the study of cognition comprehensively and multidisciplinary, taking as a reference the contributions of theoretical and empirical disciplines such as philosophy, psychology, linguistics, anthropology, neurosciences, and computer science. However, the complex, transdisciplinary and multidisciplinary nature of cognitive sciences has allowed that from 1980 onwards, various neuroimaging procedures have been developed in order to increase knowledge about brain functions; neurolinguistics is promoted, the possibility of experimentation with cognitive psychology is considered, evolutionary psychology is rethought, the Turing machine is created, etc.

Not surprisingly, cognitive science scholars maintain that in their configuration a series of processes intervene between object (natural), subjective and historical-subjective (social) sciences, and even object (engineering) technologies and subjective technologies (social). It is necessary to consider that historically, the concern to develop scientific and technological research on the phenomena of behavior, mind, and intelligence has already been found since the end of the 19th century and the



first part of the 20th century, consequently, in the 1940s, Kurt Gödel, Alan Turing, Alonzo Church, and John von Neumann stand out as the main precursors of cognitive science and are the ones who lay the foundations of the theory of computation and computers. It is established that cognitive science as an intellectual movement began in the year of the so-called cognitive revolution, that is, in the 1950s and it is said that one of the attempts to understand cognitive science is found in Howard Gardner.

Within the philosophy of cognitive sciences, there is the philosophy of the mind which has been supported by computer science. In this sense, from the 1950s on, a set of theories about the representational mind emerged that, in the style of Jerry Fodor (1980) and Alan Turing (1948), considered that the mind is a computer (Turing, Fodor). What has been said has served to establish a nexus between the philosophy of mind (in charge of providing conceptual analysis) and artificial intelligence (in charge of providing the necessary tools to represent and maneuver knowledge).

In the philosophy of science, questions about knowledge and scientific discovery have been a characteristic object of study of theoretical research, but they have also served as the basis for computational models of human behavior, aspects that together have shaped a new logic understanding of the functioning of the brain, mind, and science. Thus, in the field of philosophy of science, as is generally known, abduction as a form of explanatory reasoning, new forms of computational representation, and other similar processes have been developed to configure the inferences of scientific reasoning.

The link between the philosophy of cognitive sciences with education is very strong due to their inter, trans and multidisciplinary nature, each of the disciplines that contribute to education carries with them a series of cognitive processes related to thinking skills that enable the learning of each subject according to the formation area; each content aims to strengthen the mental processes with the aim of constructing new knowledge in which it is integrated, among other aspects: perception, attention, thought, imagination, language, memory, emotion. And to understand the various human faculties, cognitive science resorts to the help of different fields such as linguistics, psychology, artificial intelligence, philosophy, neuroscience, anthropology, etc.

The results that emerge from the cognitive sciences provide education with a set of comprehensive, interpretive, explanatory, and even predictive instruments that justify the cognitive processes of the subjects involved in the construction of knowledge. Likewise, cognitive sciences in

the educational field refer to various levels of organization that go from learning and decision-making to logic and planning of the different processes; they try to understand from neural circuits to the modular organization of the brain.

The above invites to formulate a series of questions such as the following: what is the philosophy of cognitive science? What is the relationship of the philosophy of cognitive sciences with education? What is the main philosophical debate on cognitive science? What is the philosophical foundation of cybernetics? What are the epistemological foundations of cognitivist theory? What are the philosophical foundations of connectionist theory? What are the main current trends in cognitive science? What are the auxiliary sciences of the cognitive sciences? What are the relationships between the theory of mind and cognitive science? What is the link between evolutionary psychology and education? What are the main relationships between cognitive and educational sciences? What are the main contributions of cognitive sciences to education? Questions that somehow will find an approximation of answer in the various reflections reflected in each of the research lines of the ten articles that are detailed below:

The horizon of discussion on the theme proposed for Sophia, issue 30, is initiated by the document *Cognitive Sciences and Education: A Proposal for Dialogue*, developed by Adela Fuentes Canosa, Jennifer Paola Umaña Serrato, Alicia Risso Miguez, and David Facal Mayo, it contains a proposal of transdisciplinary communication between cognitive sciences and education. The authors contextualize the communication processes experienced since the beginning of the last century with the configuration of educational psychology within the construct of educational sciences mediated by the constitution of cognitive sciences (mid-20th century) that led to the emergence of disciplinary synthesis between the sciences of the brain and the mind and that, currently, made possible new proposals for consilience between cognitive neuroscience and education. In this sense, the article presents a proposal for dialogue between the different epistemes (educational and cognitive), in relation to the phenomenon of bilingual education in the Ecuadorian intercultural context.

Next is the article *Dialogue in Cognitive Sciences in the Face of the Coeducation Controversy*, prepared by the Spanish Sonia Reverter Bañón, who reflects on neuroscientific research in relation to sexual difference; she addresses the debate about coeducation versus sex-segregated education. The author considers that in order to resolve this controversy, it is important to consider the contributions of neurosciences, as well as the



views coming from other disciplines such as the philosophy of education and the self-criticism of the neurosciences themselves. As such, the set of cognitive theories should be in permanent dialogue to understand important aspects that neurosciences alone cannot answer. She establishes that neuroeducation is an alternative to resolve the aforementioned controversy.

In this same direction of analysis is the manuscript *The Indispensability of Laws in Cognitive Sciences*, structured by the Argentine Sergio Daniel Barberis Almirón. The author defends the explanatory indispensability of the laws of science in the field of cognitive sciences; he argues that the laws of science play an indispensable epistemic role both in functional analysis and in the mechanistic explanation of cognitive abilities. He makes it clear that both those who defend and those who reject the ontological commitment to intentional causal laws assume that those laws do not contribute to the functionalist or mechanistic explanation of the phenomena they describe; he argues that functional analysis requires the specification of non-causal scientific laws and that the precise scientific representation of the activities and the dynamic organization of a mechanism that unfolds in the context of a mechanistic model, through the specification of scientific laws.

For its part, the article *Re-thinking the subject in the field of cognitive sciences*, developed by the Mexican Jonathan Cepeda Sánchez, aims to analyze the relevance of cognitive sciences in conjunction with the educational field. For the reflection of the subject, the author considers it important to review the discourse of neoliberalism and its inscription in the enigma of subjectivity. He establishes that resignifying the factor of human experience implies overcoming the challenges of the biological-reductionist vision, to privilege the maxim of unconscious knowledge. The hermeneutical path of this document takes up an interdisciplinary scaffolding, the basis of which is represented by disciplines such as philosophy, neurosciences, and psychoanalysis. The author considers it necessary to carry out a paradigm shift that weighs the history and subjective constitution, in contrast to practices that degrade the uniqueness of the human being. Furthermore, he argues that it is necessary to prioritize the influence of the social environment in the lives of the students, safeguarding their mental, physical and psychological development as the key to sustaining an ideal functioning of the nervous system and construction of the psyche.

To close this block of reflections on the central theme of Sophia's issue 30, we present the manuscript *Jerry Fodor's Philosophy of Mind*,

written by the Chilean Leopoldo Edgardo Tillería Aqueveque. The article makes an approach to the philosophy of mind of Jerry Fodor, it stops in the problem that his thesis of computational naturalism represents; emphasizes the ontological differences between the modular input systems and the central systems of this mental machine; concludes that conceptual innateness is the greatest epistemological problem of the Fodorian program and, paradoxically, constitutes the greatest philosophical contribution, especially due to the incorporation of the notion of common sense in the field of informational semantics.

Next, the second block of documents approved for the Miscellaneous section of the journal is presented. In this context arises the article *Meeting Points between critical thinking and metacognition to rethink the teaching of ethics*, structured by the Argentines Ernesto Joaquín Suárez Ruíz and Leonardo Martín González Galli. The authors argue that the traditional vision of critical thinking based on a rationalist approach has been questioned since the end of the last century by the 'second wave' of critical thinking, which, despite not being a fully defined movement, has included aspects such as imagination, creativity and cooperative work in its understanding and in its application to teaching. The manuscript analyzes a perspective of critical thinking alternative to the traditional one based on the potential contribution of metacognition and the social intuitionist model, in order to open new avenues of research to update the moral foundation that is assumed in the teaching of ethics. To delve into the aforementioned, the authors proceed to exemplify the relevance and applicability of metacognition in the teaching of ethics with situations related to the current Covid-19 pandemic.

The reflections developed in the document *Didactical Projections of the argumentative theory of reasoning*, presented by the Argentine Rodrigo Sebastián Braicovich move our issue forward. The objective of this work is to put into dialogue three lines of research within contemporary epistemology: the Epistemology of Virtue, the paradigm of Bounded Rationality and the Argumentative Theory of Reasoning. The author intends to analyze the search for a theoretical framework that allows designing pedagogical strategies on realistic premises, the Epistemology of Virtue is shown as a markedly optimistic current. The paradigm of Bounded Rationality represents the counterpart of this trend, insofar as it seems to lead to a marked pessimism regarding the possibility of designing strategies that allow perfecting the epistemic practices of the subjects. Faced with these two poles, the author suggests that the Argumentative Theory of Reasoning represents an alternative because it offers



an answer to the problem (faced by the Bounded Rationality paradigm) of the adaptive character of human reason from an evolutionary point of view and because allows overcoming the epistemic pessimism essential to the Bounded Rationality paradigm when planning realistic and effective pedagogical strategies.

Likewise, the manuscript *The modes of attention*, prepared by the Colombians Daniel Eduardo Chaves Peña and Jaime Yáñez Canal, analyzes some classic and alternative conceptions of the attention phenomenon; reviews some traditional approaches to the cognitive process; defends the importance of a phenomenological perspective of attention for which they take up the ideas of Husserl, Sartre, and Merlau-Ponty in order to establish a distinction of levels in the attentional process. Furthermore, the authors distinguish between passive and active forms of attention. The passive form corresponds to the pre-reflective consciousness and the active form can be linked to the reflective forms of directing attention.

With a view to responding to the current context, the article *Philosophy and pandemic*, prepared by Samuel Madrid Guerra Bravo, is presented. The Ecuadorian philosopher analyzes three critical aspects related to philosophy in these times of pandemic: the first refers to the end of Minerva's Owl as a universal symbol of philosophy, that is, the end of the idea that philosophy only begins to explain the world once the events have occurred; the second makes a critical distinction, from a Latin American and Global South horizon, between 'Metaphysics / Ontology of universal and abstract being' and 'Historical onto-logies of being-here'; the third, he intends to position life, not only as an ethical value capable of guiding human action but as a universal foundation and critical category. Likewise, Guerra intends to defend the simultaneity of philosophy with facts and a certain transforming power of thought; he tries to defend the significance and value of historical onto-logies as theoretical decolonization devices as opposed to metaphysical ones. The researcher considers that the 'historical onto-logies of being-here' ask about existence and everyday life itself that have been endangered by the pandemic which has revealed the true end of Eurocentric modernity and has opened the challenge to think in diverse but equal societies in the right to existence and life.

To end the route followed by the reflections presented regarding the call for the publication of Sophia 30, there is the article *The covid-19 pandemic as a limit experience of the sense of existence of the post-modern human being*, structured by the Panamanian Remberto Ortega Guizado. The researcher considers that one of the current concerns of the human being is the search for an answer about existence, its meaning and its



purpose. For this reason, he proposes to make a philosophical approach to the Covid-19 pandemic as a limit experience of the meaning of the existence of the postmodern human being that has led to a kind of existential destitution, in this sense, he argues that the ontological is rooted in existence.

It is important to indicate that the ideas contained in this volume are intended to provide a series of categories and categorical tools that activate critical-reflective-propositional analysis, that promote new questions and that become hotbeds for new research.

Floralba del Rocío Aguilar Gordón
Editora



Bibliografía

AGUILAR, Floralba

2012 Editorial. La construcción del conocimiento desde el enfoque filosófico, psicológico y pedagógico. *Revista Sophia: Colección de Filosofía de la Educación*, 13, 13-20. Quito: Editorial Abya-Yala.

MEDINA, Nicolás

2008 La ciencia cognitiva y el estudio de la mente. *Revista de Investigación en Psicología (IIPSI)*, 11(1), 183-198. Perú: Universidad Nacional Mayor de San Marcos. <https://doi.org/10.15381/rinvp.v11i1.3890>

ZUMALABE, José María

2014 Acerca del carácter representacional de la mente. La mente representacional. *Revista Psychology, Society, & Education*, 6(2), 125-144. Makirriain Universidad del País Vasco, España. <https://bit.ly/3qav6FO>

COGNITIVE SCIENCES AND EDUCATION: A PROPOSAL FOR DIALOGUE

Ciencias cognitivas y educación:

Una propuesta de diálogo

ADELA FUENTES CANOSA^{*}

National University of Education, Azogues, Ecuador
University of Coruña, Coruña, Spain
adela.fuentes.canosa@udc.es
Orcid code: <https://orcid.org/0000-0003-3305-2010>

JENNIFER PAOLA UMANA^{**}

National University of Education, Azogues, Ecuador
jennifer.umana@unae.edu.ec
Orcid code: <https://orcid.org/0000-0002-1998-7402>

ALICIA RISSO MIGUES^{***}

University of Coruña, Coruña, Spain
alicia.risso@udc.es
Orcid code: <https://orcid.org/0000-0001-6955-363X>

DAVID FACAL MAYO^{****}

University of Santiago de Compostela, Spain
david.facal@usc.es
Orcid code: <https://orcid.org/0000-0001-6230-0090>

Suggested citation: Fuentes, Adela, Umaña, Paola, Risso, Alicia & Facal, David (2021). Cognitive sciences and Education: A proposal for dialogue. *Sophia, colección de Filosofía de la Educación*, 30, pp. 43-69.

- * Master in Applied Psychology and Ph.D. student in Psychological Development, Learning, and Health from the University of Coruña (Spain). Since 2016, she works as a teacher and researcher in the area of Educational Neuroscience and Human Learning at the National University of Education of Ecuador.
- ** Doctor in Literary Studies from the Federal University of Paraná (UFPR). She has a master's degree in Hispanic Literature from the University of Guanajuato with a grant from the National Council of Science and Technology (CONACYT). She is currently a research professor at the National University of Education (UNAE) in Ecuador.
- *** Doctor in Psychology from the University of Santiago de Compostela (Spain). Professor of the Behavioral Sciences Methodology Area, Department of Psychology, University of Coruña (Spain). She specialized in research design and data analysis; preparation and analysis of tests, scales and questionnaires; psychological research via the internet; and psychology of attention.
- **** Doctor in Developmental Psychology from the University of Santiago de Compostela. Master in Clinical Gerontology from the University of Coruña. He has been a professor in the Department of Developmental Psychology at USC since 2010, teaching classes in the Bachelor of Pedagogy and the Master in Psychogerontology. He is coordinator of the Master in Psychogerontology at USC since 2020.

Abstract

In this paper, a transdisciplinary communication approach between cognitive sciences and education, as configured in 21st century, was taken. In the first place, these communicational processes are contextualized inside the historical continuum that transits since the beginning of the last century, with the emergence of educational psychology within the construct of educational sciences; and the constitution of the cognitive sciences, in the mid-twentieth century, that led to the emergence of disciplinary synthesis between the brain and mind sciences. These previous steps enable a framework rooted in the present and in the proposals for consilience between education and cognitive neuroscience. From this historical present, a dialogue between the different epistemes (educational and cognitive), in relation to the phenomenon of bilingual education was made through its concretization in the Ecuadorian intercultural context. The different levels of analysis implicated in a complex phenomenon, as is all educational phenomenon, reflects how transdisciplinary approaches could enable the recognition of the ontological complexity that underlies in an object of study. The dialogue among the different epistemologies and methodologies involved was expressed through the opening of the educational field to the mental and cerebral dimensions in its cognitive expression. Our century, however, maybe is requiring processes of reciprocal openness regarding the influence that the culture-education axis exerts on the modelling of the processes of cognition and learning.

44



Keywords

Education, cognition, psychology, neuroscience, bilingualism, culture.

Resumen

En este trabajo se realiza una propuesta de comunicación transdisciplinar entre las ciencias cognitivas y la educación, tal y como se perfilan en el siglo XXI. En un primer lugar se contextualizan estos procesos de comunicación en el continuum histórico que transita desde los inicios del siglo pasado, con la configuración de la psicología educativa dentro del constructo de las ciencias educativas; pasando por la constitución de las ciencias cognitivas, a mediados del siglo XX que propició la emergencia de la síntesis disciplinar entre las ciencias del cerebro y de la mente, para posibilitar un encuadre arraigado en el presente, y en las propuestas de consiliencia entre neurociencia cognitiva y educación. Desde este presente histórico, se efectúa una propuesta de diálogo entre las distintas epistemes (educativas y cognitivas), en relación con el fenómeno de la educación bilingüe, y en concreto en el contexto intercultural ecuatoriano. La integración de los distintos niveles de análisis que configuran un fenómeno complejo, como lo es todo fenómeno educativo, refleja cómo los intentos transdisciplinarios orientados a reconocer la complejidad ontológica de un mismo objeto de estudio, requiere del diálogo entre las distintas epistemologías y metodologías implicadas. La apertura del campo educativo a las dimensiones mentales y cerebrales en su expresión cognitiva, requiere en este s. XXI procesos de apertura recíproca respecto de la influencia que el eje cultura-educación ejerce en el modelamiento de los procesos de cognición y aprendizaje.

Palabras clave

Educación, cognición, psicología, neurociencia, bilingüismo, cultura.

Introduction

It is necessary to introduce and develop in education the study of the cerebral, mental and cultural characteristics of human knowledge, of its processes and modalities, of the mental and cultural dispositions that allow risking error and illusion
(Morin, 1999, p. 6).

This work proposes, through a critical review of the literature, to establish channels for dialogue between cognitive sciences and education expressed through bilingual education programs in the Ecuadorian context. The structuring of the results of the bibliographic review process calls for the establishment of a timeline, in which we can place the study of the question that refers to cognitive sciences and education. This timeline went back to the beginning of the 20th century, contextualizing the encounter of cognition and learning within the framework of the evolution from a monodisciplinary approach, to a multidisciplinary one within, the field of educational sciences and its interrelation with the disciplinary emergence of educational psychology. After this first section of the overview, it has been considered necessary to contemplate the historical moment of consolidation of cognitive sciences, in the middle of the last century, traversing the trail of the synergy of two of the essential disciplines in the study of human cognition, cognitive psychology and neuroscience, and the resulting product of this synergy, cognitive neuroscience. Subsequently, the emergence process of new disciplines will be addressed as a result of the consilience between cognitive neuroscience and education that originated at the end of the last century. Once the relevance of the relationship between cognitive sciences and education has been historically located, we will explore in depth of one of the aspects that have been considered essential in regard to the possible contributions that the cognitive sciences of the 21st century may be offering to the educational field: bilingual education. Its concretization in the Ecuadorian context, defined on its cultural and linguistic diversity, makes it necessary to consider the phenomenon of diglossia present in the scenario of Intercultural Bilingual Education (IBE). Subsequently, an attempt was made to establish a dialogue between the different areas of knowledge, offering a cognitive reading of the bilingual phenomenon, and complementing it with the views from the involved educational fields, to finally proceed to the presentation of the conclusions.

Cognitive science and education

Although the relationship between education and cognition today has been consolidated in the form of an indissoluble binomial, the materialization of the bridges or channels of communication between both fields of knowledge has historical channels that are expressed at different moments in educational history in which transversely, essential issues within the field of educational philosophy underlay. The processes of inter- and transdisciplinarity, which characterize the epistemic *Zeitgeist* of the sciences in the 21st century, bring with them the challenge of a rethinking of academic and investigative identities constructed on the basis of very defined limits. Overcoming these limits has been one of the crosscutting leitmotifs in the relationship between cognitive sciences and education in each of its stages. In the case of cognitive sciences and education, in its early stages, this openness is reflected in the educational consideration of the mental and brain levels at which learning and cognition take place; requiring, from later stages, a reciprocal opening of these levels, to the cultural and educational dimensions.

46



(1900-1950): Psychology and education

The explanation of the need to establish a close relationship between cognitive sciences and education constituted a central nucleus of the educational debate during the early 20th century. It was in the academic context of the University of Geneva, where proposals for a dialogue between the areas or departments of child psychology and experimental pedagogy will emerge. As Hameline (1993) argues, during this period, the keys for the evolution of an educational approach focused on the singular pedagogical discipline, towards the multidisciplinary product reflected in the plural terminology in force today, educational sciences, were forged. After this stage of intense debate, around the need for synergy between those areas of knowledge oriented towards the study of teaching and those focused on the study of learning, the creation of the Institute of Educational Sciences in Geneva was promoted, in 1912. As Hofstetter (2012) points out, this project offered testimony of the phenomenon of pedagogical effervescence that made possible the implementation of a project aimed at applying some principles of psychological training in teacher training curricula and laying the foundations for progress and development of an educational science that effectively integrates the contributions of the sciences of cognition and learning. The educational sciences anchored their beginnings in the monodisciplinary field of pedagogy or

educational science. However, the inherent complexity that characterizes educational phenomena will produce a need to cope with their object of study that integrates those fields of study, focused on cognition and learning, promoting disciplinary hybridization conditions and the birth of the educational psychology. It is in this multidisciplinary framework where the sciences of teaching and instruction, in a Herbartian sense that would include pedagogy and didactics, and psychological and cognitive science, converge, or in the words of Piaget (1969):

Any didactic method or any teaching program, of which their application and results must be analyzed from an experimental pedagogy, involves problems in developmental psychology, learning psychology, or general intelligence psychology (p.15).

As Piaget expresses, the study of learning and human cognition constitutes one of the essential fields of knowledge for the construction of educational knowledge, disciplinary materializing that intuitive premise that expresses that all quality teaching praxis must start from the principles that articulate the human learning processes.

In *How People Learn: Brain, Mind, Experience, and School*, the National Research Council (1999) places the origins of the scientific study of human learning in a parallel path to that of psychology and its establishment as a scientific discipline for the study of the human mind. It will be within psychology where the main scientific conceptions about learning emerge, basing, through educational psychology, its expression in the educational field. Castejón et al. (2013) express that educational psychology occupies a singular disciplinary space, positioning itself, at the same time, as a branch of knowledge of psychology and as one of the members of the multidisciplinary construct of educational sciences: educational psychology constitutes a bridge discipline between the fields of psychology and those of education and therefore, between cognition, learning and education.

One of the main objectives of educational psychology, in its initial stages and disciplinary consolidation, was to appeal to the need to adopt a scientific approach in which to frame the study of the educational phenomenon, fostering its roots within the field of educational sciences. Coll (1991) and Mayer (2001) refer to how educational psychology has been emerging as one of the key disciplines for coping with some of the essential problems for curriculum design; for various aspects related to the teaching of the different areas of knowledge that make up the educational curricula, as well as for the teacher training programs. This expansion of

the discipline, and its key positioning within the educational field, led to the blurring of its identity limits, a product of that disciplinary hybridization process that conforms it based on the integration of psychological and educational genes. Mayer (2001) states: “It is not easy being an educational psychologist these days. For our psychologist colleagues we are too educational (...) and for our educational colleagues we are too psychological” (p. 83).

The establishment of bridges between the mind and education, and the expression of its operability through educational psychology, profoundly marked the development of educational praxis and theory in the 20th century. The different theories about learning and human development were also expressed in the form of the pedagogical models that shaped the history of education during the last century (behaviorism, constructivism-cognitivism, and humanism): the development of the psychology of education and its evolution in the conceptualization of the mind and human behavior during the learning processes, were naturally translated into the multiple dimensions that make up the educational act, integrating themselves into the processes of construction of pedagogical and didactic knowledge.

The mind-education bridge, expressed through the birth and consolidation of the discipline of educational psychology, offers a model for understanding how the study of cognition and learning is rooted in the origins of the shaping of educational sciences, offering a solid testimony of the need to adopt plural points of view when facing a complex object of study, such as the educational phenomenon. Gordón and Arellano (2014) argue that this disciplinary bridge offers an example of the evolution of the educational framework through the convergence between the different psychological currents and educational theories, expressing themselves both in curricular structuring-implementation processes based on age or stage of student development; as in the design of didactic and instructional materials, or the evaluation of the most optimal methodologies for the full development of student capacities and potentialities.

(1950-1970): Cognitive psychology and neuroscience

The cognitive sciences, or cognitive science, since the nomenclature varies according to different sources, would be defined through the interdisciplinary study of the mind and intelligence, integrating the study that emerges within the areas of knowledge of philosophy, psychology, artificial intelligence, neuroscience, linguistics and anthropology. Although its



intellectual origins may be located in the mid-1950s, Gardner (1985) and Thagard (1996) indicate that it was necessary to wait for researchers and academics from various fields to begin to develop theories of the mind based on complex representations and computational procedures, locating its organizational origins at the end of the 70s, when the Cognitive Society was created and the Journal Cognitive Science was founded.

The interdisciplinary project of the cognitive sciences, with cognitive psychology as one of its root disciplines, did not crystallize in a fluid manner in the interrelation between the set of integrated disciplines. Crick and Koch (1998) explain that in the founding stages of cognitive sciences, the brain was conceived as if it were the human mind from the behavioral approach: as a black box that needed to be kept closed. Cognitive psychology, in this sense, was self-defined based on overcoming the behaviorist paradigm, to focus on the study of activity, and the role of the subject as a constructor of that same cognitive activity (Andrade, 2006). However, the consideration of the need to incorporate the biological dimension of this subject of cognition was not recognized in the initial stages of cognitive science.

In this sense, O'Brien (1991) points out that the development of the relationship between neuroscience and cognitive sciences constitutes one of the central topics of discussion during the initial stage of the emergence of cognitive sciences, and already in 1948, and in the context of the *Hixon Symposium*, held on the campus of the California Institute of Technology, scientists from various areas of study gather around the discussion of the possible relevance that the investigation of brain mechanisms and human behavior could have in the field of cognitive science. The integration of brain studies in cognitive science was characterized by the assignment of a secondary role to neuroscience, which, as Gardner (1985) refers to, was defined as a borderline discipline, or as Miller and Gazzaniga (1984) point out, as a support discipline, confronting it, in some way, with that set of root disciplines that made up the cognitive sciences: psychology, linguistics, artificial intelligence, and computational sciences. In this sense, Crick and Koch (1998) state that, although cognitive scientists, in opposition to behaviorism, claimed the need for the explicitness of models of mental processes, there was not a generalized enthusiasm in integrating brain studies, producing a split between those positions that advocated emphasizing the understanding of structural facts integrating the neural level, and those that defended the need to reluctantly face the integration of the biological level of analysis in the construction of cognitive science theories. Gardner (1985), referring to



the relevance of neuroscience for cognitive science, indicates: “Perhaps we can get to know each of the brain connections involved in the formation of concepts, but this will not help the understanding of what a concept is” (p. 286).

Gardner, through these words, directly alludes to one of the cracks that emerged between the set of disciplines that made up the construct of cognitive sciences, referring to the connectionist approach that prevails in brain studies and contrasting it with the symbolic models inherent to the approach, predominant in the cognitive psychology of the time. Marr (1982) examines different issues associated with the difficulties for the integration of the neural level within the cognitive sciences. In any study that refers to cognitive processing, there would be three levels of analysis. A first computational level, which alluded to the primary task carried out by an individual or system; a second algorithmic level, which would describe each of the steps carried out to carry out said task, and a third level, or implementation level, which would collect the mechanisms carried out by the hardware that makes it possible to carry out said algorithm. Byrnes (2001) highlights the fact that a normalized pattern in the construction of theories about mental events, during the time of the emergence of cognitive sciences, was to operate at the computational and algorithmic levels without considering it necessary to contemplate the level of implementation. O’Brien (1991), Stillings et al. (1995), and Lachman, Lachman, and Butterfield (1979) agree that in the theory of information processing, emerged within the cognitive sciences, the computer was the central metaphor for the study of mental activity. As Neisser (1967) indicates, cognitive science adopts under this prism a computational model of thought (with a strong emphasis on linguistic aspects) conceived based on the manipulation of symbols based on given rules. Stillings et al. (1995) and Bechtel (1994) allude to the fact that this symbolic model of information processing, to which the study of the mind adheres in the framework of the initial stage of cognitive sciences, outlined essential incompatibilities with the approach in which brain studies are ascribed since these classical symbolic models could not be explained at a neural level, framed in connectionist models or neural networks.

As the process of evolution of cognitive sciences was promoting the overcoming of the mind-computer metaphor as the central focus for the theoretical development of mental processes, the connection between cognitive psychology and neuroscience was strengthening, reflecting the need to integrate the levels of the brain in the study of human cognition. In this regard, Mayer (1981) defines cognitive psychology as the scienti-



fic study of the mental processes and memory structures of the human being. Gazzaniga, Ivry, and Mangun (2009) define the disciplinary synergy of cognitive psychology with neuroscience, cognitive neuroscience, as the study of mental processes and the biological aspects that underlie cognition: the mental processes that underlie cognition, and therefore in learning, they will be faced from the integration of the biological and psychological levels. Just as Albright, Kandel, and Posner (2000) express, human cognition in its mental, behavioral, and cerebral dimensions, stands as the object of study of cognitive neuroscience, and in this sense Mayer (1996) collects the proposal to equate the mind as a processing system –Hardware– cognition as the application –software– of cognitive processes, and learning as an acquisition of knowledge –data– will have to integrate a new element: the human brain. Regarding the disciplinary emergence of cognitive neuroscience, and anecdotally, Mclelland and Ralph (2015) place the coining of the nomenclature in 1979, during a taxi trip through New York City, and with George Miller and Michael Gazzaniga as protagonists. The birth of this new area of knowledge was caused by the convergence of various factors, Roche, Dockree, and Commins (2009) underline the importance of three events: In the first place, the fact that cognitive psychology took over from behaviorism starting in the 1950s, providing cognitive models and experimental methods for the study of human cognition; secondly, they highlight the fact that experimental neuropsychology, during the 50s and 60s, began to integrate the neural level in the studies of cognitive processing in patients with brain injury and neurological damage; Lastly, they emphasize the relevance of the advances in radiography and electroencephalography techniques that allowed the observation of the metabolic and electrical activity of the human brain during the performance of cognitive tasks. Hardcastle (2007) states that cognitive neuroscience is actually a really complex field that came to integrate different areas of research in cognitive psychology and neuroscience: brain development, perception, action, memory, higher cognitive functions, and brain plasticity.

Cognitive neuroscience is emerging today as one of the most prolific cognitive sciences of the late 20th and 21st centuries, its gradual foray into the fields of research on educational learning led to the emergence, during the 90s, of a debate around the need to integrate the brain level in the processes of construction of educational knowledge. Old questions, arising during the emergence stage of the bridges between mind and education and between mind and brain, were recovered, this time in the form of the triad consisting of mind, brain, and education.

(1990-): Cognitive neuroscience and education

On January 1, 1990, by presidential declaration, the ‘brain decade’ was established in the United States. In 1991, non-invasive neuroimaging techniques, such as functional magnetic resonance imaging (fMRI), began to be applied in humans. The study of the brain and human cognition, with the appearance of this type of non-harmful techniques, shifts the focus of interest from the study of the pathology of the central nervous system to the healthy brain: research in cognitive neuroscience is oriented, during this stage, towards the evaluation and localization of brain function in healthy individuals, producing an explosion of publications in this research field. As Jones and Mendell (1999) collect, this presidential proclamation marked a before and after in the area of neuroscience through public recognition and the consequent reorientation of the focus of the media towards the results of neuroscience research. The number of scientists attached to the Society for Neuroscience also increased exponentially, with a growth of more than 1000 members per year during this decade. Associated with the proclamation of the decade of the brain, the phenomenon known as Brain Mapping arises, which marks the beginning of the brain mapping project that is still in force today. In 2012, more than twenty daily articles focused on cognition and the human brain were published, and during the first decade of the 21st century, more than 100,000 articles were available in the U.S. Pubmed database (Savoy, 2001; Unesco, 2013).

It was during the last year of the decade of the brain when the proposal to integrate the results of research in cognitive neuroscience in the construction of educational knowledge was made official, expressed through the Brain and Learning project sponsored by the Organization for Economic Cooperation and Development-OECD. As results associated with the project, two reports are published (OECD, 2002; 2007) in which the birth of a new science of learning was proclaimed.

Proposals for a rapprochement between cognitive neuroscience and education became official in the academic field in 2001, in the Harvard University scenario, and in the form of a project based on the diagnosis of the need to update teacher training by incorporating literacy processes basic in neuroscience. The course was taught, among others, by two academics who actively participated in the consolidation process of cognitive sciences carried out in past decades, Kurt Fisher and Howard Gardner. This proposal evolves through the creation of the International Mind, Brain and Education society and with the inauguration, in 2004, of



the editorial body associated with this line of research, the *Mind, Brain, and Education Journal* (Blake & Gardner, 2007).

After the incursion and expansion into the academic field of the USA, the proposal reaches European territory, settling in different universities in the British territory and later expanding to different enclaves with variations in their nomenclature: mind, brain, and education; educational neuroscience; neuroeducation; neuropedagogy, or neurodidactics, are some of the terms with which it refers to the academic and research area settled at the intersection between education and cognitive neuroscience.

These new academic proposals can be conceptualized through their historical parallelism with the disciplinary emergence processes of educational psychology and cognitive neuroscience. In the current case, the proposal to incorporate the level of biological analysis in the construction of educational knowledge has met and still finds reluctance today: the recognition of the place that educational neuroscience (and its aspects in nomenclature) finds within the multidisciplinary construct of the educational sciences, continues to be questioned.

In this sense, it is observed in the present, the need for a synthesis between those exaggerated reductionist positions and those that are positioned at the opposite extreme, advocating the convenience of the exclusion of the neural and biological level. If you want to achieve a complete vision of a phenomenon as complex as education, it is necessary to integrate, in a non-reductionist framework, the cultural, social, affective, mental, and neural dimensions, seeking the understanding of the ways in which they interact; the integration of a new level of analysis, in this case, the biological one, responds to the needs that are denounced from the paradigms of complexity.

Just as Kim (2012) specifies, in the case of cognitive neuroscience and education, the combination of mental and neural levels in the study of learning fosters a process of reconceptualization of it, which needs to cross disciplinary boundaries to achieve a more comprehensive and complete vision. Koizumi (2004) also points out, with respect to the human biological system, that learning constitutes a process of increasing negentropy, or negative brain entropy: stimuli from the environment, in a specific period, promote the emergence of connections and brain circuits that remain in the time. Learning experiences, therefore, directly influence neural connection patterns both through the creation of new connections, as well as the strengthening of those most active networks, or the weakening and elimination of those that are not activated during contact with the experience. In this way, brain connections are gradually



modified in response to learning, and these changes, dependent on experience, would in turn affect the nature of later learning. In this sense, the inclusion of the brain level seems to appeal to the revision of the static visions of the cognitive potential or of the learning capacity, and also, in a certain sense, of a genetically determined human intelligence.

These a-dynamic conceptions reflect, to some degree, an incompatibility with the plastic capacity of the brain, as Hinton, Fischer, and Glennon (2012) indicate, as the human being learns, both in formal and informal contexts, learning experiences go on modeling brain architecture and configuring the learner's cognitive abilities. Gallistel and Maltzel (2013) emphasize that cognitive abilities in the framework of the cognitive sciences of the 21st century are conceived as something in continuous development and that the educational environment, consequently, would play an active role in the modeling of the structure and brain function: processes that become determined at the intra-subject level underlie all cognition and learning processes, but that same level reflects an openness to the environment and experience that is expressed through neural reconnection mechanisms that configure and reconfigure the learner's nervous system through of a retroactive dynamic with learning experiences.

For example, Calvo (2019) indicates that in the study of cognition and learning it became necessary to overcome simple visions and become aware of the need for this complex exchange between the inside and the outside. Both the learning capacity and the intelligence that defines the human being as a species, to form and reach its maximum potential, depends on the interaction of genetic factors with those associated with contact with experience. The human individual, from birth, is immersed in a socioculturally determined context and this context constitutes one of the main influences that will shape the individual's development process.

Nisbett and Masuda (2003) and Domínguez et al. (2009) contemplate how cultural influence would also be expressed in the field of cognitive functioning of each of the cerebral areas, both cortical and subcortical, which would respond both functionally and structurally to the flow of cultural experience, encompassing both the basic and the superior levels in cognitive processing and expanding to the affective and social spheres.

Nowadays it can be affirmed that at a global level, within our cultures and societies the process of universalization of education in its basic and elementary levels has been practically completed, Eccles and Roeser (1999) point out that the school constitutes a multilevel context of influence in the processes of socio-emotional and cognitive development, exercised through organizational, social and instructive processes. The



classroom is outlined as a setting intentionally designed so that those socio-politically determined learning processes are expressed through the curriculum and can be experienced. In this sense, from educational neuroscience, and from one of the central topics that articulate its object of study, educational neuromyths, the phenomenon of the proliferation of wrong beliefs regarding bilingual education has been collected, analyzed from its cognitive dimension. However, bilingualism constitutes a complex phenomenon, which not only encompasses the cognitive dimension, in which dimensions associated with social, cultural, and political levels transversely operate, which must be taken into account for the establishment of a true dialogue.

The Intercultural Bilingual Education Curriculum in Latin America and Ecuador

Intercultural Bilingual Education (IBE) in America could be thought of from the evangelization of Europeans in the New World since the empirical uses of the colonizers were directly related to the construction of didactic and linguistic material that allowed them an effective communication with the inhabitants of the new lands. However, its study and definition focus on the 20th century. According to Barnach (1997), during the first three decades of the last century, in different regions of the Andean highlands and the Mexican region, experiences of self-managed projects can be traced: in Bolivia, the Ayllu de Warisata school; in Ecuador, the schools created in the Chimborazo region; in Peru, schools located in Puno and, in Mexico, a country with more tradition in regard to bilingual education, different pioneering schools that sought to integrate the knowledge of ethnic minority populations that was excluded by the official education system; as stated by López (1998):

The Latin American scientific heritage has some studies dating from the first decades of this century, which, unfortunately, we have not bothered to recover and learn about and which, voluntarily or involuntarily, specialized international literature has been in charge of silencing (p. 51).

Therefore, studies around IBE have been prolific for the last forty years. However, in Mexico, studies around this issue date back to the 20s and 30s, in which different criticisms can be read towards the ignorance of these projects and their incidence within educational innovation and recreation. There is no doubt that this lack of interest in studies around intercultural education is directly related to racial, social, and linguistic

prejudices towards indigenous and afro peoples who sought to make their way into a westernized educational environment, being able to ignore their ancestral roots and traditions. Thus, the educational movements that emerged from the ethnic territories sought to re-construct teaching methods according to the community context and that claimed their own exercises as axes to combat school failure and the shame that came from recognizing oneself as indigenous or afro in contexts as global as those imposed by State policies, which saw ethnic relations and indigenous languages as an instrument to reinforce and impose hegemonic languages such as Spanish and English.

As is known, bilingual education had its beginning in integrative and assimilative models that sought, through the linguistic integration of minorities to the dominant communicative context, to create cheap productive forces that would respond efficiently to the various dynamics of power without reacting or opposing. However, it must be recognized that the dominant approaches around IBE and the attempt at linguistic impositions allowed the communities to carry out an evaluation that would determine the progress and restructuring within the educational exercises and the policies built around it.

Thus, the advancement of bilingual intercultural education in the American territory, according to Delia María Fajardo Salinas (2011) in her text *Bilingual intercultural education in Latin America: a brief state of affairs* occurred in three stages:

A first stage of transitional bilingualism; a second in which it drifts towards the maintenance of bilingualism, but without disappearing; and a third where other variants derived, in turn, from the maintenance of bilingualism are developed: intercultural bilingual education and ethnoeducation, among others (p. 2).

Although, the different stages sought the consolidation of education according to the territories, only until the end of the 20th century a consolidation, application, and operation can be observed in which education begins to be thought from a transition that tries to move away from cultural assimilation and restoring their own linguistic and cultural systems, which although it is carried out from a comparative structure with the dominant society, seeks to educate from the community referentiality that reinforces the own language and that is related to the values and own knowledge that dialogue with the Western and traditional culture in favor of the construction of a universality of contemplating the different conceptions of equity and cultural pluralism.



In this framework, the teaching and use of indigenous languages play a predominant role within the teaching-learning processes, since it is a communication instrument that is interrelated with the linguistic interaction of Spanish as a language of intercultural relationship, which, within the communities, expands the stylistic and lexical processes that include poly-functional exercises around the development of an educational component suitable for the diversity of the Latin American territory, in general, as well as for the specific Ecuadorian case.

Language in the IBE system is established as a primary element in educational processes. From the first grades or from Community Family Early Childhood Education, it is understood that linguistic exercises and communicative interactions must be given through the mother tongue, which, in this case, should be the language of the nationality, with which the teaching processes and learning should not go through translating exercises and should seek to integrate the linguistic codes in relation to the learning of the second language, in this case, the Spanish language. This linguistic interrelation seeks a communicative functionality without interference, which allows to identify and understand in their entirety different cultures one's own and universal, allowing the adoption of an epistemic diversity that allows the practice of an interculturality and transmission of knowledge, traditions, and ancestral customs that are not they are alien to "scientific" knowledge but rather integrate it into their knowledge processes or phases.

The Model of the Bilingual Intercultural Education System (MOSEIB) (Secretariat of the Bilingual Intercultural Education System, 2019) proposes the application of the educational model through the following steps:

- a) Recognition: Previous knowledge that the learner possesses and that is detected through different diagnoses.
- b) Knowledge: Creation and formation of new knowledge through investigative interaction carried out and mediated by the teacher and constructed by the students.
- c) Production: From scientific interaction with the environment and theories, the student builds new knowledge and puts them into practice in order to demonstrate empirical functionality.
- d) Reproduction: The learner interacts with what has been demonstrated and learned in order to improve and verify the processes developed.
- e) Creation: Based on the teacher's guidance and through individual imaginative uses, students build new ways of interacting and demonstrating knowledge.

- f) Recreation: It seeks to improve creations and overcome the processes of realization and empirical interaction.
- g) Validation: The theoretical and scientific advances around what has been studied are socialized to the local and educational community.
- h) Assessment: It is related to a double process in which the learner receives feedback from his educational process and from the generation of new knowledge in order to understand the useful purposes of learning and its use in certain social, cultural, and political contexts.

However, the model, despite taking into account the plural contexts of the Ecuadorian reality, does not adapt to the linguistic reality of the territories and communities, since they go through processes of linguistic regression and diglossia that hinder the effective implementation of the theoretical and philosophical precepts, generating an educational globalization that bases its teaching-learning on the practice and study of the Spanish language, avoiding linguistic revitalizations and reinforcing the monolingual use, which has generated the imminent extinction of indigenous languages and knowledge, since the community members consider that the use of their own language generates rejection and discrimination within mestizo society. This linguistic prejudice towards their own language has resulted in phenomena such as diglossia, in which the interference of Spanish and indigenous languages constructs intermediate or interlanguage languages that, at a certain point, end up creating more problems than reinforcements, thinking from the capacities generated by the ability bilingual.

Cognitive sciences and bilingual education, a proposal for dialogue

The close interrelation between cognitive sciences, bilingual education, and diglossia was expressed during the 1960s in the United States, and associated with the massive arrival of immigrants from other American enclaves, making explicit the need to adopt governmental measures for the integration of this population group in the North American public educational system. Padilla (1977) highlights how in 1965 policies for Bilingual Education were formulated in the United States through the Politic Bilingual Education Act (Title VII), which, as Beykont (2002) points out, was accompanied by a high degree of academic failure of participants. This fact led to the establishment of the belief that bilingualism was a cause of mental confusion in learners, and of inhibition



of the cognitive and academic development of students from minority cultures. Diamond (2010) alludes to the fact that the erroneous inference of correlations between bilingualism and cognitive development produced the proliferation of the premise that advocated the need for subjects to learn a single language, the majority (in this case, English) from childhood, ignoring the influence of other variables that could be leading to school failures, such as the model chosen for the implementation of bilingual education (which did not contemplate the cultural dimension) or the economic status in which minority groups were assigned. After this supposed failure of bilingual teaching, radically monolingual positions emerged that were legitimized through the appeal to cognitive foundations. A fundamentally diglossic conception of language learning was filtered through them. The dominance of a majority language, associated with a monocultural conception in the construction of national identity, sought refuge in supposedly cognitive premises to consolidate a position of monolingual dominance in the educational system.

The cognitive sciences of the 21st century, in this sense, as well as Park and Huang (2010) recollect, show evidence of the need for educational decision-making processes that respect the synergistic nature that describes the natural interrelation between culture, language, and cognition: sustained exposure to a type of experience, determined by the cultural context, is correlated with functional and structural changes in the brain, and it can therefore be deduced that continuous exposure to a specific cultural environment could affect both structure and functionality neural of the subjects. Rosenbaum, Weisler and Baker Ward (1995) indicate that this neural modeling, via culture, could be reflected, for example, in information processing models linked to the cultural values and beliefs that define East and West and producing different patterns: more focused on the object and on the organization of information through laws and categories — western culture— and other more global ones, where the object and context would be processed in a unified manner and relational information would be prioritized over the categorical — eastern culture—.

Sui, Liu, and Han (2009), Zhu et al. (2007), and Sui and Han (2007) refer to the fact that these differentiated types in information processing could also be expressed in the configuration of the individual self with respect to relational patterns for the configuration of the non-self, or otherness: culture affects the psychic structure of the self and results in two different types of self-representation, an independent self, characteristic of Western culture, and an interdependent self, characteristic of Eastern culture. Kitayama and Park (2010) allude to the fact that the human brain and

mind would come biologically prepared, complemented, and transformed through the active participation of the human being in the eco-symbolic environment called culture. Downey and Lende (2012) point out how the human nervous system has a disproportionate susceptibility to cultural modeling and the nurturing environment of an individual, affecting the environmental niche in which our nervous system is modeled.

One of the expressions that define human cultures is language, defining at the same time the essentiality and specificity of human cognition. Just as Castillo (2004) emphasizes that the so-called ancestral languages, such as the Andean languages, reflect differentiated features in cognitive categorization processes with respect to those with which they coexist, such as Spanish, which is inscribed in Western cultural models. An example is the one that is ascribed to the linguistic category of number, which indicates the reference to either a single object or a plural one, which in the Spanish language is conceived based on relational categories of exclusion; In the Quechua language, however, the relational category is dialectical, recognizing the existence of two types of plural, two types of “we,” one general or universal, and the other exclusive. In this sense, Godenzi (2014) indicates that the grammatical and syntactic categories of the Andean languages respond to specific symbolic conceptions in which to frame the construction of reality (complementary coexistence, separation and the encounter of opposites, inversion; symmetric, asymmetric and recursive reciprocity...).

Decision-making around the implementation of bilingual education programs should take into account these cultural aspects, ascribed to language, and that directly influence the cognition of the subjects. As Padilla (1977) expresses, every bilingual education project is determined by specific philosophical principles: that of ‘cultural assimilation’, in which the native language is instrumentalized as a tool to bridge the gap between home and school and that it should gradually be replaced by the majority language without taking into account aspects of cultural integration in the design of curricula; that of ‘cultural pluralism’, based on equal rights between different languages and cultures, advocating the indissolubility of the language-culture binomial, and that of ‘cultural separation’ in which bilingual problems are addressed through educational segregation of the subjects from the minority culture.

Beyond the political and social dimensions that make up bilingualism, and with a focus on the cognitive dimension, cognitive neuroscience provides evidence of the advantages of learning and acquiring two or more languages during the vital development of the individual. As Cos-



ta and Sebastián Gallés (2014) state, the evolutionary trajectory of the acquisition processes of two languages is marked by the requirement of learning two linguistic codes (two phonetic systems, two lexical systems, and two grammatical systems), and consequently of the requirement to carry out specific computing processes that require the simultaneous existence of two speech systems, responding to the need for information processing in each of the linguistic systems: bilingualism affects brain activity associated with linguistic processing, as a result of the increase in the demands of that same processing.

Diamond (2010), Carlson and Meltzoff (2008), and Bialystok (1999) state that speaking and understanding several languages could lead to improvements that transcend exclusively linguistic domains, such as executive functions. However, Cormier et al. (2012) and according to what was hypothesized by Lenneberg (1967), there are sensitive periods for the acquisition of the mother tongue, and this fact is transferred to multilingual learning. Higby, Kim, and Obler (2013) and Hyltenstam and Abrahamsson (2002) point out that the human brain has the ability to adapt to the acquisition of more than one linguistic system and the age of acquisition of these systems could be a crucial factor in the level of competence acquired finding a turning point in the period after puberty. Kuhl (2011) expresses in this regard that the child has, from the first years of life, the ability to acquire all those languages to which it may be exposed, through much more flexible learning processes than those developed in adulthood, in which language processing is markedly modularized. Early learning of a second language would also operate as a resilience factor in the face of cognitive deterioration in the stages of old age. As well as Calvo et al. (2016); Kowoll et al. (2016), and Gold et al. (2013) indicate, bilingualism constitutes one of the factors associated with a higher level of cognitive reserve in the stages of old age, and with advantages in the processes of cognitive control in this same age group.

Conclusions

In the consilience proposals between cognitive sciences and education, there are cross-cutting issues in the philosophy of science. These proposals could sometimes be formulated from the classical division between the basic, or 'pure' sciences, and those conceived as applied sciences. Many of the criticisms made of the disciplines that have taken over the synergy between cognitive neuroscience and education are articulated based on

this precise dialectic: the lack of application in real educational contexts of the evidences that arise from the cognitive laboratory.

This type of approach could be constituting one of the main epistemological barriers so that consilience between academic fields can be expressed, configuring a trend of academic resistance within the educational area. Recognition of this tension is necessary, and could in fact be the engine of evolution for effective transdisciplinarity. Educational neuroscience, neuroeducation or neuropedagogy have the pending objective of an effective anchoring and laying roots in the educational field, accepting the complexity of their identity for the production of both basic and applied knowledge created in the intersection nucleus between education and neuroscience. The imbalance in the anchoring coordinates with respect to one or another area could relegate them to a 'no man's land', making it difficult to consolidate them within the multidimensional construct that configures the sciences of education in this century.

This pending lesson, however, also requires an open position in the educational academy, which sometimes seems to feel the threat of a reductionism regarding the mental and cerebral level of analysis, which could be expressed through the term 'neurophobia' (-phobia, would refer to its etymological root of fear). According to Ocampo (2019), the fear of the biological reduction of the essentiality of the levels of analysis that make up the educational act could lie in the fact that the synergy proposals between education and the cognitive sciences advocate a radical process of psychologization or educational neurologization ('neurophilia'). It could be affirmed, therefore, that somehow a dialectical challenge is emerging in its quintessence, with a thesis in favor of neuro-educational consilience and an antithesis that opposes it. The challenge becomes apparent in the same structural patterns that make up the dialectical dynamics, a synthesis is necessary, which, on the one hand, overcomes those naïve visions that placed neuroscience as the new panacea for facing educational problems (and that were expressed through the consolidation of educational neuro-mythology); taking into account, at the same time, the reluctance and skepticism of those who are directly opposed to any type of contact, to finally be able to reach the integration of both in a synthetic result.

In this sense, the epistemic compass that has guided this work is to be able to make a possible contribution to the delineation of this synthesis, expressed through a proposal for dialogue between the different fields of knowledge that encompasses the bilingual phenomenon in its educational dimension. The incorporation of the mental and cerebral levels to the educational knowledge processes would not per se have to constitute



a cause of reductionism. In *ex æquo* relationship patterns, it could, on the contrary, contribute to the achievement of a greater depth in the processes of understanding some dimensions of those essentially complex phenomena, such as educational ones, by integrating new levels of analysis.

Collado (2017) establishes that, if the incursion of cognitive sciences in the educational field is analyzed based on dynamics of complexity, in which the organization of knowledge is framed in non-hierarchical horizontal patterns, the introduction of these levels far from inviting a position in any type of reductionism, it would enrich the understanding of educational reality, a reality that is in fact intrinsically multidimensional. It is the awareness of this multidimensional nature, which defines education, that appeals to a confrontation of its study that contemplates the intricate interrelation of each of the dimensions that make it up, transcending the hierarchical patterns of relationship between fields of knowledge and therefore any type of reductionism or subordination between disciplines: the recognition of complexity carries in its germ the openness to the different and the re-questioning of disciplinary identities.

In this sense, and after having completed the route proposed in this work, exploring, on the one hand, the historical relationship between cognitive sciences and education, and, on the other, the history of the implementation of bilingual intercultural education programs, we have tried to cover those dimensions that make up the study of human cognition, but accepting the need to overcome reductionism, in the analysis of a specific educational case: bilingual education in the Ecuadorian scenario. The proposal for dialogue between the studies of cognition and the field of educational sciences is in itself a complex proposal, which requires the opening of the educational field to certain levels of analysis, such as cognitive; but at the same time, it demands a reciprocal opening of the studies of cognition to the culture-education axis, which shapes and, in this way, also defines the cognitive dimension of the human being. The cognitive sciences of the 21st century indicate that bilingualism, far from interfering with the learning capacity of the subject, modifies it in ways that go beyond linguistic processing. The commitment to bilingualism is in that sense, a good educational commitment, aimed at one of its essential purposes: supporting the development and learning potential of the subjects.

However, the history of educational implementation of bilingual education programs offers an example of how this fact has been ignored to justly defend the opposite argument or the convenience of a monolingual educational system mediated by historically determined and socio-political contexts in which the Diglossic conceptions operated in an un-



derlying manner. In the proposal for dialogue between cognitive sciences and IBE, it is emphasized that bilingualism reaches far beyond language learning (that is, it opens the dialogue to levels of analysis –beyond– language or trans-linguistic) and that historically it was mediated due to the imbalance between cultures and languages that coexist in intercultural and multilingual contexts. Any educational proposal in intercultural contexts must take this fact into account, becoming aware of the cognitive advantages offered by bilingualism without falling into aseptic conceptions that break the bond that unites language and culture.

In summary, the dialogue between cognitive sciences and education, in this specific case, affects the need to trace and explore each of the possibilities found in the intersection fields between the different types of knowledge that make up this dialogue. From the convergence of cognitive neuroscience and education, the topic of bilingualism has been analyzed offering evidence in favor of the implementation of bilingual education, however, if we want to advance in the debate, it is necessary to integrate new levels of analysis, such as that of the imbalance in the social and cultural valuation of languages that underlie some educational linguistic policies. This work, therefore, constitutes a proposal that appeals to the need for transdisciplinary communication to solve the complex problems that define the challenges of education in this new century, in which the tensions between different epistemes can be blurred with the purpose of offering the ontological understanding that education deserves.

64



Bibliography

- ALBRIGHT Thomas, KANDEL Eric & POSNER, Michael
 2000 Cognitive neuroscience. *Current Opinion in Neurobiology*, 10(5), 612-624. [https://doi.org/10.1016/s0959-4388\(00\)00132-x](https://doi.org/10.1016/s0959-4388(00)00132-x)
- ANDRADE, Ximena
 2006 El lugar de la psicología en la filosofía de la educación: Superando la visión behaviorista de la psicología. *Sophia, Colección de Filosofía de la Educación 1*, 155-183. <https://doi.org/10.17163/soph.n1.2006.08>
- BARNACH-CALBÓ, Ernesto
 1997 La nueva educación indígena en Iberoamérica. *Revista Iberoamericana de Educación*, 13, 13-33. <https://doi.org/10.35362/rie1301135>
- BECHTEL, William
 1994 Levels of description and explanation in cognitive science. *Minds and Machines*, 4(1), 1-25. <https://doi.org/10.1007/BF00974201>
- BEYKONT, Zeynep
 2002 16-20 abril. *English-only language policies in the United States* [Ponencia en Congreso]. Congreso Mundial de Políticas Lingüísticas, Barcelona, España. Recuperado de: <https://bit.ly/3nsC3Rr>

- BIALYSTOK, Ellen
1999 Cognitive complexity and attentional control in the bilingual mind. *Child development*, 70(3), 636-644. <https://doi.org/10.1111/1467-8624.00046>
- BLAKE, Peter & GARDNER, Howard
2007 A first course in mind, brain, and education. *Mind, Brain, and Education*, 1(2), 61-65. <https://doi.org/10.1111/j.1751-228X.2007.00007.x>
- BYRNES, James
2001 *Minds, brains, and learning: Understanding the psychological and educational relevance of neuroscientific research*. New York: Guilford.
- CALVO, María del Carmen
2019 Pensamiento complejo y transdisciplina. *Sophia, Colección de Filosofía de la Educación*, 26, 307-326. <https://doi.org/10.17163/soph.n26.2019.09>
- CALVO, Noelia, GARCÍA, Adolfo, MANOILOFF, Laura & IBÁÑEZ, Agustín
2016 Bilingualism and Cognitive Reserve: A Critical Overview and a Plea for Methodological Innovations. *Frontiers in aging neuroscience*, 7. <https://doi.org/10.3389/fnagi.2015.00249>
- CARLSON, Stephanie & MELTZOFF, Andrew
2008 Bilingual experience and executive functioning in young children. *Developmental Science*, 11(2), 282-298. <https://doi.org/10.1111/j.1467-7687.2008.00675.x>
- CASTEJÓN, Juan Luis, GONZÁLEZ, Carlota, MIÑANO, Pablo & GILAR, Raquel
2013 *Psicología de la educación*. Alicante: Editorial Club Universitaria.
- CASTILLO, Félix
2004 Lenguaje y cognición en la cosmovisión andina. *Letras*, 75(107/108), 157-168. <https://doi.org/10.30920/letras.75.107-108.9>
- COLL, César
1991 *Psicología y currículum: una aproximación psicopedagógica a la elaboración del currículum escolar*. Barcelona: Paidós.
- CORMIER, Kearsy, SCHEMBRI, Alan, VINSON, David & ORFANIDOU, Eleni
2012 First language acquisition differs from second language acquisition in prelingually deaf signers: evidence from sensitivity to grammaticality judgement in British Sign Language. *Cognition*, 124(1), 50-65. <https://doi.org/10.1016/j.cognition.2012.04.003>
- COSTA, Albert & SEBASTIÁN-GALLÉS, Nuria
2014 How does the bilingual experience sculpt the brain? *Nature reviews. Neuroscience*, 15(5), 336-345. <https://doi.org/10.1038/nrn3709>
- CRICK, Francis & KOCH, Christoph
1998 Consciousness and neuroscience. *Cerebral Cortex*, 8(2), 97-107. <https://doi.org/10.1093/cercor/8.2.97>
- DIAMOND, Jared
2010 The Benefits of Multilingualism. *Science*, 330(6002), 332-333. <https://doi.org/10.1126/science.1195067>
- DOMÍNGUEZ, Juan, LEWIS, Douglas, TURNER, Robert & EGAN, Gary
2009 The brain in culture and culture in the brain: a review of core issues in neuroanthropology. *Progress in Brain Research*, 178, 43-64. [https://doi.org/10.1016/s0079-6123\(09\)17804-4](https://doi.org/10.1016/s0079-6123(09)17804-4)

- DOWNEY, Greg & LENDE, Daniel
 2012 Neuroanthropology and the encultured brain. En D.H. Lende, & G. Downey (Eds.), *Encultured brain: an introduction to neuroanthropology* (pp. 23-65). Cambridge, MA: MIT Press.
- ECCLES, Jaquelynn & ROESER, Robert
 1999 School and community influences on human development. En M.H. Bornstein & M.E. Lamb (Eds.), *Developmental Psychology: An advanced textbook* (pp. 503-554). Mahwah, New Jersey: Lawrence Erlbaum Associates Publishers.
- FAJARDO, Delia María
 2011 Educación intercultural bilingüe en Latinoamérica: un breve estado de la cuestión. *LiminaR*, 9(2), 15-29. <https://doi.org/10.29043/liminar.v9i2.45>
- GALLISTEL, Charles & MATZEL, Louise
 2013 The neuroscience of learning: beyond the Hebbian synapse. *Annual review of psychology*, 64, 169-200. <https://doi.org/10.1146/annurev-psych-113011-143807>
- GARDNER, Howard
 1985 *The mind's new science: A history of the cognitive revolution*. New York: Basic Books.
- GAZZANIGA, Michael, IVRY, Richard & MANGUN, George
 2014 *Cognitive neuroscience. The biology of the mind (4th ed.)*. New York, NY: W.W. Norton.
- GODENZZI, Juan Carlos
 2014 Cognición y lenguas andinas. Apuntes: *Revista de Ciencias Sociales*, 45, 97-106. <https://bit.ly/2K8O0NG>
- GOLD Brian, KIM Chobok, JOHNSON Nathan, KRYSCIO Richard & SMITH Charles
 2013 Lifelong bilingualism maintains neural efficiency for cognitive control in aging. *Journal of Neuroscience*, 33(2), 387-396. <https://doi.org/387-396.10.1523/JNEUROSCI.3837-12.2013>
- GORDÓN, Jaqueline & ARELLANO, Andrés
 2014 Análisis de las convergencias entre las escuelas psicológicas y las teorías del aprendizaje. *Sophia, Colección de Filosofía de la Educación*, 16, 191-205. <https://doi.org/10.17163/soph.n16.2014.08>
- HAMELINE, Daniel
 1993 Edouard Claparede (1873-1940). *Perspectivas: Revista trimestral de Educación Comparada*, 23(1-2), 808-821.
- HARDCASTLE, Valerie
 2007 The theoretical and methodological foundations of cognitive neuroscience. En Thagard (Ed.), *Handbook of the Philosophy of Science, Philosophy of Psychology and Cognitive Science* (pp. 295-311). Amsterdam: Elsevier.
- HIGBY, Eve, KIM, Jungna & OBLER, Loraine
 2013 Multilingualism and the brain. *Annual Review of Applied Linguistics*, 33, 68-101. <https://doi.org/10.1017/S0267190513000081>
- HINTON, Christina, FISCHER, Kurt & GLENNON, Catherine
 2012 *Mind, brain and education*. Boston, MA: Jobs for the future. Recuperado de: <https://bit.ly/3r3dFrN>
- HOFSTETTER, Rita
 2012 Educational sciences: Evolutions of a pluridisciplinary discipline at the crossroads of other disciplinary and professional fields (20th century). *British*



- Journal of Educational Studies*, 60(4), 317-335. <https://doi.org/10.1080/00071005.2012.729666>
- HYLTENSTAM, Kenneth & ABRAHAMSSON, Niclas
2002 Who can become native-like in a second language? All, some, or none? *Studia Linguistica*, 54(2), 150-166. <https://doi.org/10.1111/1467-9582.00056>
- JONES, Edward & MENDELL, Lorne
1999 Assessing the Decade of the Brain. *Science*, 284(5415), 739. <https://doi.org/10.1126/science.284.5415.739>
- KIM, Sung-il
2012 Neuroeducational approaches on learning. In: Seel, Norbert M. (ed.) *Encyclopedia of the Sciences of Learning*. Boston, MA: Springer. https://doi.org/10.1007/978-1-4419-1428-6_1823
- KITAYAMA, Shinobu & PARK, Jiyoung
2010 Cultural neuroscience of the self: understanding the social grounding of the brain. *Social Cognitive and Affective Neuroscience*, 5(2-3), 111-129. <https://doi.org/10.1093/scan/nsq052>
- KOIZUMI, Hideaki
2004 The concept of “developing the brain”: a new natural science for learning and education. *Brain and Development*, 26(7), 434-441. <https://doi.org/10.1016/j.braindev.2003.09.011>
- KOWOLL, Magdalena, DEGEN, Christina, GORENC, Lina, KÜNTZELMANN, Anika, FELLHAUER, Iven, GIESEL, Frederik, HABERKORN, Uwe, & SCHRÖDER, Johannes
2016 Bilingualism as a contributor to cognitive reserve? Evidence from cerebral glucose metabolism in mild cognitive impairment and Alzheimer’s disease. *Frontiers in Psychiatry*, 7. <https://doi.org/10.3389/fpsy.2016.00062>
- KUHL, Patricia
2011 Early Language Learning and Literacy: Neuroscience Implications for Education. *Mind, brain and education*, 5(3), 128-142. <https://doi.org/10.1111/j.1751-228X.2011.01121.x>
- LACHMAN, Roy, LACHMAN, Janet, & BUTTERFIELD, Earl
1979 *Cognitive Psychology and Information Processing*. New York: Psychology Press. <https://doi.org/10.4324/9781315798844>
- LENNEBERG, Eric
1967 The biological foundations of language. *Hospital Practice*, 2(12), 59-67. <https://doi.org/10.1080/21548331.1967.11707799>
- LÓPEZ, Luis Enrique
1998 La eficacia y validez de lo obvio: lecciones aprendidas desde la evaluación de procesos educativos bilingües. *Revista Iberoamericana de Educación*, 17, 51-89. <https://bit.ly/3r0EIUB>
- MARR, David
1982 *Vision: A computational investigation into the human representation and processing of visual information*. San Francisco, CA: W.H. Freeman. [*Visión: Una investigación basada en el cálculo acerca de la representación y el procesamiento humano de la información visual*. Madrid: Alianza, 1985].
- MAYER, Richard E.
1981 *The promise of cognitive psychology*. San Francisco, CA: W.H. Freeman.

- 1996 Learning strategies for making sense out of expository text: The SOI model for guiding three cognitive processes in knowledge construction. *Educational psychology review*, 8(4), 357-371. <https://doi.org/10.1007/BF01463939>
- 2001 What good is educational psychology? The case of cognition and instruction. *Educational Psychologist*, 36(2), 83-88. <https://bit.ly/2WnlhYc>
- McLELLAND, J.L. & AL RALPH, M.
 2015 Cognitive neuroscience. En J. D. Wright (Ed.), *International Encyclopedia of the Social & Behavioral Sciences*, 4, 95-102. (2nd ed.), Oxford: Elsevier.
- MILLER, George & GAZZANIGA, Michael
 1984 The cognitive sciences. En M.S. Gazzaniga (Eds.) *Handbook of Cognitive Neuroscience*. Springer, Boston, MA. https://doi.org/10.1007/978-1-4899-2177-2_1
- MORIN, Edgar
 1999 Los siete saberes necesarios para la educación del futuro. París: UNESCO. <https://bit.ly/3ajrEUj>
- NATIONAL RESEARCH COUNCIL
 2000 *How People Learn: Brain, Mind, Experience, and School: Expanded Edition*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/9853>
- NEISSER, Ulrich
 1967 *Cognitive psychology*. New York: Appleton-Century-Crofts. [*Psicología cognoscitiva*. México: Trillas, 1979]
- NISBETT, Richard & MASUDA, Takahiko
 2003 Culture and point of view. *Proceedings of the National Academy of Sciences of the United States of America* 100(19), 11163-11170. <https://doi.org/10.1073/pnas.1934527100>
- O'BRIEN, Gerard
 1991 Is connectionism common sense? *Philosophical Psychology*, 4, 165-178. <https://doi.org/10.1080/09515089108573024>
- OCAMPO-ALVARADO, Juan Carlos
 2019 Sobre lo "neuro" en la neuroeducación: de la psicologización a la neurologización de la escuela. *Sophia, Colección de Filosofía de la Educación* 26, 141-169. <https://doi.org/10.17163/soph.n26.2019.04>
- ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT-OECD
 2002 *Understanding the Brain: Towards a New Learning Science*. Paris.
 2007 *Understanding the Brain: the birth of Learning Science*. Paris.
- PADILLA, Amado
 1977 Bilingual schools: gateways to integration or roads to separation. *Bilingual Review/La Revista Bilingüe*, 4(1/2), 52-68. <https://bit.ly/2LA0AG8>
- PIAGET, Jean
 1969 *Psychologie et pédagogie*. Paris: Societé Nouvelle des Éditions Gonthier. [*Psicología y Pedagogía*. Barcelona: Ariel]
- PARK, Denise & HUANG, Cih-Mao
 2010 Culture Wires the Brain: A Cognitive Neuroscience Perspective. *Perspectives on Psychological Science*, 5(4), 391-400. <https://doi.org/10.1177/1745691610374591>



- ROCHE, Richard, COMMINS, Sean & DOCKREE, Paul
2009 Cognitive neuroscience: Introduction and historical perspective. En R.A.P. Roche & S. Commins (Eds.), *Pioneering studies in cognitive neuroscience* (pp. 1-18). Maidenhead, United Kingdom: McGraw-Hill.
- SAVOY, Robert
2001 History and future directions of human brain mapping and functional neuroimaging. *Acta Psychologica*, 107(1-3), 9-42. [https://doi.org/10.1016/S0001-6918\(01\)00018-X](https://doi.org/10.1016/S0001-6918(01)00018-X)
- SECRETARÍA DEL SISTEMA DE EDUCACIÓN CULTURAL BILINGÜE (SEIB)
2019 *Orientaciones pedagógicas para fortalecer la implementación del MOSEIB*. Quito, Ecuador. <https://bit.ly/3mruU2o>
- STILLINGS, Neil, FEINSTEIN, Mark, GARFIELD, Jay, RISSLAND, Edwina, ROSENBAUM, David, WEISLER, Steven & BAKER-WARD, Lynne
1995 *Cognitive science: An introduction*. Cambridge, MA: The MIT Press.
- SUI, Jie & HAN, Shiui
2007 Self-construal priming modulates neural substrates of self-awareness. *Psychological Science*, 18, 861-866. <https://doi.org/10.1111/j.1467-9280.2007.01992.x>
- SUI, Jie, LIU, Chang & HAN, Shi
2009 Cultural difference in neural mechanisms of self-recognition. *Social Neuroscience*, 4(5), 402-411. <https://doi.org/10.1080/17470910802674825>
- THAGARD, Paul
1996 *Mind: Introduction to Cognitive Science*. Cambridge, MA: The MIT Press. [La mente. Introducción a las ciencias cognitivas. Buenos Aires: Katz Editores, 2008].
- UNESCO Office Bangkok and Regional Bureau for Education in Asia and the Pacific
2013 *Educational neurosciences: more problems than promise? Education Policy Research Series Discussion Document No. 3*. Bangkok. <https://bit.ly/3oZxfUc>
- ZHU, Ying, ZHANG, Li, FAN, Jin & HAN, Shiui
2007 Neural basis of cultural influence on self-representation. *Neuroimage*, 34(3), 1310-1317. <https://doi.org/10.1016/j.neuroimage.2006.08.047>

Document reception date: July 14, 2020
Document review date: September 15, 2020
Document approval date: October 15, 2020
Document publication date: January 15, 2021

DIALOGUE IN COGNITIVE SCIENCES IN THE FACE OF THE COEDUCATION CONTROVERSY

El diálogo en las ciencias cognitivas frente a la controversia de la coeducación

SONIA REVERTER-BAÑÓN*

Universitat Jaume I, Castelló, Spain

reverter@uji.es

Orcid code: <http://orcid.org/0000-0002-9738-421X>

Abstract

The aim of this paper is to reflect on neuroscientific research in relation to sexual difference. The interest in this reflection is to address the debate on coeducation. The methodology used is fundamentally based on the review and contrast of the texts and theories that have starred in the debate in the last decade. In that time a controversy -already raised in the past- has emerged with force, on the pertinence of proposing again an education segregated by sexes as opposed to coeducation. In order to unravel this knot, we will see that, not only neurosciences will be important in what they tell us about our brains, but it will also need a critical view that must come from both a self-criticism of the neurosciences themselves, as well as from other disciplines, and very especially from the philosophy of education.

In this sense, the set of cognitive theories will have to engage in an open and constant dialogue to comprehend important aspects that the neurosciences alone cannot respond. Therefore, a proposal from the so-called neuroeducation not only cannot ignore this transdisciplinary dialogue, but should, in some way, be able to lead it. Finally, the question will be what we understand by education and what philosophy of education we advocate. It is precisely this transdisciplinary view, rather than a unidirectional discourse of neurosciences or neuroeducation determined by the neuro jargon, what can make us assert that coeducation is the answer.

Suggested citation: Reverter, Sonia (2021). Dialogue in Cognitive Sciences in the Face of the Coeducation Controversy. *Sophia, colección de Filosofía de la Educación*, 30, pp. 71-92.

* Doctor of Philosophy. Professor of Philosophy in the Department of Philosophy and Sociology of the Universitat Jaume I. Director of the University Institute for Feminist and Gender Studies Purificación Escribano (www.if.uji.es). She does research in contemporary philosophy and feminist theory. She is currently the I.P. of the AIRE3 project (The Equality Agenda. Resistances, Challenges and Responses). Research carried out within the framework of the project (201325.01 / 1) funded by the Generalitat Valenciana.

Keywords

Coeducation, cognitive sciences, neuroeducation, sexual difference, sexism, education.

Resumen

El objetivo de este artículo es reflexionar sobre la investigación neurocientífica en relación con la diferencia sexual. El interés en esta reflexión es abordar el debate sobre coeducación. La metodología empleada se basa fundamentalmente en la revisión y contrastación de los textos y teorías que han protagonizado el debate en la última década. En ese tiempo ha surgido con fuerza una controversia, ya planteada en momentos pasados, sobre la pertinencia de proponer de nuevo una educación segregada por sexos frente a la coeducación. Para deshacer este nudo se verá que, no solo las neurociencias serán importantes en lo que dicen sobre los cerebros, sino también será necesaria una mirada crítica que ha de proceder, tanto desde una autocrítica de las mismas neurociencias, como de otras disciplinas, y muy especialmente desde la filosofía de la educación. En este sentido, el conjunto de teorías cognitivas habrán de estar en un diálogo abierto y constante para conocer aspectos importantes que las neurociencias por sí solas no pueden responder. Una propuesta desde la llamada neuroeducación no solo no puede obviar este diálogo transdisciplinario, sino que debería, de alguna forma, poder liderarlo. La cuestión finalmente será ver qué se entiende por educación y qué filosofía de la educación defendemos. Es precisamente esta mirada transdisciplinar, más que un discurso unidireccional de las neurociencias o de una neuroeducación determinada por la jerga de lo neuro, lo que nos hará apostar por la coeducación.

72



Palabras clave

Coeducación, ciencias cognitivas, neuroeducación, diferencia sexual, sexismo, educación.

Introduction

This article aims to reflect on neuroscientific research in relation to sexual difference: the main objective of this work is to address the debate on coeducation. For this, a review and contrast of the texts and theories that have featured in the debate in the last decade is carried out. In recent times, a controversy from past eras has resurfaced about the relevance of, once again, proposing a sex-segregated education as opposed to coeducation. The article will first present, as a state of the art, the main lines of argument for the positions under debate. Afterwards, transdisciplinary dialogue will be proposed as a method to advance an understanding between neuroscience and the philosophy of education. The discussion of the article will focus on seeing how this dialogue helps to solve the question about sexual differences in the brain in terms of education. All this will guide the conclusion towards a bet on coeducation and in constant dialogue with neuroscientific theses on brain plasticity.

Scientific evidence regarding the difference between the sexes at the level of intelligence and innate abilities associated with sex, according to leading neuroscientists such as Vidal (2012), Jordan Young (2011), Hyde (2016) and Rippon (2019) and some studies from Hyde (2005, 2006, 2007) with metadata that confirms it, is null or very poor. That is, there is no

scientific way to maintain that the brain is binary in terms of sex. The fact is that the brain does not speak in a binary way, as the social language does through the genders ‘man’ and ‘woman’. Still, there is a long tradition of believing that there is such a difference. This belief, which can be called bluntly ‘pseudoscientific’, continues to be present in many medical and human biology manuals, and even today, it remains an important stream of scientific research, according to Rippon (2019). Research to better understand brains and their differences, sexually or otherwise, is a valuable goal and can provide the necessary knowledge to progress in self-awareness as humans, and to better understand what the human being is and what it can become in an even transhuman sense, as Haraway (1991, 2016) proposes. However, that research should not be confused by the long and well-known tradition in the history of science, of trying to find a natural difference between female and male brains in order to naturalize social and cultural differences (and sometimes inequality).

There is profuse documentation regarding that studies such as those of Schiebinger (1989), Russett (1989), or Laqueur (1994) give about the construction of sexual difference based on a pre-constructed idea about the body of women, and other human minorities (such as black people), which are clear testimonies of not-knowledge that is erroneously called ‘science’. They are the ‘scientific lies about women’ as García Dauder and Pérez Sedeño (2017) have called them. The concept of ‘epistemologies of ignorance’ of Tuana (2004, 2006) can fit very well to explain this practice, which is at the foundation of the nature/culture debate, centered and reconverted in the sex/gender debate, as recognized authors such as Haraway (1991) and Fox-Keller (2010) have been responsible for targeting.

According to Tuana’s concept, the construction of knowledge is linked to power practices in which the same scientific institution is often a participant. These power practices imply anomalous behaviors in scientific activity. These can range from the same bias in the design of experiments to inconsistent or poorly proven conclusions, as neuroscientists such as Rippon (2019) or Fine (2017) have recently pointed out.

The prejudices that guide these practices are intertwined and reinforced by the pressure of scientific journals to publish works and experiments that affirm sexual differences in the brain, as the scientists Rippon et al. point out in a joint article. (2017). That is, and as these scientists declare, scientific journals accept results of experiments that lead to affirming findings, however minimal, of brain differences between the sexes, rather than conclusions that there are no such differences. The percentage of rejection of scientific articles according to whether sexual differen-



ces in the brain are affirmed or denied is evident, as Kaiser et al. (2009) affirm. This of itself is already negative since it prevents a contrast that is part of scientific excellence. The fact that scientific articles on similarities in human brains are not normally published, discloses and reinforces an idea that it is scientific to assume that there is such a sexual difference in brains. But there is—in addition—an aggravating factor, and that is that this type of investigation usually reaches the media, later, in an exaggerated and striking way. It does not seem news to say that no brain difference has been found with respect to the sexes. However, saying, as Brizendine states (2006), that “women speak more than men” is striking and confirms what is assumed to be true; which comforts and allows living in a real cognitive framework because it is in accordance with held beliefs. Maney (2015, 2016) observes how the press disseminates published findings on this subject with inappropriate messages, and that the conclusions of scientific articles are often manipulated or exaggerated. In the specific case of the experiment that we have just cited on the loquacity of women and men, it reached the press with headlines such as: “They find the cause of female verbiage” (ABC, 02/22/2013). This type of language is not only scientifically unjustified, but it is also a serious drawback when it comes to being able to advance and truthfully disseminate neuroscientific research, as O’Connor and Joffe (2014) point out. In this specific case, in addition, a later study by Mehl et al. (2007) with 396 participants, compared to Brizendine’s ten, stated that it could not be concluded that one sex speaks more than the other, since the mean is similar for both. The author, Brizendine, retracted, but the generalist press no longer echoed, neither the subsequent experiment that annulled her conclusions nor Brizendine’s retraction.

These grotesque, but common cases, of the transfer of scientific research to the press, confirm the need for more demanding standards when reporting headlines to the generalist media. The humanistic and social disciplines, such as journalism, sociology, philosophy, education, and communication sciences will have to take into account how to disseminate, interpret, and apply conclusions from scientific experiments. Thus, Maney (2015) recommends avoiding terms that exaggeratedly mark illegitimate conclusions. Talking about ‘deep’ or ‘essential’ differences between scientific findings in relation to brains previously classified into two sexes has zero scientific evidence, as Jordan Young (2010) or Kraus (2011) have stated. Even so, these practices of exaggeration of results interpreted in an exaggerated way by the media are still common, with which an illegitimate use of scientific authority is made, by taking



for truth something that is intended ‘natural’ and innate when there is no evidence of this, as Reverter affirms (2016).

All these illegitimate practices lead to the need to reaffirm something that the same institutions have been demanding for a long time, and it is the urgency of a more open science, with other more collaborative systems when projecting, experimenting, concluding, and publishing; better filters and more transparent when evaluating and publishing; and more funding to be able to do, not just more, but better science. The current global crisis due to the coronavirus pandemic has reinforced these demands, and perhaps it will serve to raise awareness among citizens, governments, and institutions to invest in developing more solid scientific systems, as the UN itself is promoting.

Large projects such as the *Human Brain Project* (European Union) and the *Brain Initiative* (United States), a consequence of the declaration of the 1990s as the *Decade of the Brain* (Goldstein, 1990), have led to a growing interest in sciences by capturing grants through brain research. This has led, at times, to excessive confidence and growing expectations about the real possibilities of being able to fully explain the human being through its description, as Rose (2006) and Rose and Abi-Rached (2013) report. However, and as Roger W. Sperry (1981) himself warned when he received the Nobel Prize in 1981 for his research on the functional specialization of the hemispheres of the brain, neuroscientists must change their priorities and emphasize the possible social benefits of their research.

With this idea of analyzing the social aims of science and, at the same time, freeing scientific research about the brain from the spurious constraints that research on sex differences in the brain may entail, there has been growing criticism from some women neuroscientists about these bad practices. For a decade they have been organized in a collective to denounce how scientific journals and some of the agencies that invest in scientific research only have an interest in publishing in relation to sexual differences in human brains if it is to affirm that such difference exists, and never to deny or even question it. The so-called *NeuroGenderings Network* (NGN), which emerged in 2010 at a congress in Sweden, has become a growing group of scientists based in different universities and research centers in different countries, who carry out surveillance work regarding scientific publications about the theme of sexual difference in the brain. In a task that I called ‘epistemological guerrilla’ (Reverter, 2017), what they do is propose concepts and debates that can serve as a guide for the necessary dialogue between neurosciences and social and educational interests.

The main purpose of doing the task of monitoring what is published in relation to this topic is not to deny, in a prejudicial way, possible differences between the sexes and in relation to the brain, but to warn the need for a truly scientific and objective practice, both when planning or designing experiments and drawing conclusions, as well as when publishing them and transferring them to the generalist and popular media. For this reason, it is convenient to review and adjust new methods that can validate good science. As Roskies (2002) herself stated in her prominent article *Neuroethics for the New Millenium*, understanding the mechanisms of the brain in human behavior has potentially 'dramatic implications' for our perspective on ethics and social justice. For this reason, neurosciences and the rest of the involved cognitive sciences will have to be interested in investigating and finding out, not only questions related to the knowledge of the different academic disciplines but also moral and social questions (Reverter, 2019). And in this area the question of the differences and similarities of the brains of men and women becomes essential.



Transdisciplinary dialogue as a method

It has already been commented that the two most important projects worldwide financed with millionaire funds, both public and private, in relation to brain research are *the Human Brain Project* and the *Brain Initiative*. Both projects not only have neuroscientific objectives that allow a better understanding of the functioning and nature of the human brain but are also made up of teams of researchers from other disciplines who try to study the ethical, social, political, and educational implications of brain research. It is an interdisciplinary vision that takes into account concerns about the effects and consequences that research on the human brain may have for the entire human species and the entire life on the planet. In both projects, there is a priority in meeting the needs from the point of view of the interests of the human species and the ecological environment in which we live. It is, therefore, that scientific concern about the brain must be connected with a more complete vision of the world that it creates and in which it evolves. For this reason, there is an impact on a way of understanding the projects they develop within a framework of science that takes into account civil society and the human community, in harmony with the rest of life on the planet. Therefore, both projects have a vocation that they define as democratic and egalitarian.

In reality, this interdisciplinary vocation is not new. It should be remembered that the society that is indicated as the origin of Neurosciences as a discipline, the Society for Neuroscience (organized in 1969 and as stated on its website), developed in the 70s an ideology that led to shaping this new discipline as 'an intellectually and methodologically open field in which neither approach was privileged over the other', thus avoiding 'parochialism and traditional isolation' of the disciplines. The idea was, from the beginning, to serve a human horizon of equality.

This initial idea of neuroscience is far from the deterministic idea that thinks that a finding in the brain has to be translated into a mandate in the social field. This obsolete determinism as an idea and principle, which is so rejected in many scientific fields, continues to be maintained, many times, in ideas as deeply rooted as the belief in sexual difference. And, for this reason, the work that I have called 'epistemological guerrilla' is still necessary.

The interdisciplinary dialogue between the sciences, and specifically, between all the cognitive sciences, summoned to dialogue on education is so necessary that if it is not given, it is simply not possible to understand what to do with the knowledge that is discovered and constructed. And this is not only a "schooling" need, which would be enough, but it is a global urgency. Precisely, one of the effects of the confinement of the population in times of pandemic has put on the table the urgency to rethink education in a way that there has never been before. And for this, it will be necessary to overcome practices of generating knowledge and education that are simply no longer useful, that do not serve to prepare a better world, or are even part of the problems that exist.

Looking back at the 60s and 70s of the 20th century, one can see how what was called 'the debate of the two cultures', starring mainly Snow (1959) and Leavis (1962), left the conclusion that the separation of knowledge is a bad method. It gives a bad orientation to knowledge; what's more, that separation is disorienting. It is, therefore, a true methodological error not to maintain, promote, and seek an interdisciplinary dialogue, as stated by Nussbaum (2010).

In the impressive two-volume study that Burke (2000, 2012) carries out on the social history of knowledge, from Gutenberg to Wikipedia, he gives many keys to understanding that a serious problem of knowledge is hyperspecialization, which leads to intellectual insularity. In a world like the current one, with serious and complex problems at the planetary and human species level, this narrow-mindedness of isolated and fragmented disciplines itself becomes a considerable inconvenien-

ce. It is imperative to understand a new form of knowledge generation that takes advantage of dialogue between experts, fosters imagination, and takes risks in non-disciplined border investigations. Given the complexity of the problems, there is a challenge that only this form of open and networked science will be able to respond, as Carbonell (2018) and Carbonell and Díez Fernández-Lomana (2019) have pointed out in their latest publications.

With this intention of linking neuroscience to its aspiration to be useful for an egalitarian project of society, a congress called *Critical Neurosciences* was organized in 2008 at McGill University in Montreal. The organizers, Suparna Choudhury and Jan Slaby (2012), are professionals in the field of social sciences who precisely with the term ‘criticism’ intend to turn around this obsession with the ‘neuro’ and the new techniques for scanning the brain that leave out that necessary philosophical, sociological and political reflection. Their concern appears when they realize that from supposedly neutral parameters, neural distinctions are being made between classes or categories of people. The growing medicalization of life and the progressive surveillance of bodies, together with scientific conclusions about what the human being is, can lead to a catastrophic drift for the project of creating a world with more equality and justice, as Rose warns (2006).

From this project of Critical Neurosciences they propose to introduce the term ‘critical’ in the way that Kant (2003) defended in *The Conflict of the Faculties*, in 1798. In other words, it is public order that constitutes the fundamental condition to be able to exercise the innate right that is freedom. Choudhury, Nagel, and Slaby (2009) complement this critical vision with the proposal of the Critical Theory of the Frankfurt School. Honneth’s (2009) concept of ‘social pathologies of reason’ will serve to formulate the conceptual framework that helps to “articulate a critical stance towards some methodologies, procedures, and practices of neuroscience today” (Hartmann, 2012, p. 67). And it is that Honneth, with the concept of ‘pathologies of reason’, precisely wanted to denounce the loss of meaning and the impossibility of drawing purposes and objectives at the level of the human community. Rescuing this ethical core for all rational action linked to any practice of scientific knowledge should be the goal of that interdisciplinary dialogue that is advocated here. All science, therefore, should be critical; or, rather, it should never stop being.



Analysis: Neurosciences and philosophy of education

Criticism as a practice will have to be applied, especially in the understanding of what we are in order to offer a philosophy of education that connects competently and in dialogue with the other cognitive sciences. From that critical vision, that space for dialogue will have to be created and given first-order validity. On the subject of education, it is the discipline called 'neuroeducation' that could fulfill this role. The authors that serve as references in this area are Battro and Cardinali (1996), Battro et al. (2008), Bruer (1997, 2008), Ansari et al. (2011, 2012), and Kitchen (2017). All of them, in fact, propose to think of neuroeducation as a necessary meeting of gazes at cognition, the brain, and education. This integration will allow new categories to emerge that allow a better understanding of how learning works and, therefore, how to educate. As Kitchen (2017) warns, a vision that simply replaced mind with brain would be as absurd as it is dangerous; and that is why, in the dialogue, the philosophy of education can clarify and propose new concepts that allow us to move away from a determinism that seems to tempt certain educational sectors linked to neurosciences, as Gracia and Gozávez (2019) also point out.

In this relationship, the important thing will be to determine: what orientation has the relationship between the fields of knowledge? Who guides the way? Is it a symmetrical direction? Is there a mutual influence? The philosopher and neuroscientist Northoff (2004) proposes a transdisciplinary avenue by proposing this dialogue between philosophical theories and scientific hypotheses. With this, he aspires to create a dialogue that is more than the mere synthesis and addition of some hypotheses and others. Fuentes Canosa and Collado Ruano (2019) explain very well the differences between the different models of dialogue between disciplines: multidisciplinary, multidisciplinary, interdisciplinary, and transdisciplinary. These authors analyze in detail and rigor each one of these models for the relationship between disciplines that intervene in the study of the mind, brain, and education. They conclude that, indeed, an evolution towards a transdisciplinary approach is needed. This will imply, not only dialogue but also mixing training, concepts, methodologies, and practices to generate new knowledge. As the metaphor of Breuer (1997, 2008) proposes, it is about creating bridges and not looking for foundations.

In this search for bridges, conceptual questions will have to be asked before turning on the scanner, as Harrison (2008) warns, and beginning to translate or interpret neuroscientific findings in terms of educational 'instructions'.



Discussion: Dialogue between neurosciences and education in relation to sexual differences in the brain?

The dialogue between neurosciences and education is taking place, not always in a transdisciplinary way, as is proposed here, but there are interesting experiences of this dialogue; such as Marina (2012), Mora (2013), Narváez (2016) or Carballo (2016). However, and as has been announced in the introductory part of this article, in research on sexual differences in the brain, and especially in relation to cognition, there are still patterns that do not meet the standards required in scientific practice, as many voices point out. And this is relevant when it comes to settling an educational debate of great interest.

Although it is true that the coeducation model is well established, both in public education and is a part of private education, it is no less true that the debate around the advantages of separation by sex in the classrooms has been manifested with force in the last decade. Those who advocate a return to a sex-segregated education rely on supposed scientific conclusions about how the sexual difference in the brain affects the ways of learning. Thus, they tend to infer that not only are there structurally and functionally different brains, in the sexual sense, but that the way of learning is, because of this, different. The most outstanding cases in this idea are North American authors, on the one hand, Michael Gurian and Kathie Stevens (2011), and on the other Leonard Sax (2005). The former not only affirm that sexual difference is confirmed, but that it greatly affects the way of learning, and that this is an issue that crosses all cultures, that is, it is innate to the human species. Both are part of the *Gurian Institute* and are dedicated precisely to spreading the idea that schools have to separate boys and girls in classes again. On the other hand, the psychologist Leonard Sax (2005), with the same degree of popularity as Gurian, maintains a constant campaign in favor of segregated education, because he says that it is the correct way to act according to the innate sexual differences in the brain. This segregated education is also proposed as a solution to many of the current problems, not only in education, but in almost any human environment.

But what does neuroscientific research say? It has already been commented that what it says is that there is no conclusive evidence to affirm that there is a difference between the male and female brains. It is true that the simple concept of 'sexual difference' is already a subject in itself for a long debate. What is meant by sexual difference today is unclear, although it never has been. As Laqueur (1994) brilliantly explained



in his book *Making Sex. Body and gender from the Greeks to Freud*, what is meant by sexual difference changes across time and across cultures.

For the sake of determining the question of education and whether or not to separate boys and girls, it can be taken for granted that there are two anatomically different sexes. The question then moves, because it is the issue that is approached as most relevant for education, to whether the sexual difference occurs in the brain. Let's see what one of the world's most prestigious neuroscientists, Margaret McCarthy (in Joel & McCarthy, 2017) tells us: "... the inevitable conclusion that there cannot be a uniform masculinization or feminization of the entire brain" (p. 381). That is, the conversation about sexual differences in brains is not over, as there are no conclusive arguments about it.

For their part, Joel et al. (2015), a behavioral neuroscientist, opts to understand that the human brain is on a continuum that goes from extreme femininity to extreme masculinity. There are no male and female brains, but rather proposes the idea of a 'mosaic brain', according to which all people have typical elements of one extreme and the other, and a great variety of intermediate elements between extremes. In fact, her proposal and that of her research group was initially published in 2015 under the title *Sex beyond the genitalia: The human brain mosaic*. That is, there is an impossibility of determining, in a closed binary way, two types of brains that correspond to genital binarism: "Our results demonstrate that regardless of the cause of the observed sex / gender differences in the brain and behavior (nature or nurture), human brains cannot be classified into two distinct classes: male brain / female brain" (Joel et al., 2015, p. 15468). In fact, from Joel's study, it is concluded that only between 0% and 8% of the brains in her study contain all the female elements or all the male elements. It is essential to note that compared to the small samples that are usually used, due to the very complexity of studying the human brain, in the research of Joel and his team, magnetic resonance imaging of 1,400 human brains was used. This information was crossed with analyzes of the personality, attitudes, interests, and behaviors of 5500 more people, to observe the structural sexual differences in the brain 'beyond the genitals'.

The evidence of the similarity between brains or the scarce difference found so far between 'women's brains' and 'men's brains', therefore does not allow us to bet on a separation based on that, or to advise segregation at school and in the classrooms. The neurologist Eliot (2011, 2013) has been particularly concerned not only with answering the arguments that affirm the sexual differentiation of brains, but with discrediting the proposal of segregation in the classrooms. Eliot (2011, 2013) refutes one



by one the theses on which the main arguments for the sexual differentiation of the brain are usually based. Attending to the three most popular:

- The size of the corpus callosum (which joins the two hemispheres). Despite the popular belief that it is more numerous in adolescent girls than in boys of the same age, the scientific community only recognizes as evidence that the size of the corpus callosum is related to the size of the entire brain and not to sex, as Eliot shows (2013).
- Brain lateralization, according to which the neural function of children is more lateralized; that is, boys use either the right or left side of the brain, one at a time, while girls use both hemispheres at the same time. The basis for this idea, which in reality is almost a myth, was a study by Shaywitz (1995), the conclusions of which were widely reported in the popular press. However, the scientific truth is that since that year an attempt has been made to replicate the experiment with a total of 1526 subjects studied (the original experiment used 38 subjects), and in all cases, it is concluded that the lateralization process is very complex, and that cannot be simplified by simplifying the difference between boys and girls. In fact, this simplification is now totally discredited, as explained by Sommert et al. (2008).
- The hormonal difference, and in relation to the nervous system and the hypothalamus, it has not been possible to conclusively prove that these differences are related to diverse and specific behaviors assigned to patterns of sex and gender, as documented by Eliot (2011).

82



Reviewing the theses usually shared by those who base sexual difference in the brain as the foundation and argument to propose a segregated and differentiated education, it can be seen that, to this day, neuroscientific research cannot conclude such theses. However, they are still part of the social imaginary that influences beliefs about what is recommended for girls and boys when educating them. The scientific lies that have just been indicated as three of the main theses that maintain the idea of the sexual difference of the brain have been pointed out by eminent scientists as contaminants of the scientific process; such as Vidal (2012) and Fausto-Sterling (2000, 2015). Can it be said, then, that there is a science distorted by sexist culture?

Many scientists believe it and fight it. For example, those of the *Neurogenderings Network group* that has already been mentioned above.

And that is why it was said in the introduction to this article that tier work is a kind of ‘epistemological guerrilla’.

From the point of view that we are now interested in analyzing, there is the question of what philosophy of education can maintain. The neuroscientific foundation that proposes separating boys and girls in classrooms due to their brain differences has been discarded, due to being pseudoscientific or lack of evidence. But it is important to add that those preconceptions that are thought to be based on scientific authority are equally introduced into the classroom every day in a prejudicial way. That is to say, education today, even being in coeducation, recreates gender patterns that only social and cultural beliefs and constructions support.

In this article, it is proposed that before concluding with a philosophy with an educational proposal, we propose a model to understand from what framework this transdisciplinary dialogue is carried out, indicated above as necessary and urgent. With this objective, the proposal by Halpern (2012) and Miller and Halpern (2014) is very interesting. According to it, we need a biopsychosocial model of human life and cognition that does not fall within the dichotomous framework that thinks and studies sexual differences in terms of nature-culture. This framework, they point out, is very simple and deficient and prevents understanding human cognition in the complexity that it really presents. It has been seen how social changes in recent decades have improved the results that measure talent in specific areas: mathematics, language, orientation... All of this shows that cultural factors, like the growing reality of gender equality itself, can reverse sexual differences that were previously thought innate. This idea, linked to the quality of neuronal plasticity of the human being, allows a greater impact on the importance of agreeing in open and democratic processes what one wants to do with education and, ultimately, with the world.

Naturalizing the differences between collectives and human groups has been a common practice throughout human history. Science and its great development in the last two centuries allow us to search for innate explanations for these differences (which is a dangerous way that usually leads to inequalities). But, at a time in history when scientific collaboration, dialogue between the disciplines that generate knowledge and human awareness of the great planetary problems that exist, is more necessary than ever, the sciences cannot be made tools for ideologies to legitimize themselves, as Hartman (2012) or Malabou (2007) affirm. What philosophers of the Frankfurt School, such as Hartmann (2012), call ‘neurocapitalism’ refers precisely to the danger of depoliticization



that cognitive sciences that are not critical can suffer. Some sciences speak of ‘nature’ as an objective and neutral category. And this is not the case. Certainly, the biological is important because it is frequently taken to define social value; and, therefore, it becomes a mirror of political and social categories that will be decisive for living, surviving, and coexisting, as Malabou (2007) warns when he asks in the title of his book *What to do with our brain?*

The sciences in general, and the neurosciences in particular, have a function of legitimating certain powers and knowledge in the described capitalist context. That is, the pathologies of reason also have a point of inflection and pathological spread in scientific knowledge. The observation of brains, and the new techniques, can serve to legitimize and justify ‘scientifically’ certain policies, ideologies, norms and laws, and even myths and prejudices, as Fine (2017) and Rippon (2019) denounce. For this reason, the ‘reason’ of science not only does not save from the crisis of reason, but can make it worse.

84



Conclusions

Popper (1983, p. 95) said: “We do not study issues, but problems; and the problems can cross the limits of any object of study or discipline. Well, what this article aims is the same, with the proposal of critical neurosciences, protected by a more open and democratic practice of science, a dialogue can be achieved that leads to a framework of transdisciplinarity.” This poses a great challenge for a theory and a praxis of education. Specifically, and due to the issue raised, it means abandoning the prejudices related to an idea as widespread in time as in the different geographies of the planet, and that is the categorization of the binary sexual difference of the brain.

In the transdisciplinary dialogue that is proposed here, neuroeducation appears as the sum of dialogues that can contribute, if they are critical, great progress for the enormous challenges posed today to the human species in charge of a planet and its destiny.

Faced with the impossibility of affirming the sexual differences in the brain, which some crave so much, it is proposed to optimistically embrace the theses of brain plasticity that are being revealed. Thus, the studies by Lipina (2016) and Lipina and Evers (2017) on the importance of living conditions for neurodevelopment are known. Specifically, their studies lead us to conclude how child poverty influences cognitive and

emotional development. These investigations lead to affirm that development in terms of rights, dignity, capacity, and social responsibilities has cognitive implications. What Gabrieli and Bunge (2016) called the stamp of poverty serves to understand the effect of the environment on the brain and on the development of intelligence throughout life; the opportunities and frustrations in parenting will be translated on a neurological level and in synaptic possibilities that will shape life. Pediatric studies confirm that there is a significant correlation between socio-economic status and many mental and brain functions, and even with the volume and structural details of certain areas of the brain important for cognitive and emotional functions, as stated by Johnson, Riis and Noble (2016). This brain plasticity, moreover, not only occurs during a stage of childhood life, but is maintained throughout life; not with the same intensity, but neural and synaptic plasticity remains throughout life.

This should bring optimism, since it implies the human capacity to become better, individually, in community, and as a species. The numerous scientific bibliography of recent years tells us how protection, good nutrition, care, ensure proper brain development. On the contrary, lack of protection, abuse, poverty, and the adverse socioeconomic environment in general, make it difficult and have an impact on the anatomy and function of the brain. As a consequence, there is a significant correlation between the socio-economic level and many mental and brain functions, and even with volume or structural details of areas of the brain important for cognitive and emotional functions, as studied by Johnson, Riis and Noble (2016).

All this speaks of how fundamental brain plasticity can be to understand education as an element of impactful social transformations, as stated by May (2011). Of course, eliminating gender inequalities could improve the academic results of all, women and men; as stated in their research by Miyake et al. (2010), Hartley and Sutton (2013), and Weber et al. (2014). Understanding the importance of this capacity for action should lead us to be aware of the great impact that educational policies can have. For this reason, we also need a better way of relating educational policies to scientific research policies. The proposal of this article is that the educational debate advances in understanding how from coeducation, and detaching itself from gender patterns of differences and inequalities, a framework of equality can be promoted that enables cooperative learning and diversity. This diversity in classrooms is an element that can help, more than homogeneity, to promote learning, as Cin (2017) explains. From this philosophy of education, the reflection about whether a



segregated education or coeducation is preferable does not depend on whether sexual differences are found in the brain; ultimately, it is not scientific findings that determine what and how to educate. It is clear that cognitive differences exist, but not so much between groups, but between individuals, as Joel et al. (2015) demonstrated and recently also Rippon (2019). But this can never be an argument to advise group separation in the teaching-learning process.

It is true that there are no conclusions from the neurosciences that endorse that educational results are better in coeducation or in segregated classes. But there are robust conclusions about the importance of starting with gender equality policies to improve the educational results of young people. Numerous studies support it, such as Guiso et al. (2008), Corbett and Hill (2008), Klein (2007), Fassa, Rolle, and Storari (2014), Fassa (2016), van Hek, Kraaykamp and Pelzer (2017). That these equality policies are more possible to implement in a coeducational school, it is something that experience does demonstrate, as confirmed by Chaluda (2017), or by UNESCO (2015). In conclusion, it is necessary to emphasize some clear ideas from the research presented here: the need to think about science and the generation of knowledge in another way; the urgency to get rid of pseudoscientific arguments (very specifically in relation to sexual difference in the brain) when thinking about education as the most vital element in human life; the requirement to conceive the human brain as having a quality of plasticity and continuous learning; and, finally, learn, organize and agree on all of this so that education is primarily a path that helps train people as agents of social transformation for a more just and egalitarian world.

86



Bibliography

- ANSARI, Daniel, COCH, Donna & DE SMEDT, Bert
 2011 Connecting Education and Cognitive Neuroscience: Where will the journey take us? *Educational Philosophy and Theory*, 43(1), 37-42. <https://doi.org/10.1111/j.1469-5812.2010.00705.x>
- ANSARI, Daniel, DE SMEDT, Bert, & GRABNER, Ronald
 2012 Neuroeducation: A Critical Overview of an Emerging Field. *Neuroethics* 5(2), 105-117. <https://doi.org/10.1007/s12152-011-9119-3>
- BRIZENDINE, Louann
 2006 *The Female Brain*. New York: Broadway Books, Random House.
- BATTRO, Antonio, FISHER, Kurt & LÉNA, Pierre (Eds.)
 2008 *The Educated Brain. Studies in Neuroeducation*. Cambridge: Cambridge University Press.

- BATTRO, Antonio & CARDINALI, Daniel
 1996 *Más cerebro en la educación*. Buenos Aires: La Nación.
- BRAIN INITIATIVE
<https://bit.ly/2LMqZRr>
- BRUER, John
 1997 Education and the Brain: A Bridge Too Far. *Educational Researcher* 26(8), 1-13. <https://doi.org/10.3102/0013189X026008004>
 2008 Building Bridges in Neuroeducation. En Antonio Battro, Kurt Fischer y Pierre Léna (Eds.), *The Educated Brain* (pp.43-58). Cambridge: Cambridge University Press.
- BURKE, Peter
 2000 *A Social History of Knowledge I: From Gutenberg to Diderot*. Cambridge: Polity Press.
 2012 *A Social History of Knowledge II: From the Encyclopaedia to Wikipedia*. Cambridge: Polity Press.
- CARBALLO, Anna
 2016 Neuroeducación: de la ciencia al aula. *Aula de Infantil*, 85, 11-14.
- CARBONELL, Eudald
 2018 *Elogio del futuro: Manifiesto por una conciencia crítica de especie*. Barcelona: Arpa Editores.
- CARBONELL ROURA Eudald & DÍEZ FERNÁNDEZ-LOMANA, J.C.
 2019 Hazte humano (tengas la edad que tengas). Diario de los Yacimientos de la sierra de Atapuerca, Burgos. *Revista Atlántica-Mediterránea de Prehistoria y Arqueología Social, RAMPAS*, 21. https://doi.org/10.25267/rev_atl-medite-rr_prehist_arqueol_soc.2019.v21.1
- CHALUDA, Ania
 2017 *Ensure Equitable and Quality Education at All Levels. Report for Deliver for Good*. New York. <https://bit.ly/3oYOIBA>
- CHOUDHURY, Suparna & SLABY, Jan (Eds.)
 2012 *Critical Neuroscience: A Handbook of the Social and Cultural Contexts of Neuroscience*. New York: Wiley- Blackwell.
- CHOUDHURY, Suparna, NAGEL, Saskia & SLABY, Jan
 2009 Critical Neuroscience: Linking Neuroscience and Society through Critical Practice. *BioSocieties*, 4(61), 61-77. <https://doi.org/10.1017/S1745855209006437>
- CIN, Firdevs Melis
 2017 *Gender Justice, Education and Equality Creating Capabilities for Girls' and Women's Development*. London: Palgrave Macmillan.
- CORBETT, Christianne & HILL, Catherine
 2008 *Where the Girls Are: The Facts about Gender Equity in Education. Executive Summary*, Washington: AAUW Educational Foundation.
- FASSA, Farinaz
 2016 *Filles et garçons face à la formation. Les défis de l'égalité*. Lausanne, Presses polytechniques et universitaires romandes [additional references: <http://www.ppur.org/supplement/show/567>].
- FASSA, Farinaz, ROLLE, Valérie & STORARI, Chiara
 2014 Politiques de l'égalité à l'école obligatoire. Des ambivalences qui diluent les rapports sociaux de sexe. *Swiss Journal of Sociology*, 40(2), 197-213.

- FAUSTO-STERLING, Ann
 2000 *Sexing the body. Gender politics and the construction of sexuality.* New York, NY: Basic Books.
 2015 How else can we study sex differences in early infancy? *Developmental Psychology*, 58(1), 5-16. <https://doi.org/10.1002/dev.21345>
- FINE, Cordelia
 2017 *Testosterone Rex: Unmaking the Myths of Our Gendered Minds.* London: Icon.
 2010 *Delusions of Gender: How Our Minds, Society, and Neurosexism Create Difference.* New York: W.W. Norton.
- FOX KELLER, Evelyn
 2010 *The Mirage of a Space between Nature and Nurture.* Durham and London: Duke University Press.
- FUENTES CANOSA, Adela & COLLADO RUANO, Javier
 2019 Fundamentos epistemológicos transdisciplinarios de educación y neurociencias. *Sophia: Colección de la Educación*, 26(1), 83-113. <http://doi.org/10.17163/soph.n26.2019.02>
- GABRIELI, John, & BUNGE, Silvia
 2016 The Stamp of Poverty. *Scientific American Mind*, 28(1), 54-61. <http://doi.org/10.1038/scientificamericanmind0117-54>
- GARCÍA DAUDER, Silvia & PÉREZ SEDEÑO, Eulalia
 2017 *Las 'mentiras' científicas sobre las mujeres.* Madrid: Los libros de la catarata.
- GOLDSTEIN, Murray
 1990 The Decade of the Brain: Opportunities and Challenge. *NN*, 21(1).
- GRACIA, Xavier & GOZÁLVEZ, Vicent
 2019 La libertad incorporada como clave para la neuroeducación moral. *Sophia: Colección de la Educación*, 26(1), 59-82. <http://doi.org/10.17163/soph.n26.2019.01>
- GUISSO, Luigi, MONTE, Ferdinando, SAPIENZA, Paola & ZINGALES, Luigi
 2008 Culture, Gender, and Math. *Science*, 320, 1164-1165. Recuperado de: <https://bit.ly/3h0QrxV>
- HALPERN, Diane F.
 2012 *Sex Differences in Cognitive Abilities* (4th edition). New York and Hove: Psychology Press, Taylor & Francis (first edition, 1986).
- HARAWAY, Donna
 1991 *Simians, Cyborgs, and Women: The reinvention of Nature.* London: Free Association.
 2016 *Staying with the Trouble: Making Kin in the Chthulucene.* Durham: Duke University Press.
- HARRISON, Glenn W.
 2008 Neuroeconomics: A Critical Reconsideration. *Economics and Philosophy*, 24(03), 303-344. <https://doi.org/10.1017/S0266267108002009>
- HARTLEY, Bonny L. & SUTTON, Robbie M.
 2013 A stereotype threat account of boys' academic underachievement. *Child Development*, 84, 1716-1733. <https://doi.org/10.1111/cdev.12079>
- HARTMANN, Martin
 2012 Against first nature. *Critical Theory and Neurosciences.* En Suparna Choudhury y Jan Slaby (Eds.), *Critical Neuroscience* (pp. 67-84). Wiley-Blackwell.



- HONNETH, Axel
2009 *Patologías de la razón. Historia y actualidad de la teoría crítica*. Buenos Aires: Katz Editores.
- HYDE, Janet S.
2005 The Gender Similarities Hypothesis. *American Psychologist*, 60(6), 581-592. <https://doi.org/10.1037/0003-066X.60.6.581>
2006 Gender Similarities Still Rule. *American Psychologist*, 641-642. <https://doi.org/10.1037/0003-066X.61.6.641b>
2007 New Directions in the Study of Gender Similarities and Differences. *Current Directions in Psychological Science*, 16(5), 259-263. <https://doi.org/10.1111/j.1467-8721.2007.00516.x>
2016 Sex and cognition: gender and cognitive functions. *Current Opinion in Neurobiology*, 38, 53-56. [10.1016/j.conb.2016.02.007](https://doi.org/10.1016/j.conb.2016.02.007)
- HUMAN BRAIN PROJECT
<https://bit.ly/3nmcYaO>
- JOEL, Daphna, BERMAN, Zohar, TAVOR, Ido, WEXLER, Nadav, GABER, Olga, STEIN, Yaniv, SHEFI, Nisan, POOL, Jared, URCHS, Sebastian, MARGULIES, Daniel, LIEM, Franziskus, HÄNGGI, Jürgen, JÄNCKE, Lutz & ASSAF, Yaniv
2015 Sex beyond the genitalia: The human brain mosaic. *Proceedings of the National Academy of Sciences (PNAS)*, 112(50), 15468-15473. <https://doi.org/10.1073/pnas.1509654112>
- JOEL, Daphna & McCARTHY, Margaret M.
2017 Incorporating Sex as a Biological Variable in Neuropsychiatric Research: Where Are We Now and Where Should We Be? *Neuropsychopharmacology*, 42, 379-385. <https://doi.org/10.1038/npp.2016.79>
- JOHNSON, Sara B., RIIS, Jenna L. & NOBLE, Kimberly G.
2016 State of the Art Review: Poverty and the Developing Brain. *Pediatrics*, 137(4), e20153075. <https://doi.org/10.1542/peds.2015-3075>
- JORDAN YOUNG, Rebecca M.
2010 *Brain Storm: The Flaws in the Science of Sex Differences*. Cambridge: Harvard University Press.
- KANT, Immanuel
2003 *El conflicto de las facultades*. Madrid: Alianza Editorial.
- KAISER, Anelis, HALLER, Sven, SCHMITZ, Sigrid & NITSCH, Cordula
2009 On sex/gender related similarities and differences in fMRI language research. *Brain Res.Rev.* 61, 49-59. <https://doi.org/10.1016/j.brainresrev.2009.03.005>
- KITCHEN, William H.
2017 *Philosophical Reflections on Neuroscience and Education*. London: Bloomsbury.
- KLEIN, Susan S. (Ed.)
2007 *Handbook for Achieving Gender Equity Through Education*. New York: Routledge. Taylor and Francis Group.
- KRAUS, Cynthia
2011 Critical Studies of the Sexed Brain: A Critique of What and for Whom? *Neuroethics*, 5(3), 247-259. <https://doi.org/10.1007/s12152-011-9107-7>
- LAQUEUR, Thomas
1994 *La construcción del sexo. Cuerpo y género desde los griegos hasta Freud*. Madrid: Cátedra.

- LEAVIS, Frank Raymond
1962 *Two Cultures. The Significance of C.P. Snow*. London: Cambridge University Press.
- LIPINA, Sebastián J.
2016 *Pobre cerebro: los efectos de la pobreza sobre el desarrollo cognitivo y emocional, y lo que la neurociencia puede hacer para prevenirlos*. Madrid: Siglo Veintiuno Editores.
- MALABOU, Catherine
2007 *¿Qué hacer con nuestro cerebro?* Madrid: Arena Libros.
- MANEY, Donna L.
2015 Just like a circus: the public consumption of sex differences. *Current Topics in Behavioral Neurosciences*, 19, 279-96. 10.1007/7854_2014_339
2016 Perils and pitfalls of reporting sex differences. *Philosophical Transactions B. The Royal Society Publishing*, 371(1688), 20150119. <https://doi.org/10.1098/rstb.2015.0119>
- MARINA, José Antonio
2012 Neurociencia y educación. *Participación educativa*, 11(1), 7-13. Recuperado de: <https://bit.ly/3p4CUii>
- MAY, Arne
2011 Experience-dependent structural plasticity in the adult human brain. *Trends in Cognitive Sciences*, 15, 475-482. <https://doi.org/10.1016/j.tics.2011.08.002>
- MEHL, Matthias R., VAZIRE, Simine, RAMÍREZ-ESPARZA, Nairán, SLATCHER, Richard & PENNEBAKER, James W.
2007 Are Women Really More Talkative Than Men? *Science*, 6, 82. <https://doi.org/10.1126/science.1139940>
- MILLER, David I. & HALPERN, Diane F.
2014 The new science of cognitive sex Differences. *Trends in Cognitive Sciences*, 18(1), 37-45. <https://doi.org/10.1016/j.tics.2013.10.011>
- MIYAKE, Akira, KOST-SMITH, Lauren, FINKELSTEIN, Noah, POLLOCK, Steven, COHEN, Geoffrey & ITO, Tiffany
2010 Reducing the gender achievement gap in college science: a classroom study of values affirmation. *Science*, 330, 1234-1237. <https://doi.org/10.1126/science.1195996>
- MORA, Francisco
2013 *Neuroeducación*. Madrid: Alianza Editorial.
- NARVÁEZ, Darcia
2016 *Embodied Morality. Proteccionism, engagement and imagination*. London: Palgrave.
- NORTHOFF, Georg
2004 What is Neurophilosophy? A Methodological Account. *Journal for General Philosophy of Science*, 35, 91-127. <https://doi.org/10.1023/B:JGPS.0000035153.89143.4c>
- NUSSBAUM, Martha
2010 *Sin fines de lucro. Por qué la democracia necesita de las humanidades*. Buenos Aires/Madrid: Katz Editores.
- POPPER, Karl
1983 *Conjeturas y refutaciones. El desarrollo del conocimiento científico*. Barcelona: Paidós.

- REVERTER BAÑÓN, Sonia
- 2016 Reflexión crítica frente al Neurosexismo. *Pensamiento*, 72(273), 959-979. <https://doi.org/10.14422/pen.v72.i273.y2016.011>
- 2017 El Neurofeminismo frente a la investigación sobre la diferencia sexual. *Daimon*, 6, 95-110. <https://doi.org/10.6018/daimon/291561>
- 2019 The case of gender in moral neuroeducation. En Patrici Calvo y Javier Gracia-Calandín (Eds.), *Moral Neuroeducation for a Democratic and Pluralistic Society* (pp.175-192). London: Springer.
- RIPPON, Gina
- 2019 *The Gendered Brain. The new neuroscience that shatters the myth of the female brain*. London: Bodley Head.
- RIPPON, Gina, JORDAN-YOUNG, Rebecca, KAISER, Anelis, JOEL, Daphna & FINE, Cordelia
- 2017 Journal of neuroscience research policy on addressing sex as a biological variable: Comments, clarifications, and elaborations. *Journal of Neuroscience Research*, 95(7), 1357-1359. <https://doi.org/10.1002/jnr.24045>
- ROSE, Nikolas
- 2006 *The Politics of Life Itself: Biomedicine, Power, and Subjectivity in the Twenty-First Century*. Princeton, NJ: Princeton University Press.
- ROSE, Nikolas & ABI-RACHED, Joelle M.
- 2013 *Neuro: The New Brain Sciences and the Management of the Mind*. Princeton University Press.
- ROSKIES, Adina
- 2002 Neuroethics for the new Millenium. *Neuron*, 35(1) 21-23. [https://doi.org/10.1016/s0896-6273\(02\)00763-8](https://doi.org/10.1016/s0896-6273(02)00763-8)
- RUSSETT, Cynthia E.
- 1989 *Sexual Science: The Victorian Construction of Womanhood*. Cambridge MA: Harvard University Press.
- SAX, Leonard
- 2005 *Why Gender Matters: What Parents and Teachers Need to Know about the Emerging Science of Sex Differences*. New York: Harmony Books.
- SCHIEBINGER, Londa
- 1989 *The Mind Has No Sex: Women in the origins of modern science*. Cambridge, Massachusetts: Harvard University Press.
- SOCIETY FOR NEUROSCIENCE
- <https://bit.ly/3ahirMtSOMMER>
- SNOW, Charles Percy
- 1959 *The Two Cultures and the Scientific Revolution*. London: Cambridge University Press.
- SPERRY, Roger W.
- 1981 Changing Priorities. *Annual Review of Neuroscience*, 4, 1-15. <https://doi.org/10.1146/annurev.ne.04.030181.000245>
- TUANA, Nancy
- 2004 Coming to understand: Orgasm and the epistemology of ignorance. *Hypatia: A Journal of Feminist Philosophy*, 19(1), 194-232. <https://doi.org/10.1111/j.1527-2001.2004.tb01275.x>
- 2006 The Speculum of Ignorance: The Women's Health Movement and Epistemologies of Ignorance. *Hypatia: A Journal of Feminist Philosophy*, 21(3), 1-19. Recuperado de: <https://bit.ly/3h8X81b>

UNESCO

2015 Education 2030 Framework for Action, Incheon Declaration and Framework for Action for the implementation of Sustainable Development Goal 4. New York: Unesco Press.

VAN HEK, Margriet, KRAAYKAMP, Gerbert & PELZER, Ben

2017 Do schools affect girls' and boys' reading performance differently? A multi-level study on the gendered effects of school resources and school practices. *School Effectiveness and School Improvement*, 29(1), 1-21, <https://doi.org/10.1080/09243453.2017.1382540>

VIDAL, Catherine

2012 The Sexed Brain: Between Science and Ideology. *Neuroethics*, 5(3), 295-303. <https://doi.org/10.1007/s12152-011-9121-9>

WEBER, Daniela, SKIRBEKK, Vegard, FREUND, Inga & HERLITZ, Agneta

2014 The changing face of cognitive gender differences in Europe. *PNAS*, 111(32) 11673-11678.

92



Document reception date: July 15, 2020
Document review date: September 15, 2020
Document approval date: October 15, 2020
Document publication date: January 15, 2021

THE INDISPENSABILITY OF LAWS IN COGNITIVE SCIENCE

La indispensabilidad de las leyes en ciencias cognitivas

SERGIO DANIEL BARBERIS ALMIRÓN*

University of Buenos Aires, Buenos Aires, Argentina
sbarberis@filo.uba.ar

Orcid code: <https://orcid.org/0000-0002-5381-3772>

Abstract

Endorsing the philosophical distinction between laws of science and laws of nature, the present paper advocates for the explanatory indispensability of the laws of science in the field of the cognitive sciences. It is argued here that laws of science play an indispensable epistemic role both for functional analyses and mechanistic explanations of cognitive capacities. In this way, the paper provides a plausible explication of the explanatory power of the cognitive sciences while wisely bracketing the controversial metaphysical status of natural laws. It is argued that both the advocates and the detractors of intentional causal laws presuppose that those laws contribute neither to functional nor mechanistic explanations of target phenomena. However, the present paper shows, first, that functional analysis requires the specification of non-causal, scientific laws, and second, that the precise scientific representation of the activities and the dynamical organization of some mechanism is generally deployed, in the context of a mechanistic model, by specifying scientific laws. The conclusion is that the laws of science (but not necessarily the laws of nature) play an indispensable role in cognitive scientific explanations.

Keywords

Cognitivism, explanation, law, mechanism, dynamics, function.

Suggested citation: Barberis, Sergio (2021). The indispensability of laws in cognitive science. *Sophia, colección de Filosofía de la Educación*, 30, pp. 93-119.

* Doctor of Philosophy (University of Buenos Aires). Assistant Researcher of the National Council for Scientific and Technical Research (CONICET), at the Institute of Studies on Science and Technology, Department of Social Sciences, National University of Quilmes. Head of Practical Works of the subjects 'Philosophy of Sciences', 'History of Science', 'Metaphysics' and 'Philosophy of the mind' in the Department of Philosophy (UBA). Director of the UBACyT project: 'Conceptual reconstructions in biological sciences: didactic applications and social implications'. Author of publications in specialized journals on the philosophy of cognitive science and philosophy and history of neuroscience.

Resumen

Partiendo de la distinción filosófica entre las leyes de la ciencia y las leyes de la naturaleza, en el presente artículo se defiende la indispensabilidad explicativa de las leyes de la ciencia en el campo de las ciencias cognitivas. Se sostiene que las leyes de la ciencia desempeñan un papel epistémico indispensable tanto en el análisis funcional como en la explicación mecanicista de las capacidades cognitivas. De esta manera, se ofrece una elucidación plausible del poder explicativo de las ciencias cognitivas en términos del papel epistémico de las leyes de la ciencia, suspendiendo el juicio, de manera prudente, respecto del controvertido estatus metafísico de las leyes naturales. Se pone en evidencia que tanto quienes defienden como quienes rechazan el compromiso ontológico con leyes causales intencionales presuponen que esas leyes no contribuyen a la explicación funcionalista ni mecanicista de los fenómenos que describen. Sin embargo, en el presente trabajo se argumenta, primero, que el análisis funcional requiere la especificación de leyes científicas no causales y, segundo, que la representación científica precisa de las actividades y de la organización dinámica de un mecanismo se despliega mayoritariamente, en el contexto de un modelo mecanicista, mediante la especificación de leyes científicas. La conclusión es que las leyes científicas (aunque no necesariamente las leyes de la naturaleza) desempeñan un papel indispensable en la explicación en ciencias cognitivas.

94



Palabras clave

Cognitivismo, explicación, ley, mecanismo, dinámica, función.

Introduction

Starting from the philosophical distinction between the laws of science and the laws of nature, this article defends the explanatory requisiteness of the laws of science in the particular field of cognitive sciences. According to van Fraassen, (1989), Swartz (1995), and Giere (1999), there is a very important conceptual distinction, often overlooked, between the ‘laws of nature’ or ‘physical laws’, on the one hand, and the ‘laws of science’ or ‘laws of models’, on the other. The laws of nature are those empirical regularities that govern the natural world, regardless of the scientific representations that are made of them; the laws of science are those basic principles that are constitutive of the theories of which they are part and that structure a good part of scientific practice, as described by Lorenzano (2007). In this article, an elucidation of the explanatory power of the cognitive sciences in terms of the laws of science is defended, maintaining certain neutrality regarding the relationship between the latter and the laws of nature. In other words, it is proposed to approach the explanation in cognitive sciences as an epistemic phenomenon, suspending the judgment regarding the metaphysical status of natural laws.

The idea of the explanatory indispensability of laws is classical in the philosophy of science, it belongs to the canon of logical empiricism. With the resurgence of mechanistic philosophy, in the 2000s, several mechanistic philosophers (or close to mechanistic philosophy) rejected the classic canon of the epistemic indispensability of the laws of science.

Authors such as Bechtel and Abrahamsen (2005), Craver (2007), Kaplan and Craver (2011) have affirmed, with greater or lesser vehemence, that scientific laws do not play any explanatory role in the functional/mechanistic models of a certain cognitive capacity.

The arguments, if successful, show that there are no laws of nature in the biological and cognitive realms since in these realms there are only contingent and mechanistically fragile regularities. Mechanistic philosophers such as Machamer, Darden, and Craver (2000), Bechtel and Abrahamsen (2005), and Craver (2007) oppose the thesis according to which scientific explanation requires the postulation of laws of nature governing each of the activities and the organization inside a mechanism. However, these arguments leave open the possibility that the precise scientific representation of the activities and of the dynamic organization of a mechanism, in the context of a mechanistic model, is deployed mainly through the specification of scientific principles or laws and that, furthermore, it is the latter that bear a large part of the explanatory burden.

This document is structured in three sections. The first section reconstructs the debate in the philosophy of mind and the cognitive sciences about the existence and nature of intentional causal laws. The second section defends the thesis that functional analysis, as an explanatory guideline, is only incompatible with the relevance of causal laws, but not with the relevance of scientific laws in general. In the third section, an argument is developed for the epistemic requisiteness of scientific laws in mechanistic explanation. In the end, the main conclusions of the research are presented.

The debate on intentional causal laws

In the 1990s, the debate about the status of laws in cognitive science was framed in a broader metaphysical discussion about the plausibility of ‘intentional realism’. Intentional realism sets out to reconcile two metaphysical theses in the philosophy of mind. On the one hand, intentional realists affirm that there are mental states with semantically evaluable content; that these mental states are semantically evaluable means that they have conditions of satisfaction. For example, the content of Sofia’s belief that snow is white will be true or false according to the color of snow in the world. On the other hand, as Skidelsky (2003) points out, the intentional realist holds the thesis that such intentional states have a causal role in the production of behavior and other intentional states.

Jerry Fodor (1991; 1994), in his claim to intentional realism, argues for the causal relevance of intentional states by defending the thesis that there are ‘causal intentional laws’ that subsume intentional properties (i.e., be semantically evaluable) such as:

Typically, intentional generalizations could be of the form: “If you want to, and you think you can’t unless you do, then, *ceteris paribus*, you will try to do.” For example, if you want to make an omelet, and you think you can’t do it unless you break some eggs, then, all things being equal, you will try to do an action that is breaking the eggs (Fodor, 1994, p. 4).

The clause *ceteris paribus* that is mentioned in the quote is indispensable for the formulation of the law since, otherwise, the alleged law would be false. Returning to the example of Fodor, it could be the case that a person, due to some neuropsychological impediment in the integration of information, does not attempt any action that is the breaking of eggs even though he wants to make an omelet and believes that he cannot do it unless he breaks some eggs. All intentional generalizations allow exceptions of this kind. The incorporation of *ceteris paribus* clauses in the formulation of scientific laws, however, is a frequent source of philosophical malaise, as it threatens to trivialize the content of the law. Fodor considers that the inclusion of such clauses in the causal intentional laws (and in the laws of the special sciences in general) is not problematic, since it is possible to complete the antecedent of the statement of the law by specifying the perturbing conditions subsumed under the *ceteris paribus* clause using the concepts of some more basic theory:

Exceptions to the generalizations of a special science are typically inexplicable from the point of view of (that is, in the vocabulary of) that science. That’s one of the things that makes it a special science. But, of course, it may be perfectly possible to explain those exceptions in the vocabulary of some other science (...) or we [n]o have reason to doubt that [the clauses *ceteris paribus*] can be downloaded into the vocabulary of some lower-level science (let’s say neurology, biochemistry, in the worst case, physics) (Fodor, 1987, p. 6).

An intentional causal law of the type envisioned by Fodor would have the form: “*Ms cause B ceteris paribus*,” where *M* is a psychological, mental, or intentional property. The description of the antecedent *M* in the vocabulary of some relatively more basic theory is called by Fodor a ‘realizer’ of *M*. Since *M* is a (functional) psychological property, those who participate in the debate accept that it is a multiply realizable property: each functional property can be realized in different physical pro-



erties R_1, \dots, R_n . Each of these physical properties cannot cause B by itself; In each case, it is essential to add some physical condition C that, together with the first, is sufficient to produce B .

Fodor (1991) defines that condition C is a ‘completer’ relative to the realization of M through the physical property if and only if:

- i. R_i and C are strictly sufficient for B ;
- ii. R_i , considered in isolation, it is not strictly sufficient for B ;
- iii. C , considered in isolation, is not strictly sufficient for B

Given this terminology, the law ‘ M cause B ceteris paribus’ is true if and only if, for each performer R_i of M , there is a completer C_i such that R_i & C_i cause B . In frank opposition to Fodor’s position, Schiffer (1991) considers that, even when statements of the type “The M cause B ceteris paribus” express true propositions, they do not refer to properly psychological natural laws. On the one hand, it is not about psychological laws because the right side of the biconditional: ‘For each performer R_i of M , there is a completer C_i such that R_i & C_i cause B ’ implies that the condition & that does not require intentional or psychological vocabulary, is nomically sufficient for the occurrence of B . Furthermore, if the phenomenon of the multiple realizability of M is taken into account, it becomes clear that it is nomically possible that there is a R_i realizer of M who has no completer and therefore does not cause B . In other words, the intentional generalizations *ceteris paribus* admit absolute exceptions, so they cannot be true or, if they were, they would be trivially true.

In his response to Schiffer’s objection, Fodor (1991) concedes, first of all, that it is nomically possible for a performer R_i of M not to cause B . However, if R_i it is indeed a realizer of M , it is conceptually impossible that it does not instantiate some of the laws of the causal network that define the functional property M . Although R_i it is an absolute exception to ‘Los M cause B ceteris paribus’, it cannot constitute an absolute exception to any law of the form ‘Los M cause X ceteris paribus’ that is part of the network that defines the causal role of property M . For Fodor, intentional causal laws are legitimate insofar as they do not have absolute exceptions for the entire network.

Diana Pérez (1995) objects to this argument of Fodor pointing out that, if it is admitted that ‘The M cause B ceteris paribus’ may have at least one absolute exception, that is, that it is nomically possible that a performer R_i does not enter into a causal connection with some instance of B , then it is not clear in what sense the properties M and B are cau-

sally connected, since not only would there be no constant conjunction between the instances of *M* and *B* (and Fodor already admitted that they are not probabilistic laws) but that the presumed natural law would not offer support for counterfactual statements such as: ‘If this were an *M*, it would cause a *B*’.

So far, a brief review has been offered of the problems plaguing the defense, by the staunch intentional realist, of the existence of *ceteris paribus* psychological laws. It should be noted that this is a primarily metaphysical debate about the status of natural psychological laws. Now, in the context of this article, a different question stands out: What epistemic role should be attributed to these intentional laws in the context of explanation in cognitive science?

Both Schiffer (1991) and Fodor (1991) seem interested in generalizations from common sense psychology. In the case of Schiffer (1991), he is interested in generalizations such as:

If *x* wants *p* and believes that (*p* if *x* does *A*) and *x* has the correct beliefs about how to do *A* and *x* is capable of doing *A* and *x* has no stronger competing wish, then, *ceteris paribus*, *x* does *A*” (p. 11).

Fodor (1991) shares the same interest in generalizations from common sense psychology when he states that “intentional explanations/predictions of common sense are (at least implicitly) and at least occasionally, a kind of explanation/prediction by subsumption under laws” (p. 20).

However, as Fodor (1991) himself points out, the reconstruction of the explanatory guidelines of common-sense psychology is not the only philosophical project that is interested in psychological laws (nor the most important, I may add). When it comes to the structure of explanations in cognitive science, Fodor does not seem to assign intentional laws a fundamental role. I will allow myself to quote a key passage in this regard:

It is a law that the moon appears larger to us on the horizon than above our heads, and it is an intentional law because it invokes inescapably relationships such as “appearing”. Cognitive science seeks a computational explanation for this intentional law; seeks (e.g.) an algorithm that maps proximal visual arrangements and perceptual judgments, in such a way that the kinds of proximal visual arrangements that are caused by looking at the moon when it is close to the horizon reliably facilitate an overestimation of size (...) If there were no contingent and reliable generalizations about the relationships between proximal arrangements and perceptual size judgments - if they were not, in short, intentional laws - then computational models would have nothing to explain (Fodor 1991, p. 20).



This example from Fodor illustrates, first, how the author oscillates between two different characterizations of the intentional law in question. According to the first, purely *folk* or common sense, characterization, the law establishes that the same objects appear to be larger on the horizon than on the head. The second characterization is cognitive (in particular, computational): the law links (causally) certain arrangements of proximal visual stimuli with certain perceptual estimates of the size of distal objects. It could be thought that they are two different formulations of the same natural law. However, there are good reasons to think that these are two different laws. The first law links certain spatial conditions with the perceptual judgments of an individual; the second law specifies an activity or causal interaction between the ‘parts’ of a computational subsystem of the individual. Thus, in the terms of Dennett (1969) and Skidelsky and Pérez (2005), while the first is a law at the personal level, the second is a law at the subpersonal level.

Secondly, the quotation highlights the role that Fodor attributes to intentional laws in explanatory patterns, not just common sense, but cognitive science. It is curious that while intentional laws are fundamental from a metaphysical point of view to realism about intentional states, they do not appear to be so from an explanatory point of view. Fodor (1991) states: “the (supposed) intentional laws provide the agenda for computational modeling” (p. 20). If this is the case, then psychological laws are rather the *explanandum* of an explanation in cognitive science, which must be realized and explained through the deployment of computational models.

Fodor seems to be giving too much to the “enemy of psychological laws.” In fact, the explanatory irrelevance of *ceteris paribus* laws for explanations in special sciences is part of the main objection that Schiffer (1991) raises against the existence of such laws:

When I read biology [texts], I have a hard time finding something that looks like an explanation that invokes laws, and I think I know why. Suppose you invented a spring-activated mousetrap and had to explain how it worked. You would say that, when the machine works, it is because a mouse nibbles the cheese placed in a trigger mechanism; the movement caused by the nibbling triggers a bar attached to a stretched spring; etc. But I wouldn’t mention any laws. Perhaps if the explanation were to continue through a long enough causal chain, it would arrive at laws; but they would be laws of physics, not laws about mousetrap theory. In the same way, most of biology is concerned with explaining how various mechanisms work —think of the photosynthesis explana-



tion— and it seems that these explanations do not invoke biological laws, neither strict nor *ceteris paribus* (p. 16).

An unexpected consequence, then, of the controversy over intentional laws seems to be that these laws, even if they exist in the world, do not play any explanatory role in cognitive science, as Skidelsky (2003) points out. In the best of cases, they would offer a new description of the *explanandum* phenomenon. Of course, discovering these intentional laws would not be a trivial job, but even so, they would not carry substantive weight in explaining the phenomena that cognitive scientists set out to explain. This perspective on the explanatory irrelevance of laws in cognitive sciences crystallizes in the canonical conception of cognitivist explanation, namely, the *Functional Analysis* proposal of Robert Cummins (1975; 1983; 2000). This proposal is analyzed in the next section.

100



Functional analysis and the explanatory relevance of non-causal laws

Especially in the case of cognitive sciences, many philosophers accept Cummins's (2000) proposal according to which the explanatory pattern of cognitive sciences is functional analysis, and that this analysis does not require the identification of scientific laws in the *explanans*. In this section, it is shown that Cummins overestimates the scope of the thesis that he postulates, insofar as his results only apply to the irrelevance of the 'causal laws' for functional analysis. In fact, his more complete presentation of the structure of functional analysis reveals the indispensable (epistemic at least) of other types of 'non-causal scientific laws' for an explanation.

The conclusion of the previous section, largely implicit in the debate of the deliberate law, is explicitly defended by Cummins (2000). According to this philosopher, the explanatory guidelines of the cognitive sciences should not be interpreted in terms of the nomological-deductive conception of the explanation of Hempel (1965). The psychological causal laws do not perform the function of explaining the behavioral or psychological phenomena that they subsume, but, in any case, they re-describe those phenomena in a more general way.

Does the Law of Effect explain why feeding a pigeon every time it pecks at a lever increases the frequency of pecking? Or does it just repeat the phenomenon in general terms? The correct moral of the story here is that the Law of Effect is an *explanandum*, not an *explanans* (...). In science when a law is thought of as an *explanandum*, it is called an "effect"

(...) Nobody thinks that the McGurk effect explains the data that it subsumes. No one who accepts the [nomological-deductive] model would suppose that it can be explained why someone hears a consonant like the one that appears to be pronounced by the mouth that is speaking, by appealing to the McGurk effect. This is the McGurk effect (Cummins, 2000, p. 119).

According to this author, when psychological causal laws are thought of as *explananda*, they are called effects. Just as, for Fodor (1991), intentional laws constituted what to explain through computational models, Cummins (2000) conceives psychological effects as in situ laws that specify the behavior patterns of different mechanisms. What does it mean that the effects are laws in situ? It is only another way of pointing out that they are not strict natural laws, i.e., laws that apply to all objects in all time and space but specify regular patterns of behavior that only apply to a special kind of system, due to the peculiar constitution and organization of that system.

According to Cummins (2000), in situ laws would not play an indispensable role in the specification of the *explanandum* either, since what is sought to be explained in cognitive sciences are not limited laws but rather specific capacities of a system: for example, the human capacity to perceive depth, to learn a language, to plan, to predict the future, to understand mental states of others, etc. These capabilities can be thought of as complex dispositional properties of systems. These dispositional properties are usually specified by subjunctive conditional statements of the type: “*x* is soluble in water if and only if (if *x* were put in water, then, *ceteris paribus*, *x* would dissolve in water)” (Cummins 1983, p. 18). This analysis shows that, for a given system, having such or such a dispositional property is satisfying this or that law in situ. It is in this sense that Cummins (2000) states that capabilities and effects are ‘close relatives’. However, he is not prepared to argue that a capacity can always be specified by a set of non-strict laws, since many of the regularities that we call ‘effects’ in psychology are, in fact, incidental to the exercise of some capacity, i.e., mere epiphenomena.

The problem with this argument from Cummins is obvious. The fact that there are laws in situ that describe effects incidental to the normal functioning of a capacity does not mean that those regularities that effectively govern normal functioning (and that, therefore, are part of the *explanandum* of a cognitive explanation) cannot be collected by laws in situ.

Like Schiffer (1991), Cummins reconstructs the explanatory patterns of the special sciences as consisting of the development of scientific

theories or models about the functional and constitutive structure of the 'mechanisms' that underlie the effects or in situ laws of the systems that are part of the scope of each of these sciences. For this author, at least in his article from (2000), the functional analysis of a system would not require the description of any natural law.

What is the functional analysis of a capacity? According to Cummins (2000), the functional analysis consists of analyzing a complex arrangement of a system in a number of 'less problematic' arrangements, in such a way that the programmed manifestation of these analyzing provisions results in a manifestation of the analyzed arrangement. By 'programmed' he means "organized in such a way that it can be specified in a program or in a flow chart" (Cummins 2000, p. 125). Given this characterization, in principle, a functional analysis of any capacity can be offered. However, the explanatory interest of a functional analysis will be directly proportional to: (i) the degree to which the analytical capacities are less sophisticated than the analyzed capacity; (ii) the degree to which the analyzing capacities are of different types from the type of the analyzed capacity; (iii) the degree of the relative sophistication of the program being appealed, that is, the relative complexity of the organization of the components that are attributed to capacity.

In the simplest cases (for example, in the explanation of how a mounting tape works), the functional analysis of the global arrangement obviously accompanies the component analysis of the system. Functional analysis does not have to be componential; both the analyzed capacity and the analytical capacities can be attributed to the system as a whole. Component analysis, on the other hand, identifies the specific parts of the analyzed system, for example, those that perform the functions identified in the functional analysis. For Cummins (2000), this direct correspondence between concrete structures and functions is absent in the cases of relatively more complex systems, as are the majority of cognitive systems. In the latter, there is no direct correspondence between the identified functions, for example, through a computational model, and the specific parts of the brain studied by neurobiology (see Weiskopf, 2011). It is for this reason that Cummins considers it important to maintain functional analysis and componential analysis as being conceptually distinct.

Cummins (2000) characterization of functional analysis and his reasons for thinking that certain in situ laws can play the role of *explananda* in an explanation in cognitive science have been succinctly presented. Now, what reasons does Cummins offer for thinking that functional analysis does not require the identification of scientific laws?



It is, at least, striking that, in his 2000 article, he simply takes it for granted that functional analysis does not need scientific laws. In the 1983 book, on the other hand, he is much more cautious and precise in formulating his theses. There he explicitly states that functional analysis does not require the specification of *causal laws*, for example, nomic correlations whose instances are cause-effect pairs (Cummins 1983). However, as he himself is in charge of emphasizing, not all scientific laws are causal laws.

Of particular interest are three types of laws that Cummins (1983) characterizes as non-causal. First, the ‘laws of composition’, which specify the analysis of a specific type of system; for example, water molecules are made up of two hydrogen atoms bonded to one oxygen atom and the double helix model of DNA. Second, the ‘laws of instantiation’, which specify how a property is instantiated in a specific type of system; an example of an instantiation law would be given by the Boyle-Mariotte law, according to which the temperature is instantiated in gas as the average kinetic energy of the gas molecules. Finally, the ‘nomic attributions’, which state that all x ’s have a certain property P ; for example, the law of gravitation in the theory of general relativity.

Well, according to Cummins (1983), as long as it is clear that not every scientific law is a causal law, it is acceptable to represent the structure of functional analysis by means of a scheme in which non-causal laws essentially participate:

Functional Analysis [FA]

- (1) Any system that has the components C_1, \dots, C_n organized in the O manner—i.e., which has the analysis $[C_1, \dots, C_n, O]$ —possesses the property P .
- (2) S has the analysis $[C_1, \dots, C_n, O]$
- (3) Por lo tanto, S tiene la propiedad P .

The conclusion (3) of the FA scheme is a nomic attribution. Premise (1) includes a law of instantiation (in the sense specified above), while premise (2) includes a law of composition. This alternative presentation of the structure of functional analysis shows that the thesis of the explanatory irrelevance of scientific laws in his article (2000) is presented, at least, in an ambiguous manner. All that the arguments developed there, show is that functional analysis does not require the identification of causal laws, although it does require the identification of (non-causal) laws of instantiation and composition.

What motivations does one have for thinking that the laws of composition are, indeed, scientific laws? A philosophical motivation behind this classification is the following. Complex systems for which a functional analysis can be informative are robust systems, that is, they are systems whose operation and organization is not completely ephemeral or circumstantial, but rather exhibits a characteristic regularity, not necessarily deterministic, which is crucial for the explanation. higher-level in situ laws (those that characterize the behavior of the system as a whole). Therefore, the specifications of the organization of the components of a system are, themselves, legaliformed, as Cummins (1983) points out:

[A] successful analysis yields an explanatory gain when it allows us to realize that an object that has the specified class of components, organized in the specified way, is bound to have the property that it seeks to explain (p. 17)

104



In the case of the status of the instantiation laws, the issue is more complex, according to Cummins, since these laws are derived principles that require, themselves, an explanation. This means that the $[C_1, \dots, C_n, O]$ analysis cannot provide, on its own, the complete (or definitive) explanation of the nomic attribution contained in FA's conclusion. Specifically, the capabilities C_1, \dots, C_n must be explained, in turn, by the properties of the real parts of the system, those in which these capabilities are, in turn, instantiated. In other words, the only available guideline to explain an instantiation law is to 'derive' it from the nomic attributions that specify the properties of the components of the system, in terms of Cummins (1983). A full explanation of a capability should exhibit the details of the physical instantiation of the parsing capabilities in the system that contains them. In the special case of cognitive sciences, Cummins (2000) states that:

Neuroscience enters this image [of explanation] as a source of evidence, arbitrating between [functional analyzes] in competition and, ultimately, as the source of an explanation of the biological realization of functionally described psychological systems (p 135).

In this way, it is seen how different types of non-causal scientific laws (nomic attributions, laws of composition, and laws of instantiation) play a fundamental role in the construction of a complete explanation of the psychological effects. Cummins' proposal does not explicitly distinguish between laws of nature and laws of science, but it does not seem problematic to formulate his thesis in epistemic terms, such as asserting

that certain (non-causal) types of laws or principles of science play an explanatory role in the context of functional analysis.

Mechanism and the Argument of the Epistemic Indispensability of Laws

Certainly, canonical mechanistic philosophers such as Machamer, Darden, and Craver (2000) and Craver (2007) do not consider that the traditional concept of 'strict scientific law' has any use in the reconstruction of explanatory patterns of neurobiology, neurosciences, or cognitive sciences. Very few, if any, of the generalizations that appear in the biological sciences are 'strict', in the same sense in which the laws of Newtonian mechanics were traditionally considered to be. Strict laws are universal, general, they are not vaguely true, they have no exceptions, they are projected and they are nomically necessary, as Leuridan (2010) summarizes. The generalizations of the biological sciences, on the other hand, are limited in scope, stochastic, mechanistically fragile, and historically contingent, a characterization in which Beatty (1995), Weber (2005), and Craver (2007) agree.

Craver (2007) illustrates these characteristics of biological generalizations with an example taken from neuroscience: the phenomenon of long-term potentiation (LTP). The phenomenon of LTP can be characterized as an increase in synaptic efficiency in a population of postsynaptic neurons as a result of the application of a sequence of stimuli in presynaptic neurons. In particular, this phenomenon involves: (i) an increase in the amplitude of the excitatory potential of each postsynaptic neuron; (ii) an increase in the amplitude of the potentials of the population as a whole; (iii) a reduction in the latency of such potentials. Well, first of all, the LTP, qua natural regularity, has a limited scope. It is not a feature of all cells, nor of all chemical synapses; it changes from organism to organism, from one brain region to another, etc. Second, it is a stochastic generalization. Today, scientists are able to induce an LTP in about 50% of cases. Third, LTP is mechanistically fragile, its manifestation can vary and even be prevented due to alternations in the stimulus, in the background conditions, or in the components of the underlying mechanism. Lastly, the phenomenon of LTP is physically contingent. It is, as Beatty (1995) asserts, the product of contingencies in the evolutionary history of certain organisms. There was a time when no organism in the world manifested LTP and there is a physically possible world in which no organism ma-

nifests LTP. Since the aforementioned characteristics are not unique to LTP, but are common to most biological generalizations, the conclusion reached by mechanists, such as Craver (2007), is that ‘there are no natural biological laws’; in the sense that the generalizations of biology do not include strict regularities (that is, universal, general, without exceptions, physically necessary, etc.).

Many of the mechanistic philosophers accept this conclusion, namely that there are no natural biological laws. For the same reason, there are no natural cognitive laws either. Do mechanists further argue that generalizations from the biological sciences in general, and from the cognitive sciences in particular, play no central or indispensable epistemic/explanatory role in the scientific models in which they appear?

Leuridan (2010) interprets mechanists as holding that neither scientific laws nor natural regularities explain why a certain phenomenon occurs. There is no lack of textual evidence for this interpretation. In the founding article on mechanism, Machamer Darden and Craver (2000) argue, not only that the notion of strict law of nature has no application in biology, but that the concept of ‘activity’ can perform all epistemic/explanatory functions traditionally attributed to scientific laws. In the proposed analysis of these authors, a mechanism is a complex of entities and activities organized in such a way that they are productive of regular changes from starting conditions to termination conditions (Machamer, Darden, and Craver, 2000). Entities are the parts or components in mechanisms. They have properties that allow them to be involved in a variety of activities; Typically, such entities possess location, size, structure, and orientation. In molecular biology and neurobiology, the hierarchy of mechanisms ‘bottoms out’ in describing the activities of entities such as macromolecules, smaller molecules, and ions. Activities are the causal components in mechanisms. The activities in which the hierarchy of mechanisms bottoms out can be classified, according to Machamer Darden and Craver (2000), into at least four types: geometric-mechanical, electrochemical, energetic (thermodynamic), and electromagnetic activities. Finally, the entities and the activities of the mechanisms present a certain spatial and dynamic organization that guarantees the productive continuity of the mechanism. At this point, the authors ask themselves: is the specification of scientific laws indispensable for the characterization of the activities of a mechanism? The answer that Machamer Darden and Craver (2000) offer in this text is clearly negative:

Sometimes the regularities of activities can be described by laws. Other times they can’t. For example, Ohm’s law can be used to describe aspects



of the activities in the neurotransmission mechanism. But there are no laws that describe the regularities of binding of proteins to regions of DNA. However, the notion of activity carries some of the characteristic features associated with laws. Laws are considered as determinate regularities. They describe something that acts in the same way under the same conditions: i.e., same cause, same effect. The same can be said of the mechanisms and their activities. A mechanism is a series of entity activities that produce termination conditions on a regular basis. These regularities are not accidental and support counterfactuals insofar as they describe activities (...) There is no philosophical advance postulating an additional entity, a law, as underlying the productivity of the activities (p. 7-8).

Apparently, for these authors, not only the notion of strict natural law, but also the more general notion of a scientific law is dispensable in the characterization of mechanistic models. In the first place, they seem to suggest that every scientific law describes the activity or capacity of some kind of entity, whether of a system or a component of a system. Second, not every activity has a corresponding description in terms of some scientific law (the example they provide is that of the linkage process between DNA and a protein). Third, all those traits or virtues traditionally attributed to scientific laws—in particular, natural necessity and the support of counterfactuals—can be directly attributed to the activities coincidentally constitutive of a mechanism. Therefore, it is the activities of the component parts of the mechanism that carry the genuine explanatory weight. Such statements appear even in more recent contributions to the mechanistic literature. Thus, Kaplan and Craver (2011) emphasize that:

(...) Mechanism models frequently involve mathematical descriptions of the causal relationships in a mechanism. This gives the erroneous impression that the explanation in such cases involves subsumption under generalizations and that it is the generalization that is performing the explanatory task. In fact, however, the generalizations are explanatory because they describe the causal relationships that produce, underlie, or maintain the *explanandum* phenomenon (p. 612).

Next, it is argued that, from the mechanistic philosopher's own point of view, there are good reasons to reject the thesis of the epistemic/explanatory irrelevance of scientific laws in the characterization of mechanisms. An argument is put forward that stresses two crucial premises based, first, on the criteria for distinguishing between relatively unproblematic descriptions of activities, on the one hand, and so-called 'filler terms', on the other, and, second, in the demand for quantification of the

dynamic principles of the organization of mechanisms. This argument can be outlined as follows:

Argument of epistemic necessity [AEN]

1. A complete mechanistic model requires the specification of the activities and the organization of the mechanism that underlies this phenomenon.
2. Scientific laws are indispensable for the specification of the nonproblematic activities of a mechanism.
3. Scientific laws are indispensable for the specification of the dynamic organization of a mechanism.
4. Therefore, scientific laws are indispensable for the specification of a complete mechanistic model.

108



The AEN-2 premise is based on the conceptual distinction between ‘sketches’ of mechanisms, at one extreme, and models that offer an ideally complete description of a mechanism, at the other extreme, as elucidated by Craver (2006; 2007) and Bechtel and Abrahamsen (2005). A sketch of a mechanism is an incomplete model of a mechanism. While some of the terms or parameters that appear in the model characterize specific parts of the mechanism or their corresponding activities, others are mere ‘filler terms’. Some of the most common filler terms for activities are ‘cause’, ‘activate’, ‘encode’, ‘inhibit’ or ‘render’. These terms indicate some part or activity postulated in the mechanism, but “do not offer any details about how that activity is carried out” (Craver, 2006, p. 360). The limit case of mechanism sketch is constituted by the ‘phenomenal models’. In a phenomenal model, no parameter represents some part or activity of the mechanism underlying the phenomenon. At the other pole of the classification are ideally complete descriptions of a mechanism. In these models, the terms or parameters represent all and only the parts and activities that are explanatory relevant for each aspect of the *explanandum* phenomenon. Of course, the everyday life of modeling in science occurs at the intermediate points of this continuum; there are the ‘mechanism schemes’, for example, those models that represent some components of the mechanism, but omit other components, either because they are irrelevant in the context of certain specific explanatory demands, or whose features are unknown structural, functional or dynamic.

On the one hand, for mechanists such as Machamer, Darden, and Craver (2000) and Craver and Darden (2001) there is a set of types of geometric-mechanical, electrochemical, thermodynamic, and electro-

magnetic activities in which the mechanistic explanation in biology hits bottom. This means that the parameters that represent these types of activities cannot be considered *prima facie* as filler terms, but are part of the theoretical body available for scientific modeling. Some examples of these relatively fundamental activities are the rotation of the alpha-helix in sodium ion channels (mechanical activity), the formation of a covalent bond between amino acids in a protein (electrochemistry), the diffusion of certain ions through the cell membrane (thermodynamic) or the conduction of electrical impulses through nerves (electromagnetic). On the other hand, concepts or terms of activities such as ‘cause’, ‘encode’, ‘inhibit’ are exemplary of filler terms, for example, terms that are in place of some activity with respect to which we do not know exactly how it is carried out. Now, what is it that distinguishes the terms for relatively fundamental, or unproblematic, activities from the filler terms? Why is “ionic diffusion” an activity that is part of the stock of concepts at hand for mechanistic modeling, but ‘storage of representations’ is not?

The common thread of the answer to these questions can be found in Weber (2005). This author focuses on a specific process that is part of the action potential mechanism: the passive transport of ions through the membrane. This process is the result of the action of two different types of forces. First, there is an electromagnetic force. The fact that the positive and negative charges are unevenly distributed on both sides of the membrane creates a net Coulomb force that moves the sodium ions through the membrane. The second force is osmotic. The ions are always in thermal random movement, constantly bouncing off the lipid membrane. Therefore, more ions will cross the membrane from the side where the ionic concentration is higher. There is a state of equilibrium in which these two forces cancel and which is given by the Nernst equation:

$$[1]E = \frac{RT}{zF} \ln \frac{[X]_o}{[X]_i}$$

In this equation, R is the gas constant, T is temperature (in degrees Kelvin), z is the valence of the ion, F is the Faraday constant, and $[X]_o$ and $[X]_i$ are the ionic concentrations outside and inside the cell membrane. If the ion concentrations are not in equilibrium with the membrane potential, then there is a net force that is proportional to the potential difference between the membrane voltage and the equilibrium voltage for that type of ion.

Well, as Weber (2005) points out, what this brief explanation shows is that the passive transport of ions is explained in terms of at least two scientific laws: Coulomb's law, which specifies the force with which charged bodies attract or repel each other, and the Nernst equation, which specifies the equilibrium state for passive ion transport. Weber's conclusion is that, at least in some specific cases, it appears that laws of nature are required to understand how certain activities arise and develop. However, Weber (2005) concedes that this conclusion can be reformulated in terms of the laws of science, in such a way that "we could use the so-called semantic conception of theories to say that the model [of the action potential] is a physical theory -chemistry that incorporates some biological information" (p. 27)

The example of passive diffusion shows that the possibility of making explicit an acceptable mechanistic criterion to draw the distinction between the concepts of 'non-problematic activities' and 'filler terms'. In the context of scientific modeling, certain activity concepts are considered relatively unproblematic (i.e., as those in which mechanistic research stops) only if such processes or activities can be subsumed under some confirmed scientific principles or laws. Given the classification of fundamental activities by Machamer, Darden, and Craver, the relevant scientific laws for mechanism are those of the theories of mechanics, chemistry, thermodynamics, electrodynamics (and the various theories between those fields). Since the well-confirmed scientific laws that would specify activity terms such as 'memory storage' or 'rotate visual representation' are supposedly unknown, the latter cannot be considered relatively unproblematic in the construction of a complete mechanistic description.

Another important point is that the example of passive transport makes it possible to question the (perhaps implicit) thesis of mechanist according to which the scientific laws involved in mechanistic models can only, —their only function is— specify the activities or capacities of the parts of a mechanism. It could be argued, following Cartwright (1983) that Coulomb's law only describes the 'ability' of charged bodies to be moved by other charged bodies under certain conditions. However, this defense does not apply to the Nernst equation. Since it is a thermodynamic law, the equation specifies the behavior of a piece of matter without paying attention to the causal details of the processes involved; *a fortiori*, thermodynamic laws do not refer to capacities possessed by individual objects.

In the context of the Nernst equation, although ions have an 'ability' to move or be moved by other ions, what they do not have is the ability to try to equilibrate across the membrane. Perhaps the electrochemical gra-



dient across the membrane has this capacity, but it is not a component part of the mechanism, it is not even a material object, as Weber (2005) points out. This example shows that, at least in the case of some scientific laws involved in mechanistic models, the function of such laws is not linked to the specification of the activities carried out by the parties. In sum, it is clear that the thesis of the epistemic/explanatory irrelevance of scientific laws cannot be accepted by the mechanistic philosopher. Rather, this thesis is required by a good elucidation of the mechanistic distinction between sketches, diagrams, and ideally complete descriptions of mechanisms.

The AEN-3 premise focuses on the indispensability of scientific laws in specifying the dynamic organization of a mechanism. This indispensability can be illustrated with the paradigmatic example of a successful mechanistic explanation proposed by Craver (2007), the explanation of the action potential using the ion channel theory. From a Hempelian, nomological-deductivist perspective, it could be thought that the electrophysiological model of Hodgkin and Huxley (1952) of the ‘action potential’ explained the development of the nerve impulse through the neuronal membrane by means of certain principles or dynamic laws, collected in the Differential equations of the model, which essentially represented the changes in the selective permeability of the membrane. For mechanistic philosophers, on the other hand, the Hodgkin and Huxley model is a phenomenological model or, at best, the incomplete sketch of the mechanism of the action potential. The main reason is that the Hodgkin and Huxley model includes filler terms. The ‘activation’ and ‘inactivation’ of certain ‘active transport particles’ of ions were activities (and parts) postulated by the model, but for whose existence there was no evidence of any kind. In fact, that initial hypothesis turned out to be empirically inadequate and was consequently rejected. According to Craver (2007):

C.M. Armstrong (1981) and Bert Hille (1992), among others, elevated the discourse of specific ion channels above the status of filler terms. In Hille’s model, now part of neuroscience textbooks, conductance changes in action potentials are explained by the temporally coordinated opening and closing of channels through the membrane (p. 116).

In Hille’s theory of ‘ion channels’, above a certain threshold of depolarization of the cell, a large number of sensitive channels Na^+ open, which dramatically increase the conductance through the cell membrane allowing the entry of ions of the Na^+ intracellular medium. This flux of sodium ions drives the cell voltage to approximately the equilibrium

potential of Na^+ and accounts for the rising phase of the action potential. The depolarization of the membrane produces the inactivation of specific channels of Na^+ ; In addition, it activates another type of ionic channels that are specifically sensitive to potassium ions K^+ : these then diffuse from the intracellular fluid to the extracellular environment. The diffusion of potassium ions returns the potential of the membrane to its equilibrium potential. Since these K^+ channels take a relatively long time to return to their closed state, the membrane enters a hyperpolarization phase, during which it is less excitable. Despite the fact that Armstrong and Hille's explanation pattern was clearly mechanistic, tending to identify the specific parts and activities responsible for the action potential phenomenon, Craver (2007) maintains that the proposal of these researchers constituted a mechanism scheme. There was still, according to Craver, filler terms; in particular, the question of how the channels were 'activated' and 'deactivated' was still pending.

Craver focuses on reconstructing the empirical investigations of these activities postulated for the case of specific channels of Na^+ (see Hille, 1992). In modifying the example slightly and reviewing the empirical research on the way in which the activation of potassium channels K^+ takes place. This shift in focus makes it possible to highlight the importance of the specification of certain scientific laws in a relatively more complete description of the activities of a mechanism, i.e., one that replaces padding terms with relatively unproblematic concepts.

The fundamental leap in the scientific understanding of the structure of K^+ channels is relatively recent. In Doyle et al. (1998), a disciple of Hille, Rod Mackinnon, and members of his laboratory, succeeded in applying experimental X-ray diffraction crystallography techniques to reconstruct the three-dimensional structure, at the atomic level, of channel *KcsA*—a channel of potassium from the bacterium *Streptomyces lividans*. The *KcsA* structure consists of 396 amino acid residues (or 3504 atoms). The channel is constructed of four subunits of a peptide chain tetramer, each consisting of an outer helix, an inner helix, a pore helix, and a selectivity filter. The protein atoms form a central pore through these subunits, as reported by Chung and Kuyucak (2002) (see Figure 1).



Figure 1
The sculpture 'The Birth of an Idea' by Julian Voss-Andreae
based on the KcsA potassium channel



Source: Photo by Dan Kvitka. Sculpture commissioned and owned by Roderick MacKinnon.

MacKinnon won the Nobel Prize in 2004 for this description of the atomic structure of the *KcsA* channel. However, the same researcher considers that the task is far from being concluded and states:

Many questions remain unanswered. I suspect that the ions in the pore interact with each other through the structure of the protein. To test this idea, however, higher resolution data on selectivity filter chemistry are required, and perhaps protein dynamics studies (Hille, Armstrong, & MacKinnon, 1999, p. 1109).

He is not wrong. Most recent reviews of advances in the field of ion channels, such as Kuyucak and Bastug (2003), point out that the discovery of the atomic structure of channels like *KcsA* has changed the fo-

cus of theoretical studies in the area, from qualitative models to quantitative models in which it is intended to specify the functional and dynamic aspects of the permeability of the channels, starting from the information available about the molecular structure. In this sense, computational modeling provides a complementary source of understanding regarding crystallographic experiments. As Chung and Kuyucak (2002) point out:

During the last few years, there have been enormous advances in our understanding of structure-function relationships in biological ion channels. The sudden advance has been the product of the combined effort of experimental and computational biophysicists, who have brought to light the working principles of these exquisitely designed biological macromolecules that regulate ionic gradients across the living membrane (...) Many aspects of Observed macroscopic properties of ion channels are being considered by stochastic dynamics and molecular simulations. Intuitive and claimed explanations of ion permeability and selectivity are beginning to be replaced by quantitative statements based on rigorous physical laws (p. 268).

114



The contemporaneously accepted explanation of the action potential basically consists of the ion channel scheme proposed forty years ago by Hille. This scheme proposes certain component parts or entities and activities, for example, the activation and inactivation of ion channels. Recently, MacKinnon has identified, with an atomic level of detail, the structure of these channels, in particular, of the potassium channels in certain bacteria. However, this theoretical and experimental achievement, rather than constituting a 'resting point' for the research, rather implied the launching of a set of computational modeling works aimed at quantitatively representing the activities and the dynamic organization of the concrete components, which guarantee the productive continuity of the mechanism. The need for such models should be clear at this point in the argument: without such quantitative understanding and in accordance with well-confirmed scientific laws, representations of ion channel activities are mere filler terms, which cannot be considered as relatively nonproblematic and well understood.

Considering that it is a paradigmatic exemplar of mechanistic explanation, the requisiteness of dynamic principles in explaining the action potential strongly suggests that such principles will be equally indispensable in the construction of many other, if not most, of the mechanistic models in biology and cognitive sciences.

This long argument in favor of the necessity of the laws of science for the specification of mechanistic models should not be read as a criti-

que of mechanism. According to a charitable interpretation, it is notable that, in key passages of their texts, mechanists kindly accept the indispensable nature of this type of scientific principle, both for the fundamental description of activities (AEN-2), and for the description of the organization. Mechanism dynamics (AEN-3).

Regarding the general thesis of epistemic indispensableness, Craver and Kaiser (2013) state, against Leuridan, that:

In short, no mechanist denies that biologists look for regularities and routinely formulate [non-strict] generalizations that can be used for prediction, explanation, and control of phenomena. In fact, it is difficult to see how any significant human activity can be carried out without discovering and representing (in some sense) such regularities (p. 130).

Following Bogen (2005), Craver and Kaiser emphasize the variety of epistemic roles that the principles of scientific models can play in the search for mechanisms, among others, describing the phenomenon to be explained, describing some restrictions on acceptable mechanistic models, calculate quantitative parameters relevant to the mechanism and simulate the behavior of the mechanism. For their part, Bechtel and Richardson (2010) suggest, perhaps surprisingly, that to the extent that they emphasize the study of scientific models over the study of general theories, their mechanistic proposal is not incompatible with the family of semantic conceptions. of theories. In most semantic conceptions, such as that of Giere (1988) mentioned by the authors, certain principles (or 'laws of science') are indispensable for the specification of scientific models.

The mechanistic acceptance of the necessity of the laws of science is even clearer if we focus on the premise AEN-3. Thus, for example, in the context of a review of certain overly strong statements made by Machamer, Darden, and Craver, Kaplan and Craver (2011) argue the following:

Frequently, the features of the spatial and temporal or dynamic organization of the components and their activities are explanatory relevant and are included in [mechanistic] models (...) Mechanisms are frequently described using equations that represent how the values of the component variables change with each other. Mathematical description, although not essential for all mechanistic explanations, is certainly a useful tool for characterizing complex interactions between components, even in moderately complicated mechanisms (p. 606).

Thus, for these authors, scientific principles can be 'useful tools' in the adequate representation of the dynamic organization of mechanisms, as long as they reach a relatively low threshold of complexity. Although

useful, such principles appear to be optional. Now, this excessive prevention of Kaplan and Craver can be questioned, since what alternative do we have to the use of such dynamic principles in the representation of complex systems? On this point, I agree with mechanists such as Bechtel and Richardson (2010), and Bechtel and Abrahamsen (2010), who point out that the ‘complexity threshold’ for the use of dynamic equations is quickly exceeded in most —if not all— biological systems studied by neurobiology or cognitive sciences. Bechtel and Richardson (2010) even go so far as to formulate the very thesis of requisiteness, according to which the specification of dynamic laws is a necessary requirement for the construction of complete mechanistic explanations:

As the number and importance of interactions increases, so does the complexity of explanatory problems. The task of constructing an explanation for a given domain can be seen as the task of finding a sufficient number of variables, of constraints on the possible values of those variables, and the dynamic laws that are functions of those variables. These laws make it possible to use the model to predict future states of affairs from descriptions of preceding states (p. 21).

Given this textual evidence, it is prudent to reconstruct the mechanistic position as accepting the thesis of the explanatory requisiteness of scientific laws (not so of natural laws, whether strict or not). If the opposite interpretation on which Leuridan’s (2010) argument is based was chosen, then the argument presented in this section would constitute a critique of the mechanistic conception. The point is that this interpretation of Leuridan runs the risk of attacking a ‘straw man’: a thesis not defended by anyone and rejected by all the participants in the debate. Therefore, it can be concluded that, under a charitable interpretation of the mechanistic conception, it commits itself, like the functional analysis of Cummins (1983), to the thesis of the epistemic/explanatory indispensability of the principles or laws of science, at least for the case of mechanistic models in biological or cognitive sciences.

Conclusions

This article defends the indispensability of scientific laws in the field of cognitive sciences.

The distinction between the laws of science and the laws of nature was introduced.



It is evident that both those who defend and those who reject the existence of intentional causal laws assume that these laws do not contribute to the functionalist or mechanistic explanation of the phenomena they describe.

It is argued that functional analysis requires the specification of non-causal scientific laws.

An argument is made in favor of the epistemic necessity of scientific laws for mechanistic explanation.

Scientific laws (though not necessarily the laws of nature) play an indispensable epistemic role in explanation in cognitive science.

Bibliography

BEATTY, John

- 1995 The Evolutionary Contingency Thesis. En Gereon Wolters, James Lennon y Peter McLaughlin (Eds.), *Concepts, Theories and Rationality in the Biological Sciences* (pp. 45-81), Pittsburgh, University of Pittsburgh Press.

BECHTEL, William & ABRAHAMSEN, Adele

- 2005 Explanation: A Mechanist Alternative. *Studies in the History and Philosophy of Biological and Biomedical Sciences*, 36, 421-441. <https://doi.org/10.1016/j.shpsc.2005.03.010>

- 2010 Dynamic Mechanistic Explanation: Computational Modeling of Circadian Rhythms as an Exemplar for Cognitive Science. *Studies in History and Philosophy of Science*, 41, 321-333. <https://doi.org/10.1016/j.shpsa.2010.07.003>

BECHTEL, William & RICHARDSON, Robert

- 2010 *Discovering Complexity*. Cambridge, MIT Press.

BOGEN, James

- 2005 Regularities and Causality. Generalizations and Causal Explanations. *Studies in History of Philosophy of Biology and Biomedical Sciences*, 36, 397-420. <https://doi.org/10.1016/j.shpsc.2005.03.009>

CARTWRIGHT, Nancy

- 1983 *How The Laws of Physics Lie*. Oxford, Clarendon Press.

CHUNG, Shin-Ho & KUYUCAK, Serdar

- 2002 Ion Channels: Recent Progress and Prospects. *European Biophysics Journal*, 31, 283-293. <https://doi.org/10.1007/s00249-002-0216-4>

CRAVER, Carl

- 2006 When Mechanistic Models Explain. *Synthese*, 155, 355-376. <https://doi.org/10.1007/s11229-006-9097-x>

- 2007 *Explaining the Brain: Mechanisms and the Mosaic Unity of Neuroscience*, Oxford, Clarendon Press.

CRAVER, Carl & DARDEN, L.

- 2001 *Discovering Mechanisms in Neurobiology: The Case of Spatial Memory*. En Peter Machamer, Robert Grush y Peter McLaughlin (Eds.), *Theory and Method in Neuroscience* (pp.112-137), Pittsburgh, University of Pittsburgh Press.



- CRAVER, Carl & KAISER, Marie
2013 Mechanisms and Laws: Clarifying the Debate. En Hsiang-Ke Chao, Szu-Ting Chen y Roberta Millstein (Eds.), *Mechanism and Causality in Biology and Economics* (pp. 125-145), Dordrecht, Springer.
- CUMMINS, Robert
1975 Functional Analysis. *Journal of Philosophy*, 72(20), 741-765. <https://bit.ly/2LPROEb>
1983 *The Nature of Psychological Explanation*. Cambridge, MIT Press.
2000 'How Does It Work?' Vs. 'What Are The Laws': Two Conceptions of Psychological Explanation. En Robert Cummins, *The World in the Head* (pp. 282-310). Oxford, Oxford University Press.
- DENNETT, Daniel
1969 *Content and consciousness*. Londres, Humanities Press.
- PÉREZ, Diana
1995 ¿Leyes causales intencionales? *Revista Latinoamericana de Filosofía*, 20(1), 67-81.
- DOYLE, Declan, CABRAL, João, PFUETZNER, Richard, KUO, Anling, GULBIS, Jacqueline, COHEN, Steven, CHAIT, Brian & MACKINNON, Robert
1998 The Structure of the Potassium Channel: Molecular Basis of K⁺ Conduction and Selectivity. *Science*, 280, 69-77. <https://doi.org/10.1126/science.280.5360.69>
- FODOR, Jerry
1987 *Psychosemantics*. Cambridge, MIT Press.
1991 You can fool some of the people all of the time, everything else being equal; Hedged laws and psychological explanations. *Mind*, 100(1), 19-34. <https://doi.org/10.1093/mind/C.397.19>
1994 *The Elm and the Expert. Mentalese and its Semantics*. Cambridge, MIT Press.
- GIERE, Ronald
1988 *Explaining Science*. Chicago, University of Chicago Press.
1999 *Science without Laws*. Chicago, University of Chicago Press.
- HILLE, Bert
1992 *Ions Channels of Excitable Membranes*, Sunderland, Sinauer.
- HILLE, Bert, ARMSTRONG, Clay & MACKINNON, Robert
1999 Ion Channels: From Idea to Reality. *Nature Medicine*, 5, 1105-1109. <https://doi.org/10.1038/13415>
- HODGKIN, Alan & HUXLEY, Andrew
1952 Quantitative Description of Membrane Current and Its Application to Conduction and Excitation in Nerve. *Journal of Physiology*, 117, 500-544. <https://doi.org/10.1113/jphysiol.1952.sp004764>
- KAPLAN, David & CRAVER, Carl
2011 The Explanatory Force of Dynamical and Mathematical Models in Neuroscience: A Mechanistic Perspective. *Philosophy of Science*, 78, 601-627. <https://doi.org/10.1086/661755>
- KUYUCAK, Serdar & BASTUG, Turgut
2003 Physics of Ion Channels. *Journal of Biological Physics*, 29, 429-446. <https://doi.org/10.1023/A:1027309113522>



- LEURIDAN, Bert
 2010 Can Mechanisms Really Replace Laws of Nature. *Philosophy of Science*, 77, 317-340. <https://doi.org/10.1086/652959>
- LORENZANO, Pablo
 2007 Leyes Fundamentales y Leyes de la Biología. *Scientia Studia*, 5(2), 185- 224. <https://doi.org/10.1590/S1678-31662007000200004>
- MACHAMER, Peter, DARDEN, Lindley & CRAVER, Carl
 2000 "Thinking About Mechanisms", *Philosophy of Science*, 67, 1-25. <https://doi.org/10.1086/392759>
- SCHIFFER, Stephen
 1991 Ceteris Paribus Laws. *Mind*, 100, 1-17. <https://doi.org/10.1093/mind/C.397.1>
- SKIDELSKY, Liza & PÉREZ, Diana
 2005 La distinción personal-subpersonal y la autonomía de la explicación de nivel personal en Dennett. *Manuscrito*, 28(1), 77-112. Recuperado de: <https://bit.ly/3r6NznQ>
- SKIDELSKY, Liza
 2003 "Realismo Intencional, Eliminativismo y Psicología Científica", *Análisis Filosófico*, 23(1), 13-39. Recuperado de: <https://bit.ly/37tHBpc>
- SWARTZ, Norman
 1995 *A Neo-Humean Perspective: Laws as Regularities*. En Friedel Weinert (Ed.), *Laws of Nature: Essays on the Philosophical, Scientific and Historical Dimensions* (pp. 67-91), New York, de Gruyter.
- VAN FRAASSEN, Bas
 1989 *Laws and Symmetry*. Oxford, Clarendon Press.
- WEBER, Marcel
 2005 *Philosophy of experimental biology*. Cambridge University Press.
- Weiskopf, Daniel
 2011 Models and Mechanisms in Psychological Explanation. *Synthese*, 183, 313-338. Recuperado de: <https://bit.ly/37xNZM4>

Document reception date: July 6, 2020
 Document review date: September 15, 2020
 Document approval date: October 15, 2020
 Document publication date: January 15, 2021

RE-THINKING THE SUBJECT IN THE FIELD OF COGNITIVE SCIENCES

Re-pensar al sujeto en el campo de las ciencias cognitivas

JONATHAN CEPEDA SÁNCHEZ*

Educational Services of the State of Chihuahua, Mexico
gathering-jona@hotmail.com

Orcid code: <https://orcid.org/0000-0001-5961-6545>

Abstract

In this article a documental review is unfolded that has as fundamental objective to analyze the relevance of cognitive science in articulation with educational field. For the sake of reflecting about notion of subject, it is determined important to review the neoliberal speech and its inscription in the enigma of subjectivity. To resignify the human experience factor, implies to overcome challenges of biological reductionist vision, to privilege the maxim of unconscious knowledge. The hermeneutical overview of this document takes up an interdisciplinary scaffolding, which base is represented by disciplines like: philosophy, neuroscience and psychoanalysis. To this effect, it is considered necessary to carry out a change of paradigm shift that ponders over History and subjective constitution, in opposition of practices that degrade the uniqueness of human being. To prioritize the influence of social environment on students 'life, joined to safeguard their mental, physical and psychological development, it is outlined as a key requirement to hold an ideal operation of nervous system and construction of psychism. It is imperative to extend the advance of science to the auspices of public politics, to link neuroscientific knowledge and subjective condition to teachers training spaces, it is an exercise of educational prophylaxis.

Keywords

Knowledge, psychoanalysis, philosophy, neoliberalism, history.

Suggested citation: Cepeda, Jonathan (2021). Re-thinking the subject in the field of cognitive sciences. *Sophia*, colección de Filosofía de la Educación, 30, pp. 121-149.

* Doctor of education. Master in Clinical Psychology with a psychoanalytic approach. Degree in Psychology. Special education counselor/psychologist in Chihuahua, Mexico. Integral Family Development Psychotherapist (DIF) Bachiniva, Mexico

Resumen

En el presente artículo se despliega una revisión documental que tiene como objetivo fundamental, analizar la relevancia de las ciencias cognitivas en articulación con el ámbito educativo. En aras de reflexionar sobre la noción de sujeto, se determina importante revisar el discurso del neoliberalismo y su inscripción en el enigma de la subjetividad. Resignificar el factor de la experiencia humana implica sortear los desafíos de la visión biológica-reduccionista, para privilegiar la máxima del saber inconsciente. El recorrido hermenéutico de este documento retoma un andamiaje interdisciplinario, cuya base es representada por disciplinas como la filosofía, las neurociencias y el psicoanálisis. En tal sentido, se considera necesario efectuar un cambio de paradigma que pondere la historia y constitución subjetiva, en contraposición de prácticas que degradan la singularidad del ser humano. Priorizar la influencia del entorno social en la vida de los educandos, aunado a salvaguardar su desarrollo mental, físico y psicológico, se perfila como un requisito clave para sostener un funcionamiento idóneo del sistema nervioso y construcción del psiquismo. Es imperativo extender el avance de las ciencias a los auspicios de las políticas públicas, vincular el conocimiento neurocientífico y condición subjetiva a los espacios de formación docente, supone un ejercicio de profilaxis educativa.

Palabras clave

Conocimiento, psicoanálisis, filosofía, neoliberalismo, historia.

122



Introduction

The study of cognitive science today represents a revolutionary movement to understand the human being, through the findings of neural plasticity and the transcendence of learning in context, it is possible to capture more clearly the functioning of the central nervous system and, therefore, reflect on everyday aspects such as the learning of students, or where appropriate, human behavior.

Among the advances observed in this interdisciplinary construct, the one that has to do with the understanding and functioning of mind-body dualism stands out, specifically with the emotional component. Among the advances observed in this interdisciplinary construct, the one that has to do with the understanding and functioning of mind-body dualism stands out, specifically with the emotional component. Although it is true, this represents perhaps one of the main challenges, as Martínez (2000) already mentioned, its dynamic foundation has made it possible that, in the case of educational discourse, there is a synchronization between the development of adolescence with the structural changes of the brain.

Although the relevance of the neuroscientific field contributes to strengthening the educational response and understanding of the human mind, the conception of subjectivity, as a process of dynamic configuration, provides a theorization and approach different from that of a neurological basis. According to Pajares (1992), the set of elements

rooted in the field of study of perceptions is configured by those beliefs and points of view that certain subjects experience in their contextual reality, so that interpellating the subjective meaning is equivalent to specifying what was underlined by Socolovsky (2014), “subjectivity itself is not something quantifiable or static, nor is it physical or traceable in inheritance and it does not encompass only conscious but also unconscious experience” (p. 175).

Therefore, the purpose of this study is to analyze the discourse of subjectivity in correlation with those disciplines focused on the understanding of the subject —namely— philosophy, neuroscience, and psychoanalysis. Discussing them allows arguing that singularity, that is, that notion of being and being in the world is inscribed in a dilemma; through a reading on depression and attention deficit disorder, it is determined that although there may be different explanations and opinions about its genesis, the need to recognize the basis of both neural networks and the construction of the psyche, aims to re-signify the history of life, even more so, when living times in which consumerism and globalization challenge becoming a subject.

The structure that the document follows is broken down into the following sections: the relevance of establishing an interdisciplinary work, crossroads of the subject and cracks in the social fabric, insurrection or exclusion of the subject in the study of science.

Information treatment is supported by a bibliographic review of databases and primary sources (books, theses, scientific journals) on the study of cognitive and dialectical sciences of subjectivity. The criteria for the selection and analysis of articles are limited to the following: 1) their international recognition and indexing; 2) contribution to the topic of analysis.

The relevance of establishing interdisciplinary work

The importance of embracing other languages of knowledge lies in the fact that, for a long time, it has been experienced within educational practices, a deployment of actions that have taken into account only the brain as a learning engine, that is, it is part of an isolated vision of intelligence and reason, and thereby the relevance of the context that guarantees meaningful learning and the benefits that anthropology can confer on cognitive sciences are ignored.



For Baker, Salinas, and Eslinger (2012) the contribution of social research has not been sufficiently valued to reduce the knowledge gap between the field of cognitive neuroscience and education, through correlating the importance of social contexts with the findings from evolutionary biology, one can access a scheme where the ‘social neurocognitive’ revolution is conceptualized.

Within educational institutions, diverse knowledge is outlined that will have to be transmitted to students, among which, one has to do with the same knowledge/ability and another that ventures into the external reality. For García (2018) this difference between ‘epistemic subject’ and ‘subject of knowledge’ implies questioning the pedagogical approaches and distinguishing which faculties are played from the position of the teacher and from the students. Rethinking the course of the school career is to reflect on the educational link that consists of the following:

Having thus established the relationship between school administrators and teachers with students and their parents, it can be thought that primarily students are located in a place of “epistemic subjects”, in which they are thought about from the connection with specialized knowledge, they are situated in a region of knowledge that excludes others, which is a way of separating the world from school disciplines. The contents of the school are transmitted to the students regardless of the modes of relationship that they establish with the world. Thus, pedagogical objectives such as “focus on literacy” or wanting them to “reach university” are proposed (García, 2018, p. 104).

There is no doubt that the cultural influence on the training of apprentices is an issue of yesteryear but that today, it continues to generate uncertainty and, at the same time, analysis within the social or educational spaces where it has influence. As Mead (1993) already related in his experiences with the Samoan community, the transition from childhood to adolescence is strongly marked by the cultural environment to which one belongs, the latter introducing a certain set of codes and social norms that, by way of ideals, they represent that which must unquestionably be fulfilled as a choice, at least, propped up on the lures of hope. Here the main conflict and reason for reflection has to do with freedom of choice; the educational and family fields must be shaken off of that belief that to fend for oneself is only way of life:

It is inconceivable that a final recognition of the great number of ways in which man, during the course of history and in the present age,



solves the problems of life, would, in turn, bring about the destruction of our belief in a single norm (Mead, 1993, p. 228).

From other latitudes and referring to López's (2017) scrutiny, the case of the so-called conduct disorders or school disorders is presented, which, in its quality of adherence to a positivist-behaviorist orientation, gave way to the fury of child psychiatry in the Secretariat of Public Education of Mexico in the years 1930 to 1970. Through the remarks that the author develops about the child psychiatry movement in conjunction with the SPE, it is possible to trace a set of actions, theories, and approaches that serve to weave the threads that serve as the basis for the actions of educational practice in relationship with the subject; although he indicates the instrumentation of psychiatric spaces to investigate the genesis of school disorders, giving rise to peidopsychiatry as a kind of link between medical and school discourse, it refers to the fact that given the insufficiency of this perspective to guide explanations, it is valid to not ignore the understanding of an entire educational system, weakened in terms of its structures, and ineffective in its operation. The main reason that led to a radical dissociation according to López (2017) was that:

For thirty years the presence of psychiatrists in the Mexican educational system was sustained under the justification that mental medicine, being the discipline with the greatest knowledge about the physical and mental development of children, could explain and counteract the lack of satisfactory results. in the classrooms (p. 124).

The rise of cognitive sciences in relation to education implies taking up other areas of knowledge to reformulate those concerns that emanate from the enigma of the mind and its correlates with the environment. The purpose of establishing an open field to other dialogues and narratives of being, consists of maintaining an interdisciplinary work not only to identify the difficulties that shake the school structure, but also to counteract the barriers that students and teachers face in their quality of difference.

Although cognitive sciences as mentioned by Medina (2008) are built from other disciplines, their significance and object of study can serve as a basis for understanding certain phenomena that occur in the educational process; the importance of taking into account the context in the student's learning reappears as a crucial situation for pedagogical praxis since, according to Silenzi (2012), it is from this interaction that commitment, ethics, and responsibility of the subjects involved in school

formation can be raised. Its base of action allows to rescue an embedded approach that emphasizes the relationship of man with the world, that is to say, the mind is no longer perceived as an isolated entity, but its social bond with others is enhanced.

From this perspective, it is valid to mention that this way of proceeding is mediated, in terms of Castoriadis (2011), by the society/psyche dualism, by means of which the imaginary construction of institutions is in itself the totality of the universe that encompasses the subjective sense of the people who make it up.

According to Medina (2008) this situation is pressing for the study of the human mind: points out that although it is true there is a tendency to clarify its operation according to the canons of experimentation, its dynamism as a holistic construct does not allow to avoid the intervention of an agent that, in its quality of signifier, gives meaning to the representational field of knowledge. According to the author, this passage reflects a significant fact for the movement of cognitive sciences since it covers the perception of the subject, giving credit to the subjective meanings.

The understandings unveiled by Martínez (2017) show that, in the exercise of mental processes, the representations that the subject makes about certain facts are fixed based on language, from which a series of differences between internal/external can be established, but the imperative, in this case, is to consider that its base is built on a computational scheme. After the vision of comparing the mind to a virtual machine, Dennett (1993) considers that the transformation of the human brain is due to an inscription of language, that is, through words (memas) consciousness is configured.

This is important because it adds elements to the understanding of the human mind, interpellating knowledge of other disciplines by virtue of a reflective act becomes an obligatory task. Thinking about the notion of the subject for Colas-Blaise (2019) represents an integrative exercise whose genesis begins to be structured from the interaction with the other, to then settle in the deployment of reflexivity and action crossed by the marks of language and enunciation. Although the communicative process that emanates from this dynamic visualizes in the distance, on the shores of contemplation, a paradigm mediated by positivism and classical rational character to understand the unity of man, it is important to give ground to the inscription of the intersubjectivity. As stated by (Sarria, 2005) “The subject is not, then, an isolated organization; it is a system that is constituted in exchange, in transactions, in negotiations, in the recognition of the other” (p. 613).



What is revealed here refers to thinking about the modes of anchoring between man and the world, that is, to the way in which the subject is represented as a psychosocial entity. Knowledge of reality will be configured based on the perceptual act and in tune with reminiscences, which according to Vázquez (2017) refer to the symbolic register:

The point of reference to apprehend perception is no longer a previously defined world, which does not depend on the subject who perceives, but rather on the sensory-motor structure of the cognitive agent, in the way in which the nervous system connects sensory and motor surfaces (p.12).

The centrality in the symbolic dimension makes it possible to take into account a capital question, namely, the emotional scaffolding of the subject as a value judgment and belief system, according to the approach of Peres (2015), granting credit to emotions as a set of actions derived from the cognitive component, is equivalent to laying the foundations of rationality, from which parcels of knowledge are installed that come to mark the lineages of intelligence and ethical reasoning “emotions are nothing but the way of being human being-in-the-world, of expressing his connection with things” (p. 224).

Emphasizing emotions as a process of human development is a task that can and should be inserted into the educational field, the functioning of the brain is intimately linked with the emotional dimension, and this, in turn, with the experiences that are registered from contact with the context, therefore, retaking this consideration is not only conceived as a favorable panorama for the subject, but also for society, since as Bernal (2013) states:

(...) For optimal learning to take place, the subject must be emotionally competent, which requires communication between different parts of the brain, the deeper levels that automatically process emotions and the more evolved brain structures that deal with cognitive processes with greater awareness (p.119).

The biological basis of emotions is for Castaño (2017) a dimension that allows human beings to adapt to the world in which they live. Returning to the factor of experiences, the emotional configuration aims to reconsider the crossover that takes place towards the outskirts of the organism; given the plasticity of the brain quadrants, it is elementary to see in what way, what is blurred in the peripheries of sensory perception can make human development drinkable or, where appropriate, dethrone, in light of this the author postulates that:

The value judgments that are internally linked to the biological function of the emotions contribute to the subjective that accompanies the experiences, in such a way that the affective reactions provide meaning to life and behaviors; they show us that we do not act without meaning and that each of our actions is linked to a feeling and its affective valence (p. 11).

The concomitant factor to this scrutiny is that moral development is traversed by the set of emotions that occur in the subject when making value judgments. According to Pinedo (2015), establishing an ethical and moral education that is so demanded today by educational spaces requires working from different areas of knowledge, since as previously indicated, cementing reasoning barely, under the findings of a discipline, as cognitive neuroscience may well be, is to exclude other research axes, which in the words of Martínez, Segura and Sánchez (2011) means:

The debt with empiricism is being too attached to the materiality of cognitive functions. Another way is to collect all the elements that current neurology has discovered without disregarding them and turn to other sources to give way to consciousness (p.180).

Recognition of emotions becomes evident in intervention programs or models that keep a better social adaptation as a badge, beyond its biological basis, the emphasis is placed according to González (2006) on the context, through which it can be given account of a chain of elements that represent expressive behavior. Emotional learning is therefore derived from neuronal attachments, but its specificities will largely depend on the interaction that occurs with the other or with the environment. In this way, Arboccó de los Heros (2015) points out that, in order to potentiate a social adjustment, both the family, school and society must re-feed from neural networks through activation/stimulation mechanisms “The fact of growing, learning, socializing and maturing is related to good brain performance and especially with the neocortex areas” (p. 8).

According to Dosil (2014), this marked dilemma can be re-elaborated from the educational field, the fact of developing actions to redefine the history of the student through a symbolic record contributes to generating more liberating and less repressive conditions and environments.

The management of emotions in the educational context serves as the basis to strengthen the teaching work since, as Benavidez and Flores (2019) point out, based on neurodidactics, teachers can know how the brain learns; the study of the limbic system allows to have a complete vision of the daily life of the students and to develop a praxis of greater flexibility. A retrospective examination of the above allows us to main-



tain that in the relationship of the emotional component with the brain, practices that are not necessarily destructive of the educational field, but rather, of the new styles of parenting are revealed. The central nucleus between cerebral and emotional development must be located in the area of mutual understanding, that is, in the capacity and disposition of the adult to understand not only the physiological needs of the child but also the psychological ones, since as Torras de Bea affirms (2010):

If the neuronal and connection loss is prolonged, it becomes irreversible. This loss of connections means an impoverishment of the psychic capacities of the child, adolescent and adult in the different areas: intellectual, emotional, social, learning capacity (p. 158).

According to Lipina and Álvarez (2011), the processes of globalization, consumerism, and competitiveness stress not only educational and work practices, but also family demands for the care of children and adults. The advancement of the sciences, in particular cognitive neuroscience, is an issue that must be within the reach of governments and systems (education, health) in charge of designing policies focused on human development, however, the false perception of considering neuroscience as a discipline distant from the problems caused by poverty, it is based on the notion that its suitability is low and, therefore, scarce for community development purposes. To counteract this dilemma, it becomes unavoidable to expand and disseminate the knowledge extracted by scientific research, taking into account the factors of ethics and citizen responsibility translates into the following: “Aspiring to this role necessarily implies overcoming the deep gap that exists between knowledge produced in academic centers and its application in a social context” (p. 244).

The consideration of integrating concepts from the science of cognitive development into economic and educational models allows, according to Howard-Jones, Washbrook, and Meadows (2012) to provide valuable tools (early childhood) for the politicians of tomorrow. The investment in this sense must be weighed towards the first years of life.

The gradual discovery of the benefits that these sciences can bring to the educational field should be underpinned in reciprocal dialogue, the study of the mind in conjunction with teaching and learning is for Barrios-Tao (2016) an insufficient question that does not manage to cover all the dimensions of the human being, to the extent that the learner interacts with his context, in that sense, he will be able to establish new channels to apprehend significant knowledge. Likewise, the importance



of considering real contexts and, above all, of contextualizing the spaces where the pedagogical meeting takes place is pointed out.

Recognizing some of the limitations of the study of neurosciences is of vital importance because although they offer valuable ideas to understand learning, the results and knowledge derived from research should be handled with caution, since as determined by the Organization for Cooperation and Economic Development (OECD, 2007):

Educational policy informed by neurobiology simply cannot be imposed on schools—the educational implications of any line of research must be involved in a synergistic interaction with each educational community, in such a way that the appropriate policy for each culture is developed— (pp 232-233).

130



To exemplify the above, it is necessary to take into account the speech of Dolto (1990) who already points out the importance of creating a flexible curriculum, to which all students can easily involve themselves; learning understood as a process of constant evolution must be based on knowledge and skills that are alternative to the basic ones, that is, the teaching that is acquired through experiences and social interaction must also be considered as an elementary function for human development. In addition to these factors (sociological, psychological, and pedagogical), it is necessary to consider another aspect whose analysis lies in the duality teacher/student relationship.

One of the specific advances in this rhetoric refers to the new ways of conceiving adolescence, according to Marina (2014) this process must be accompanied by a new paradigm that ends up disdaining the notion that the brain reaches its maximum development during infancy. On the contrary, the adolescent period becomes an ideal space for learning since there is a refinement of synaptic circuits and processes, which allows, as far as possible, to develop a certain task with greater finitude. As well as this period is fertile ground for human development, it is also represented as a table of risks that, according to the author, are in correspondence with the environment, so that both myelination and synaptic pruning are affected, or in their case favored, by reciprocal interaction. In this exchange, what Choudhury, Blakemore, and Charman (2006) call social cognition unfolds; It is a component of greater structure unlike the infantile period, which is amalgamated with decision-making and emotional understanding.

Crossroads of the subject and cracks in the social fabric

The transgression that the social fabric has suffered in terms of security within the Mexican territory has become a constant source of grievances against the uniqueness and physiological development of children and adolescents. To assume a position like this is to understand that the plasticity of the adolescent brain in terms of Marina (2014) cannot be sculpted, their condition as a person is not subject to a solid structure and, on the contrary, it is exposed to the most perverse forms of violence.

In order to reduce the situations of inequality, injustice, and violence, it is necessary, according to Arzate (2015), to redefine public policies; the multiple forms of marginalization and poverty that are experienced in Mexico represent a situation of encounters and miss encounters with well-being and human development. Although there are efforts in terms of investment, these are insufficient given the marked gap of social inequity, in this sense, it is important to design prevention practices for children and adolescents who are the product of exclusion and discrimination:

(...) Young people cannot be on the street exposed to violence, crime, poverty, and multiple forms of vulnerability; they should, on the contrary, have quality educational opportunities that provide them with the tools to build a dignified and productive future. The school for all, free public and secular, is one of the best projects of the Mexican nation which should not be blurred; Therefore, it is necessary to understand it as one of the priority objectives of democracy and economic development (Arzate, 2015, p. 132).

The above implies making a change in the cultural paradigm that aims to deconstruct how the phenomenon of violence has been installed in the social sphere; violence against children has become a subject of great importance for society in general, the high rates of physical, sexual, and emotional abuse experienced by girls and boys invite us to reflect on parenting styles and ways of coexistence (an ideal environment where the study of cognitive sciences could have a place). According to Jiménez (2019), the damage generated by the manifestations of violence can be serious, transgressing the mental, physical and social health of the people who suffer it. Through these behaviors, neuropsychological alterations are revealed that compromise executive functions.

The relevance of these observations is correlated by that already stated by Stein et al. (1996) who, through a comparative study and

through the use of the interview, express that physical or sexual abuse in childhood is particularly associated with patients with anxiety disorders.

According to the review by Mccrory, De Brito, and Viding (2010), it is specified that, although the neurobiological mechanisms by which child abuse increases vulnerability to psychopathology remain poorly understood, the evidence recorded on adverse situations in Nursing, accounts for a series of alterations in the structure and function of the brain that are harmful to the developing baby. In this sense, the maternal function plays a determining role since the interruption of early care can affect the psychological and emotional development of a child.

The research that Fares (2016) breaks down, agrees that infants who suffer from some type of abuse tend to suffer from neuropsychological affectations and therefore poor cognitive functioning, a specific intervention that takes into account neural plasticity is of utmost importance, since that in this way socio-adaptation difficulties and disorders in adult life can be prevented.

The approaches of Liévano (2013); Urazan and Ávila (2015) who, following the lines of the neurobiology of aggression and violence, demonstrate an articulation between aggressive and violent behavior with brain processes (amygdala, hippocampus, among others); however, these studies should take into account the in-situ context to have greater scope and affinity, since in terms of Ortega and Alcázar (2016):

(...) the concrete expression of aggressive or violent behavior will be promoted, inhibited, or modulated by the society and culture where such behavior is expressed, which will take place during the development of the individual in constant interaction with the subject's brain in order to develop situational models that allow the prevention of violent behavior by a subject in a specific situation (p. 67).

If up to now it has been shown that the phenomenon of violence has its correlates with people's brain function, some authors Liévano (2013), Ortega and Alcázar (2016) and Jiménez (2019) assume that to carry out a comprehensive study of it, it is convenient to reconsider the role of the sociocultural aspects and life history of the person, in such a way that it was possible to expand knowledge towards other frontiers of knowledge and thus apprehend new starting points. In this situation, Novo and Pérez (2009) mention that: "Socio-cultural circumstances are as decisive as the genetic load of the individual, even a two-way communication between these two universes can be ensured..." (p. 81).



Although the thought of Bleichmar (2007) argues that the new forms of violence invite us to think about the processes of desubjectivation, in the case of Mexico the effect that organized crime has on the psychic constitution of girls, boys and adolescents is surprising. The game as such is no longer a space to develop creativity and imagination, its main motive is in the drama of “the good guys” and “the bad guys” polarizing what is instituted as justice. This fantasy in the game is not exclusive to infants, their redirection towards youthful times is disguised under the representation of power and submission that is commonly visualized in everyday life.

The constant flow of encounters and disagreements, of struggles and alliances, as well as of failed attempts to safeguard a singularity, which, according to the capitalist empire, is under the costs of an alienated market, represents the atmosphere through which it is possible to access a ‘cognitive sciences’ episteme that covers social mobilization and resistance but also gives meaning to the psychic configuration of the subject.

It is important to open new areas of knowledge to analyze the discourse of a society engulfed by globalization and consumerism, which in the words of Apreta (2006) tend to reify subjectivity. “Even more significant for the self-understanding of psychiatry is the growing propensity to the neurosciences to declare subjectivity itself as merely an epiphenomenon of brain processes” (p. 38).

This conception is forged in the foundations of the neoliberal sphere that only shows the productivity and competitiveness of the human being, since it is inscribed in market conditions and logic that visualize it more as investment and consumption, than, as a person with a free will, in this way, Vecslir (2017) affirms that:

Neoliberal governmentality finds in the brain a privileged protagonist since from now on this will be the locus of behaviors and decisions, especially those of an economic nature. In this way, the individual is challenged as the exclusive responsible for his living conditions and held responsible for his permanent self-scrutiny, for the development of adaptive and competitive behaviors (p. 99).

On these lines Martínez (2018) expresses that in order to revalue the knowledge of cognitive sciences, it is necessary to avoid with rigorous discipline the actions of a polarizing and confusing nature; It is unintelligible for the conscience to appropriate facts and merely speculative aspirations and lacking scientific judgment since the structure of the cognitive subject can be similar to the representation of a computer, whose genesis is cons-



titled from an information processing system. From this point of view, Fierro (2011) points out that there is a point of agreement between the classical cognitivist model and the connectionist model since both positions work from a computational system that: “allows us to explain the speed with which cognitive and its resistance to damage, that is, very rarely is the whole of a skill engaged; it is almost always partially preserved” (p. 531).

Insurrection or exclusion of the subject in the study of science

The advanced scientific-technological terrain that has been deployed in recent times represents for Cabañes and Rubio (2013) an opportunity to reflect on the notion of the subject; they express that the emerging findings of computational and neurobiological experiments set the course for the new ways of conceiving the future of humanity, they also emphasize the importance of reviewing not only the theories of mind as a unilateral action of cognitive sciences, but also given its hybrid methodology, it is imperative to place oneself on the contours of the subject.

This line of thinking questions a field of study devoid of meaning, since thinking of the subject only from a computational model as an isolated entity and devoid of meaning, according to Sarria (2005) is equivalent to not seeing the historicity that protects and represents it before the Exterior.

Given the complexity of mental processes and human behavior, it is affordable according to Zumalabe (2016), not to disdain, but not to exclusively use the contributions of neurosciences to explain human functioning, thus transcending the importance of articulating in the center of the cognitive sciences, an interdisciplinary network that advocates for interpretive psychological lines. On the contrary, it would mean betting on a practice and ethics that are increasingly remote from reality while a reductionist model is manufactured “... explaining all behaviors and mental phenomena exclusively based on biological mechanisms, chemical reactions, etc., is to grant excessive importance of biological determinism, which implies a radical reductionism” (Zumalabe, 2016, p. 276).

In order to contextualize the above, it is licit to focus attention on a phenomenon that in recent years has gained great relevance in the school environment, it is the construct of ADHD that affects girls, boys, and adolescents so much. It is important to point out the existence of two positions, of two aspects that, keeping the proportions, answer the call of its understanding and treatment.



From the neurophysiological ranks, Martínez and Vasco (2011) point out that the failures in the regulation and behavioral management clearly reflected in these cases are related to alterations in the neurotransmitters whose base of explanation reveals a lack of linkage between the learning of an action and its trigger as a response, thus preventing further reflection on what has already been experienced. In this sense, Ortiz (2009) explains that attention deficit hyperactivity disorder is a psychiatric disorder with a higher prevalence in childhood, whose structure amalgamates a series of important cognitive correlates. Likewise, it points out that there is a tendency to explain its genesis from the functioning and vision of the alteration at the level of the prefrontal cortex, in charge of the executive functions that allow impulse control, planning, and concentration, among other executive variables.

Its treatment becomes controversial since, the pharmacological use as the main response route must be subjected to an analysis that prioritizes the uniqueness of the people and the relevance of the attached social construction, as García, Alda, and Gascón (2012) point out:

The presence of certain symptoms is necessary in order to define a disease, but it is not enough. Psychiatric classifications require that these symptoms produce a deterioration in social, academic, or work activity. This key aspect of the disease is subjective and socially determined (p. 126).

This is interesting given that it reflects a prevailing situation that has to do with the dynamics of ADHD and its progressive correlation with school functioning, in this sense, Avellón (2013) mentions the existence of two positions; while one has to do with the physiological model, the other is positioned in the psychopathological space. Here we can glimpse the risks that are configured and have an effect on the students, when in chess terms their psyche is put in checkmate by labeling said disorder, in view of this, it is postulated that it is essential to consider a psychotherapeutic model since, from this, work can be redirected that allows clarifying the psychic processes of early childhood:

It is in this initial mother or primary caregiver bond that the formation of the psychic is played out, the mind and body, the psychological and the biological being indissolubly united from the beginning. It would be absurd to ignore the biological basis of a given individual, but it would be just as absurd to pretend that only biology determines the psychic functioning of a person (Avellón, 2013, p.18).

The vicissitudes that appear today under the label of attention deficit and other problems that afflict the child-youth population, deserve to be addressed from a holistic perspective; the revelations of Jiménez (2003) show that to the extent that difficulties are manifested at the neuronal level, this implies fissures in the psychic structuring of the individual, so that the professional approach, far from supporting itself in a single position, must take into account both the neurological and emotional development “If these factors are not taken into account there is a risk of confining the child in a diagnosis (sometimes with dire connotations) and in most of the times with asymptomatic approach” (p. 146).

The controversy of this debate is encouraging for the field of research and demands, in that sense, another treatment of the information, however, its analysis allows adding elements of reflection to this article as long as the practice that unfolds in the daily school life is seen benefited. In this vein, it is possible to elucidate some notes that organizations such as the Association for Infant Mental Health since Pregnancy (ASMI, 2015) have expressed in this regard; they state that given the increase in ADHD cases, it is important to establish a critical stance that tends to a more accurate treatment, its characterization and diagnosis from a physiological basis supposes that:

Suffering, as well as the complexity of the human being and his psychic-emotional functioning, are thus limited to reductionist and simplistic conceptions, based on pseudoscientific conceptions of the biological, psychological, social, and genetic that constitute us, presenting us as subjects without subjectivity, subjected to the biological and neurochemical empire of our brain, as if our organism functioned independently, isolated and separated from what we are, what we do and how we live with what we are and do (ASMI, 2015, p. 1).

Far from predicting the relevance of these two positions, it is considered essential to establish a dialogue that helps to understand these disorders in the educational context, it is worth noting that knowledge versed in the auspices of teaching, is not relegated to the encounter with the enigmas and uncertainties of the accelerated technological advance, which, therefore, will lead to a constant reflection on the subject.

In this case, it is so sublime to ratify the construction of a subject based on conformity, on completeness, as the act of recognizing oneself based on superfluous praise is fallacious. It should be mentioned that recognition as such is not the equivalent of a recipe book or a system of



classifications, which can later be argued as valid, but must at all times be established as an unfinished and constantly transforming process.

It is worth mentioning that in this passage the notion of the capitalist system as such refers to thinking about a form of degradation or ‘dehumanization of the fellow man’ as mentioned by Bleichmar (2011). In the enclosure of this scheme, a void appears, a kind of absence that clouds the view, not allowing us to see beyond the projected codes, as if these were by themselves the only way of access to understand the implicit art. This linear interlocation corresponds to forms that deconstruct subjectivity as there is no open field for the construction of ethics and responsibility.

In line with the above, it is feasible to refer to the thought of Merlin (2019) who, from a lucid position, aims to interweave the milestones of neurosciences with the socio-historical moment that represents them, exposes that under these indications of reflection one must undergo meticulous review of the neoliberal socio-political scheme, because beyond being a purely economic model, it is currently reflected as a system that tends to suppress subjectivity through practices and discourses of power such as marketing and a biological approach.

According to Segura (2016), the production of the subject from a neoliberal perspective tends to make subjective conditions invisible and massify, by virtue of installing a process, a discourse, and an ideal that transcends into spaces of consumerism and productivity; the obsession with the establishment of a social order in which each person must be and socialize in the world, according to the universality of social norms and practices, is simply a condemnation of emptiness and reductionism.

The constraints that are added to this framework is that neurosciences, as a means of control to achieve a redirection on the evolution of humanity, are installed as a discipline from which it is possible to access the field of happiness and human dignity; faithful to the footholds of consumerism and the market, they develop a strategy that, rather than favor a comprehensive vision of mental health, demarcates the limits between what can be considered ‘normal’ and ‘abnormal’ according to the statutes that justify the use and pharmacological treatment. Based on the boom in today’s society and the normalizing language in the logics of the economy, Beckdorf (2019) points out that:

Neurosciences challenge emotions with a purpose that is to achieve docility from the subject: the best possible way to govern it, fulfilling the latter in turn with the objectives and ends of market economies that they expect from society, productivity, profitability, and excessive con-

sumption of psychotropic drugs so that their economies function and produce (pp. 28-29).

In this market logic, a problem stands out that erases the subject's intersubjective gear from the map to place it under a regulation, assuming, as García (2011) mentions, the existence of a standard subject from which universal facts can be extracted:

The scientific validity of this methodology is more than questionable, as science always works from theoretical models to deduce laws of causality or explanatory correlations. There is only the schizophrenic brain because we assume a standard schizophrenic individual (pp. 670-671).

This means, at first glance, a latent risk since it is untenable to think about certain psychopathology only by filling in and meeting certain diagnostic criteria.

In order not to fall into a reductionist vision of subjectivity, as already stressed by Apreda (2006), it is necessary to go from a purely biological paradigm to an ecological one, under this last approach it is proposed to analyze man's knowledge based on his subjective condition and in correspondence with the environment where we develop. It is pointed out that the brain alone cannot account for affectations such as anxiety or depression, in its case, it needs the analysis of the senses and meanings that a subject can give to certain experiences of daily life.

According to Carpintero, Hazaki, and Vainer (2020), the pharmaceutical marketing that exists to promote a cure in depressive disorders is worth noting; It is common to observe and hear in psychiatry and in everyday language the infinite use of terms that refer to a picture of depression and anxiety, or simply a lack of desire or motivation to do things. The classifications and diagnoses at all costs that are practiced today are still another instruments to normalize the subject in question (adult/adolescent). Giving voice and listening to the uniqueness/history of each person implies recognizing that the drug mitigates the effects of depression, but does not analyze the causes that cause it:

The promise is that the drug, beyond curing the disease, tones the brain to allow a better lifestyle. Selling new lifestyles works like marketing that is illustrated with convincing images: when an antidepressant is taken, it stops raining, the sun rises and the perception of the world changes (Carpintero, Hazaki and Vainer 2020, p. 4).

The way to approach this situation leads us to reflect on the paradigms and disciplines that allow, as far as possible, to build a vision to



interpret the human being in juxtaposition with the socio-historical context that surrounds him/her. Although the scope of the neurosciences has become very important in the study of the brain, since from its operation conjectures about its actions in daily life can be extracted, this represents a vestige that, crossed by the rigor of the scientific order, escapes the re-encounter of knowledge with subjectivity, which inevitably weaves itself in the ranks of psychoanalysis. Then, it will be necessary that, in order to establish an ethical work, a space to think about the subject not only from the structures of neuronal plasticity is prioritized.

Due to a lack of exploration of the techniques used by the neurosciences to understand the life and global functioning of man, Cusumano, and Raz (2014) mention that it is feasible to look for those methodological tools and techniques that, from the discipline of psychoanalysis, can serve as a basis for the understanding of the constitution of subjectivity. They argue that both neuroscientists and psychoanalysts are motivated by mutual recognition between both disciplines, thus giving rise to the flourishing movement of neuropsychology. A debate is set up on this scaffolding that according to Cieri and Esposito (2019) implies overcoming the challenges that the biological-reductionist vision of subjective experience brings with it.

The analysis of subjective experience represents for Feinberg and Mallat (2019) a fundamental step to close the gap between objective explanations of brain functions and the subjective feelings that accompany them, they argue that consciousness is entirely complex, with three domains or subtypes standing out. partially overlapping: exteroceptive, affective, and interoceptive. Therefore, the gap can be better explained by taking into account the scaffolding of the following factors: the personal embodiment of life-derived subjectivity, with the unique, complex, and diverse neurobiological characteristics that contribute to consciousness.

From neuroplasticity studies, traces can be drawn to understand the functioning of psychic processes in conjunction with the neural networks of the attentional model, according to Palencia (2018) the need to formalize a work from interdisciplinarity becomes a nodal point that questions not only the practical but also the theoretical:

Obviously, each experience perceived and lived can leave a mark, determining the character of the subjective inscriptions. However, it is clear that only a portion of what is perceived reaches the level of consciousness, and that the conscious is not exactly what is perceived (p. 7).

In addition to the issue of how to understand the notion of subjectivity from the field of neurosciences, the approach of Franck (2019)

is added, who invites not to ignore the appointment of the field of philosophy as a discipline oriented towards the understanding of the human being, he expresses that man as such cannot be understood from a purely neurophysiological basis, that is, it is unintelligible to explain his behavior on the basis of a neural network, he mentions on the contrary that there are elements traversed by language and experience that is positioned in an analysis of ontological character, in such a way that as Marcos (2015) states:

The correct way to mitigate human vulnerability is not the overcoming of the human, but the deepening of the human, that is, the adequate convergence and integration in each person of all the aspects of our human nature (p. 412).

140



Beyond the psychological or cognitive positions that come to offer a current panorama of the brain in relation to learning, the support of educational programs must also be based on the ideal of anthropological or sociological contributions; As the milestones of the human mind break down, ramifications appear that according to Ruiz (2018) become the object of study:

(...) Subjective and intersubjective transformations, which can influence culture and environment, are mediated by communicative actions, which in turn imply the development of thinking faculties that make it possible to discern, argue, debate, propose, choose and take responsibility individually and collectively (p. 296).

In the process of instituting the rethinking of educational programs and understanding the holistic nature of school life, it is feasible to evoke a situation of analysis and contrast; Although the subjects in training (students) come to manifest difficulties in their learning process or academic performance, the response as an operating rule rather than leading to reflection, leads to adopting a paradoxical position, since to the extent of objectifying and normalize the needs present in the school corridors, the ontological process of being tends to be concealed under the nuances of the deficit or, where appropriate, under the paradigms of diagnostic manuals. This is of the utmost importance since it is necessary to ask oneself: where are the student's word and desire when his human rights are trampled upon, while, under the haste of having explanations for his learning difficulties, it will prevail, like that society shaken by immediacy, to a praxis of reduced complexity?

The concern of developing educational practices of a greater humanistic nature lies in the need to counteract the false perceptions and beliefs that the teaching staff may have about human development. Such is the case of what was pointed out by Tardif, Douidin, and Meylan (2015) who, through quantitative research in the region of Switzerland, analyze what is the position of teachers towards ‘neuromyths’, that is, on those misconceptions of the brain and its functions. The discourse offered by the participants (active teachers-students in teacher training) allows registering a favorable recognition of the functionality of the brain structures and hemispheres. Derived from this, it is important to consider neuroscience as a means to better understand a series of topics relevant to education, but not as a prescriptive tool for teachers.

Helmuth (2016) argues on this point by emphasizing that in the lures of teacher training a work plan aimed at research and global understanding of the human being must be sustained. From theories of the mind, a new treatment that, adjusted to the needs of society, allows a circular dialogue between the natural and social sciences is already required.

By way of a simple but forceful training is the categorical way in which the subject, according to Sisto (2006), can be ‘inscribed’ in the register of what is desirable by cognitive processes, so that in light of such events It becomes essential to listen to the discrepancies manifested in the face of cognitive sciences, namely, the displacement of the social constitution and structuring of language as a determining entity in the development of the subject. This implies a restriction of the gaze that does not allow us to see beyond the wall, the lens is, in this case, encapsulated, and perhaps the only way of escape, to think and say in the world is through cause-effect logistics.

The importance of reconsidering the human experience factor is a situation that must be prioritized not only in the field of education but also in the field of mental health. Following the rhetoric of Schiffer (2019) it is possible to understand the interaction of subjectivity with the brain, while the latter is affected by subjective experience. The maxim of alluding to this dialogue rests on a thesis that with the passage of time has become more evident by reason, of unconscious knowledge.

Conclusions

The insights revealed through this bibliographic analysis refer that, although the field of cognitive sciences is of utmost importance for the



educational field, its application must be carried out under a framework of responsibility and ethics. Faced with this invitation, Puebla and Talma (2011) agree with the fact of incorporating the knowledge of neurosciences into teacher training processes. In order to reduce the gap between both disciplines, a greater approach is requested whose purpose helps to overcome the neuromyths of the educators' beliefs.

Giving reading and voice to the new challenges that arise in the conception of the human being, is a demand that requests the rethinking of the ways in which the disciplines attached to education are approached, although this has contemplated a gateway of compendia and constructs, perhaps some more sophisticated and rigorous than others in their approach, this has not been enough, so it is necessary to delve into the variety of existing paths to access knowledge and try to interpret reality. The effort of professionals to enhance the relationship between neuroscience and education lies according to Benarós et al. (2010), in considering how professionals from different disciplines contribute to crystallize the gaps through their practices.

To solidify the relationship between both disciplines, it is necessary to use a hybrid methodology that translates into knowing how neuroscientific information is used. The objective according to Zadina (2015) is to know how future professionals are being trained to interweave said knowledge. It is about establishing a circular dialogue that incorporates scientific training, real learning environments, that is, schools with students living in poverty.

What is revealed here is a conscientious review of the disciplines devoted to the study of the human mind, because as these are useful to the life of the subject in training, emphasizing a permanent correlation with their immediate context and taking into account the configuration of the psyche and neurological functioning, the journey through the educational paths would be more enjoyable and meaningful. Otherwise, it is not strange to imagine that that torrent of energy that aspires to excel is collapsed by bureaucratic actions and segregating mechanisms that subtract, instead of adding, to a cause worthy of autonomy and freedom, and where appropriate, obey a heteronomous character. It is precisely this mechanism of metamorphosis and interaction that is the alternative door to the torments of positivist and neoliberal logic because as the image of a literary work is kept in mind, from whose meaning different positions and expressions arise, in that sense its value it becomes important, that is to say, that through a hermeneutical act it can approach its understanding. If, for the understanding of the human act, at least a reversible



work is needed that implies a vision from the general to the particular, it is because this allows us to reflect on the genesis of its work, in such a way that, if it is required to grant recognition to the subject, it is not enough to just look at the event from above or far away, it is required, where appropriate, to apprehend it in the foundations of its constitution, which in educational terms would mean from the dimension of healthy and peaceful coexistence.

The narrative of neoliberal ideology establishes a framework of actions that, by virtue of radical authoritarianism and strong conviction towards the dispersion of capitalist well-being, erodes the field of individuality, affecting, as PrestiFlippo and Wegelin (2016) point out, the unfolding of subjectivities. This kind of training is revitalized from four spheres that disrupt the construction of meanings: the justification of inequality, meritocracy, technocratism, and the ideology of the flexibility of life. From this perspective, it is plausible to allegorically evoke the thought that, according to Fromm (1990), would position itself in favor of justice and social responsibility:

Humanistic conscience is the expression of self-interest and the integrity of the man. While the authoritarian conscience deals with obedience, self-sacrifice, and man's duty or his "social adjustment". The goal of humanistic consciousness is productivity, and therefore happiness since happiness is the necessary concomitant of productive living (p. 174).

Bibliography

APREDA, Gustavo

2006 La relación del sujeto con el objeto de las neurociencias. *Revista de la Facultad de Ciencias Médicas U.N.L.P.* 1(3), 37-43. Recuperado de: <https://bit.ly/3ribiBN>

ARBOCCÓ DE LOS HEROS, Manuel

2015 Apuntes psicoeducativos a la luz de las neurociencias. *Temática psicológica*, 11(1). 7-15. Recuperado de: <https://bit.ly/37xVEKu>

ARZATE, Jorge

2015 Políticas de inclusión educativa para los jóvenes en México. Un análisis desde un contexto de desigualdad y violencia. *Revista de Paz y Conflictos*, 8(1). 103-134. Recuperado de: <https://bit.ly/2Wv8t1K>

ASMI

2015 Manifiesto de ASMI a favor de un enfoque psicopatológico del trastorno por déficit de atención con o sin hiperactividad (TDA/H). Recuperado de: *Cuadernos de Psiquiatría y Psicoterapia del Niño y del Adolescente*, 1-15. Recuperado de: <https://bit.ly/3rdSGTs>

- AVELLÓN, Mónica
 2013 Psicoanálisis y TDAH: el origen de la hiperactividad y los problemas de atención en las vivencias primeras. *Cuadernos de Psiquiatría y Psicoterapia del Niño y del Adolescente*, (56). 17-24. Recuperado de: <https://bit.ly/2KEkX4J>
- BAKER, David, SALINAS, Daniel & ESLINGER, Paul
 2012 An envisioned bridge: Schooling as a neurocognitive developmental institution. *Elsevier*, 25, 6-17. <https://doi.org/10.1016/j.dcn.2011.12.001>
- BARRIOS-TAO, Hernando
 2016 Neurociencias, educación y entorno sociocultural. *Educación y Educadores*, 19(3), 395-415. Recuperado de: <https://bit.ly/3nsAG5j>
- BECKDORF, Nicolás
 2019 *Tiempos de neoliberalismo. El discurso de las neurociencias en la medicalización de la tristeza*. XIII Jornadas de Sociología. Las cuestiones de la Sociología y la Sociología en cuestión, 1-34.
- BENARÓS, Sol, LIPINA, Sebastián, SEGRETIN, María & HERMIDA, María
 2010 Neuroscience and education: Towards the construction of interactive bridges. *Revista Neurología*, 50(3), 179-186. Recuperado de: <https://bit.ly/3mz5S1k>
- BENAVIDEZ, Verónica & FLORES, Ramón
 2019 La importancia de las emociones para la neurodidáctica. *Revista Wimblu, Estudiantes de Psicología Universidad de Costa Rica*, 14(1), 25-53. <https://doi.org/10.15517/WL.V14I1.35935>
- BERNAL, Antonio
 2013 Cambio social, desarrollo neurocientífico y nuevas pedagogías potenciadoras de la individuación. *Juventud, neurociencia, tecnología y subjetividad*, (103). 109-124. Recuperado de: <https://bit.ly/3p5qDDM>
- BLEICHMAR, Silvia
 2007 *La construcción de las legalidades como principio educativo*. Conferencia de Silvia Bleichmar en la Universidad de Rosario.
 2011 *La construcción del sujeto ético*. Buenos Aires, Argentina. Editorial Paidós
- CABAÑES, Eurídice & RUBIO, María
 2013 El sujeto desde la neurociencia y la inteligencia artificial. *Juventud, neurociencia, tecnología y subjetividad*, (103), 9-19. Recuperado de: <https://bit.ly/3h35tTG>
- CARPINTERO, Enrique, HAZAKI, César & VAINER, Alejandro
 2020 La era de la depresión. *Revista Topía. Psicoanálisis, Sociedad y Cultura*, (88), 3-35. Recuperado de: <https://bit.ly/3pioYuL>
- CASTAÑO, Sandra
 2017 Emociones In-corporadas. *Revista Virtual de Ciencias Sociales y Humanas PSICOESPACIOS*, 11(19), 1-18.
- CASTORIADIS, Cornelius
 2011 *La institución imaginaria de la sociedad*. Editorial Tusquets.
- COLAS-BLAISE, Marion
 2019 Subjetividad, subjetalidad y subjetivación: el devenir (del) sujeto. *Tópicos del Seminario*, (41), 57-77. Recuperado de: <https://bit.ly/3r4avnE>
- CUSUMANO, Emma, & RAZ, Amir
 2014 Harnessing psychoanalytical methods for a phenomenological neuroscience. *Frontiers in Psychology*, 5, 1-5. <https://doi.org/10.3389/fpsyg.2014.00334>



- CIERI, Filippo & ESPOSITO Roberto
 2019 Psychoanalysis and Neuroscience: The Bridge Between Mind and Brain. *Frontiers in Psychology*, 10, 1-15. <https://doi.org/10.3389/fpsyg.2019.01983>
- CHOUDHURY, Suparna, BLAKEMORE, Sarah-Jayne & CHARMAN, Tony
 2006 Social cognitive development during adolescence. *Social Cognitive and Affective Neuroscience*, 1(3), 165-174. <https://doi.org/10.1093/scan/nsl024>
- DENNETT, Daniel
 1993 *Consciousness Explained*. London: Penguin.
- DOLTO, Françoise
 1990 *La causa de los adolescentes. El verdadero lenguaje para dialogar con los jóvenes*. Barcelona: Editorial Seix Barral.
- DOSIL, Javier
 2014 La función del sujeto en la formación de docentes en historia. *Tzintzun. Revista de Estudios Históricos*, (60), 280-303. Recuperado de: <https://bit.ly/3mXP7sb>
- FARES, Natalia
 2016 *Rehabilitación neuropsicológica en el maltrato infantil*. (Tesis doctoral). Universidad Complutense de Madrid. Facultad de Psicología.
- FEINBERG, Todd & MALLAT, Jon
 2019 Subjectivity “Demystified”: Neurobiology, Evolution, and the Explanatory Gap. *Frontiers in Psychology*, 10, 1-10. <https://doi.org/10.3389/fpsyg.2019.01686>
- FIERRO, Marco
 2011 El desarrollo conceptual de la ciencia cognitiva. Parte I. *Revista Colombiana de Psiquiatría*, 40(3), 519-533. Recuperado de: <https://bit.ly/3p4KMTt>
- FRANCK, Juan
 2019 La subjetividad de la persona humana y las neurociencias. *Humanidades: Revista de la Universidad de Montevideo*, (5), 9-25. <https://doi.org/10.25185/5.1>
- FROMM, Erich
 1990 *Ética y psicoanálisis*. D.F, México. Fondo de Cultura Económica.
- GARCÍA, Héctor
 2011 Neurociencias y psicoanálisis: consideraciones epistemológicas para una dialéctica posible sobre la subjetividad. *Revista de la Asociación Española de Neuropsiquiatría*, 31(4), 661-678. Recuperado de: <https://bit.ly/38eCyIE>
- GARCÍA, María
 2018 Docentes, alumnos y la relación con el saber. Reflexiones en torno a los procesos de subjetividad en una escuela pública de San Luis, Argentina. *Diálogos Pedagógicos*, 16(32), 95-105.
- GARCÍA, Javier, ALDA, Marta & GASCÓN, Santiago
 2012 Trastorno por déficit de atención con hiperactividad en la infancia y la adolescencia: del constructo social al calvinismo farmacológico. *Atención Primaria*, 44(3), 125-127. <https://doi.org/10.1016/j.aprim.2011.10.007>
- GONZÁLEZ, Mauricio
 2006 Aspectos psicológicos y neurales en el aprendizaje del reconocimiento de emociones. *Revista Chilena de Neuropsicología*, 1(1), 21-28. Recuperado de: <https://bit.ly/37xW8jP>

- HOWARD-JONES, Paul, WASHBROOK, Elizabeth & MEADOWS, Sara
2012 The timing of educational investment: A neuroscientific perspective. *Elsevier*, 25, 18-29. <https://doi.org/10.1016/j.dcn.2011.11.002>
- HELMUTH, Walte
2016 *El aporte de la ciencia cognitiva a la educación: en busca de una nueva mirada sobre los procesos de formación de docentes.* (Monografía) Universidad Distrital Francisco José de Caldas, Bogotá.
- JIMÉNEZ, Ana
2003 Intervenciones psicoterapéuticas en unidades de salud mental infanto juvenil y coordinación con otros dispositivos. *Cuadernos de Psiquiatría y Psicoterapia del Niño y del Adolescente*, (35-36), 139-167.
- JIMÉNEZ, Erick
2019 Neuropsicología de la violencia y la psicopatía. *Visión Criminológica-criminalística*, 76-83.
- LIÉVANO, Diego
2013 Neurobiología de la agresión: aportes para la psicología. *Revista Vanguardia Psicológica Clínica Teórica y Práctica*, 4(1), 69-85. Recuperado de: <https://bit.ly/38f3XtX>
- LIPINA, Sebastián & ÁLVAREZ, Miguel
2011 Contribuciones de la neurociencia cognitiva al diseño de políticas científicas y sociales para niños en situación de pobreza. *Interamerican Journal of Psychology*, 45(2), 243-253. Recuperado de: <https://bit.ly/2LEIGIB>
- LÓPEZ, Ximena
2017 *La psiquiatría infantil en la Secretaría de Educación Pública y la emergencia de la educación especial.* Instituto de Investigaciones Históricas Universidad Nacional Autónoma de México.
- MARCOS, Alfredo
2015 Neuroética y vulnerabilidad humana en perspectiva filosófica. *Cuadernos de Bioética*, 26(88), 397-414. Recuperado de: <https://bit.ly/3p264YP>
- MARINA, José
2014 Bases neurológicas del nuevo paradigma adolescente. Metamorfosis. *Revista del Centro Reina Sofía sobre Adolescencia y Juventud*, (1), 21-36. Recuperado de: <https://bit.ly/3alF3LT>
- MARTÍNEZ, Pascual
2000 El desafío de las emociones a las ciencias cognitivas. *Revista de filosofía Thémata*, (25), 55-66. Recuperado de: <https://bit.ly/3nt0M8e>
2017 Representación y creación mental. *Revista Mexicana de Investigación en Psicología*, 9(2), 139-146. Recuperado de: <https://bit.ly/37wLM3L>
2018 El conocimiento según las ciencias cognitivas. *Revista Internacional de Filosofía*, 23(2), 115-123. <https://doi.org/10.24310/Contrastescontrastes.v23i2.5575>
- MARTÍNEZ, Marta & VASCO, Carlos
2011 Sentimientos: encuentro entre la neurobiología y la ética según Antonio Damasio. *Revista Colombiana de Bioética*, 6(2), 181-194. Recuperado de: <https://bit.ly/3p630ed>
- MARTÍNEZ, Estrella, SEGURA, Rosario & SÁNCHEZ, Lourdes
2011 El complejo mundo de la interactividad: emociones y redes sociales. *Revista Mediterránea de comunicación*, (2), 171-190. Recuperado de: <https://bit.ly/2WuBASU>



- MEAD, Margaret
1993 *Adolescencia, sexo y cultura en Samoa*. Barcelona: Editorial Planeta-Agostini.
- MEDINA, Nicolás
2008 La ciencia cognitiva y el estudio de la mente. *Revista de Investigación en Psicología*, 11(1). <https://doi.org/10.15381/rinvp.v11i1.3890>
- MERLIN, Nora
2019 Colonización de la subjetividad y neoliberalismo. *Revista GEARTE, Porto Alegre*, 6(2), 272-285. Recuperado de: <https://bit.ly/2WqU9Hx>
- McCRORY, Eamon, DE BRITO, Stephane & VIDING, Essi
2010 The neurobiology and genetics of maltreatment and adversity. *Journal of Child Psychology and Psychiatry*, 51(10), 1079-1095. <https://doi.org/10.1111/j.1469-7610.2010.02271.x>
- NOVO, Carlos & PÉREZ, Erick
2009 Neurociencia en Psiquiatría. Hacia una medicina integral y personalizada en el DSM-V: una propuesta. *Cuadernos de Neuropsicología*, 3(1), 65-103. Recuperado de: <https://bit.ly/3p9S7I7>
- OCDE
2007 La comprensión del cerebro. El nacimiento de una ciencia del aprendizaje. Santiago: Ediciones Universidad Católica Silva Henríquez.
- ORTEGA, Joaquín & ALCÁZAR, Miguel
2016 Neurobiología de la agresión y la violencia. *Anuario de Psicología Jurídica*, 26, 60-69. <https://doi.org/10.1016/j.apj.2016.03.001>
- ORTIZ, Tomás
2009 *Neurociencia y Educación*. Recuperado de: <https://bit.ly/3nyEqIT>
- PAJARES, Frank
1992 Teachers' beliefs and educational research: cleaning up a messy construct. *Review of Educational Research*, 62(3), 307-332. <https://doi.org/10.3102/00346543062003307>
- PALENCIA, María Luisa
2018 La atención: desde la mirada freudiana y la perspectiva neurocognitiva. *Subjetividad y Procesos Cognitivos*, 22(2), 1-11. Recuperado de: <https://bit.ly/3p5uZKV>
- PERES, Daniel
2015 ¿Emociones racionales? *Revista de Filosofía Eikasia*, (63), 217-224. Recuperado de: <https://bit.ly/2J1JWhM>
- PINEDO, Iván
2015 El factor emocional en la construcción del juicio moral: una trayectoria desde Kohlberg al horizonte de la filosofía experimental y la neurociencia cognitiva. *Límite. Revista Interdisciplinaria de Filosofía y Psicología*, 10(32), 15-25. Recuperado de: <https://bit.ly/3h0YcUt>
- PUEBLA, Ricardo & TALMA, María
2011 Educación y neurociencias. La conexión que hace falta. *Estudios Pedagógicos*, 37(2), 379-388.
- PRESTIFILIPPO, Agustín & WEGELIN, Lucía
2016 El neoliberalismo como trama ideológica en la Argentina reciente. *Utopía y Praxis Latinoamericana*, 21(74). Recuperado de: <https://bit.ly/38ctP9K>

RUIZ, Sandra

- 2018 Didáctica de las ciencias desde la diversidad cultural y ambiental: aportes para un currículo contextualizado. *Góndola, Enseñanza y Aprendizaje de las Ciencias*, 13(2), 291-305. <https://doi.org/10.14483/23464712.12546>

SARRIA, Marta

- 2005 El sujeto, sus nociones y lugar en la formación de docentes. *Educere, Revista Venezolana de Educación*, 9(31), 609-616. Recuperado de: <https://bit.ly/3rbtbBY>

SEGURA, José

- 2016 Empresa, poder e individuo: El neoliberalismo como productor de subjetividad. *Civilizar. Ciencias Sociales y Humanas*, 16(31), 113-126. Recuperado de: <https://bit.ly/3mDO1qf>

SILENZI, María

- 2012 Algunos aportes del enfoque incrustado de las ciencias cognitivas a las ciencias de la educación. El rol del entorno en las prácticas educativas. *Revista de Filosofía y Ciencias Prometeica*, (6), 48-65. Recuperado de: <https://bit.ly/2LOSQjG>

SISTO, Vicente

- 2006 Acerca de la inexistencia de la ciencia cognitiva. *Psicoperspectivas*, 5(1), 77-102. Recuperado de: <https://bit.ly/2KI41KH>

SOLOLOVSKI BATISTA, Mara

- 2014 *La institución escolar y sus efectos en la estructuración del sujeto*. (Tesis doctoral). Universidad de Valencia.

SCHIFFER, Fredric

- 2019 The physical nature of subjective experience and its interaction with the brain. *Medical Hypotheses*, 125, 57-69. <https://doi.org/10.1016/j.mehy.2019.02.011>

STEIN, Murray, WALKER, John, ANDERSON, Geri, HAZEN, Andrea, ROSS, Colin, ELDRIDGE, Gloria & FORDE, David

- 1996 Childhood physical and sexual abuse in patients with anxiety disorders and in a community sample. *The American Journal of Psychiatry*, 153(2), 275-277. <https://doi.org/10.1176/ajp.153.2.275>

TARDIF, Eric, DOUDIN, Pierre-André & MEYLAN, Nicolas

- 2015 Neuromyths among Teacher and Student Teachers. *Mind, Brain and Education*, 9(1), 50-59.

TORRAS DE BEA, Eulalia

- 2010 Investigaciones sobre el desarrollo cerebral y emocional: sus indicativos en relación a la crianza. *Cuadernos de Psiquiatría y Psicoterapia del Niño y del Adolescente*, (49), 153-171. Recuperado de: <https://bit.ly/2KpfYFa>

URAZAN, Juan & ÁVILA, Néstor

- 2015 Análisis neuroforense de la violencia: Propuesta de revisión. *Revista Chilena de Neuropsicología*, 10(1), 50-54. Recuperado de: <https://bit.ly/34zRYWO>

VÁZQUEZ, Adolfo

- 2017 Francisco Varela: Neurofenomenología y ciencias cognitivas. De la acción encarnada a la habilidad ética. *Nómadas. Critical Journal of Social and Juridical Sciences*, 52(4), 301-323. Recuperado de: <https://bit.ly/3rkL29R>



VECSLIR, Lelia

- 2017 Cerebralización de la subjetividad y generización del cerebrotecnológico. *Revista Argentina de Sociología*, 82-100. Recuperado de: <https://bit.ly/2WAmJq7>

ZADINA, Janet

- 2015 The emerging role of educational neuroscience in education reform. [El papel emergente de la neurociencia educativa en la reforma de la educación]. *Psicología Educativa*, 21, 71-77. <https://doi.org/10.1016/j.pse.2015.08.005>

ZUMALABE, José

- 2016 El estudio neurológico de la conciencia: Una valoración crítica. *Anales de Psicología*, 32(1), 266-278. <http://dx.doi.org/10.6018/analesps.31.3.184411>.

Document reception date: July 15, 2020
Document review date: September 15, 2020
Document approval date: October 15, 2020
Document publication date: January 15, 2021

JERRY FODOR'S PHILOSOPHY OF MIND

La filosofía de la mente de Jerry Fodor

LEOPOLDO EDGARDO TILLERÍA AQUEVEQUE*

INACAP, Temuco, Chile

leopoldo.tilleria@inacapmail.cl

Orcid code: <https://orcid.org/0000-0001-5630-7552>

Abstract

The article presents an approach to the philosophy of mind of Jerry Fodor, and focuses on the problem that his thesis on computational naturalism represents. It emphasizes the ontological differences between the modular input systems and the central systems of this mental machine. Through a review of the main criticisms of the Fodorian program, it is concluded with the idea that its conceptual innateness turns out to be its greatest epistemological problem and, paradoxically, its greatest philosophical contribution, especially due to the incorporation of the notion of common sense in the field of informational semantics. Fodor's computational theory of mind seems to be an undeniable contribution to current models of cognitive science, particularly considering his idea of informational encapsulation. Likewise, the notions of semantic and referential semantic memory, and their possible implications in the domain of Artificial Intelligence, currently constitute an important legacy of the works of the American philosopher. His suggestive observation that there is no such thing as constitutive conceptual truths seems to tip the board toward conceptual intuitionism for now. As long as something more substantive is not evident, the marriage between common sense and belief system, turns out to be the greatest philosophical triumph of 'Citizen Fodor'.

Keywords

Science, cognition, philosophy, information, mind, psychology

Suggested citation: Tillería, Leopoldo (2021). Jerry Fodor's Philosophy of Mind. *Sophia, colección de Filosofía de la Educación*, 30, pp. 151-171.

* Social worker, journalist, Master and Doctor of Philosophy from the University of Chile. Academic and researcher in the Information Technology and Cybersecurity Area of INACAP, Temuco. Research lines: Philosophy of technology, Aesthetics, and Philosophy of religion.

Resumen

El artículo presenta una aproximación a la filosofía de la mente de Jerry Fodor, y se detiene en el problema que representa su tesis del naturalismo computacional. Se enfatiza en las diferencias ontológicas entre los sistemas modulares de entrada y los sistemas centrales de esta máquina mental. Mediante una revisión de las principales críticas al programa fodoriano, se concluye con la idea de que su innatismo conceptual resulta ser su mayor problema epistemológico y, paradójicamente, su mayor aporte filosófico, en especial por la incorporación de la noción de sentido común en el campo de la semántica informacional. La teoría computacional de la mente de Fodor parece ser un innegable aporte a los modelos actuales de las ciencias cognitivas, en particular, considerando su idea de encapsulamiento informativo. Asimismo, las nociones de memoria semántica y semántica referencial, y sus posibles implicancias en el dominio de la Inteligencia Artificial, constituyen en la actualidad una importante herencia de los trabajos del filósofo estadounidense. Su sugerente observación acerca de que no existe algo llamado verdades conceptuales constitutivas, parece dejar por ahora el tablero inclinado hacia el intuicionismo conceptual. Mientras no se evidencie algo más sustantivo, el matrimonio entre sentido común y sistema de creencias, resulta ser el mayor triunfo filosófico del 'ciudadano Fodor'.

Palabras clave

Ciencia, cognición, filosofía, información, mente, psicología.

152



Introduction

Jerry Fodor's work seems impossible to classify from the point of view of his theoretical register. His work focused on the problem of how something called the mind defines a certain type of belief, based on a certain class of mechanisms, has been loved and hated by dozens of cognitive scientists, psychologists of one creed or another, and philosophers of the mind. As Welsh (2016) states, if Fodor's claims are true, then they have profound implications for cognitive science, linguistics, psychology, the philosophy of language, and the philosophy of mind. Fodor's thesis that the mind has a computational architecture, that is, that it would be composed of systems, functions, and properties: it is by far his greatest legacy almost three years after his death. The many times - heightened controversy - between philosophy of mind, psychology, and cognitive sciences, seems to be resolved in the position of the philosopher that there is no way to explain the functioning of the human mind, other than by resorting precisely to a computational approach. In Fodor's own sayings (1986), mental activity should be considered "as a set of formal operations that deal with symbols or representations" (p. 12).

His project, by the way, has consisted of an incisive critique of the teleosemantic program in the philosophy of mind and evolutionary psychology, especially, thinks Fulda (2015), regarding the notion of 'selection of explanations'. For Fodor, it is about determining what is the nature of 'that' which puts the individual in representational contact with

the environment, and, above all, of how it is that which contacts him/her acquires a certain type of meaning. In this way, he examines the great problem of semantics associated with mental representations. In order to functionally specify the concept of mind, Fodor resorts to the literal thesis that mental operations follow a computational mechanism, even if only partially. This means that, once a certain flow of data or stimuli has been computed, it is the central systems of the mind (which, unlike the input and output systems, are not modular) that must execute the reasoning and belief permanence processes. Regarding the latter, his theory seems to leave the field open to the hypothesis about the true nature of these central “endowment” systems of meanings (the semantic “hard drive disk”).

Now, everything indicates that Fodor always presented his representational thesis as an investigation and that at all times, he was aware of the limitations of his theoretical project. A final passage from *Modularity of the Mind* is sufficient as an example: “We have, to put it bluntly, no computational formalisms that show us how to do this, and we have no idea how such formalisms might be developed.” (Fodor, 1986, p. 177). In this sense, the image that Domingo (2003) outlines about the Fodorian thesis is eloquent in itself:

A nice metaphor to use, we could say that the image of the mind derived from here would be comparable to one of these Swiss army knives in which each of its deployable gear would be designed according to specific purposes (p. 565).

This article is organized as follows: first, what might well be called Fodor’s ‘theory of mind’ is outlined, attempting to emphasize the philosophical status of his project. In the second place, and already fully in its computational theory, the architecture of the input systems is reviewed, to continue in the third section with the specification of the ‘big cabinet’ of mental processes: central systems. The fourth section addresses the problem of the relationship between Fodorian semantics and mental representations. In the end, some of the main objections to Fodor’s program are discussed.

The idea of mind in Fodor’s philosophy

It is necessary to start by breaking down some myths about the Fodor program. The first of them is the one that assumes that because he is a philosopher of the mind, his ideas are only of an ontological rank, and that, therefore, his hypotheses or assertions would play better in the field of metaphysics,

if not in that of fiction literature. Contrary to this objection, Fodor's realistic theory of mind, in particular, that which refers to its modularity, strives to discuss, based on what could be called an open program of psychological research, the a posteriori foundation of intelligent activity in human systems. Undoubtedly, his thesis on the mind collides with a host of cognitive prejudices, especially those of a Quinean or phrenological stamp, which would indicate that the problem of essence or, if you like, of the identity of the mind, is merely philosophical, and therefore should be returned to the Platonic foundations for its resolution, or it is exclusively psychological (or psychiatric or phenomenological), and, in such a case, philosophy would have nothing to do in this kind of 'guild' of experts in cognitive processes.

Of course, this is not the case. There is enough evidence to indicate that the philosophy of mind has emerged precisely from fundamental questions about our states of consciousness, the nature of concepts, belief systems, and mental events, among others. Gilbert Ryle himself, starting from his *The Concept of Mind* (1949), has made a cardinal contribution to the philosophy of contemporary mind, based on his conjecture of the influence on it of the "philosophy of common language" (Botero, 1992, p. 63). Fortunately, and as De Brigard (2017) observes, the increasingly active presence of cognitive sciences, the philosophy of consciousness, and phenomenal consciousness in the current concert of the philosophy of psychology, provides a healthy quota of measure around the relationship between epistemology and the haunting question about the mind.

A first point that should be anticipated about Fodor's thesis is that mental functioning is basically an unconscious activity (a question derived from the possibility of 'access' only to the peripheral processes of the 'general computer': the input systems and output). In other words—and this is probably the question that differentiates Fodor's cognitive ontology from the endeavors of scientific psychology around the problem of mind—Fodorian theory leaves aside the fundamental concern with the problem of consciousness, and it focuses specifically on the spontaneous processes of information analysis and internal representation. What is presented, then, is a philosophy of the psychology of the mental faculties, whose central idea comes to be that of modularity.

Curiously, Fodor's conceptual innateness is, if anything, closer to empirical psychology than to the metaphysics of the mind itself. The observation of Subía and Gordón (2014) seems entirely accurate to focus the Fodorian arguments in their modular perspective:

Empirical psychology, on the one hand, strives to fragment mental structures, while the psychology of the spirit clings to the metaphysical



explanation as an expression of idealism, which resurfaces and does not admit another form of explanation, even less, a that is related to anatomical structures (p. 81).

The orthodox mentalist doctrine assumed by Fodor (1986) can be summarized in the following statement: “It seems obvious that you need mechanisms to put what you know into action; mechanisms that function to bring the organization of behavior into conformity with the propositional structures that are cognized” (p. 29). Content and mechanism are, then, the fundamental determinations of the notion of mind as a functional device. Fodor’s hypothesis also adopts a birth certificate adhering to physicalism and intentional realism. His approach is physicalist, insofar as he declares that mental processes suppose the preexistence of physical processes capable of causing said phenomena. Thus, the American philosopher believes that the laws introduced in any special science are determined by the existence of more basic physical processes that implement such laws (Rengifo, 2008). Its intentional realism, in turn, supposes that position that maintains that the natural order shows certain intrinsic intentionality, in such a way that, connected this intentional realism with the problem of the intentionality of the content, it would have, according to Vallejos (1990), that the first would make possible the formulation of the conditions under which the content of a representation can be determined in naturalistic terms.

Put schematically: the architecture of the mind in Fodor’s program defines three types of components. On the one hand, there are the transducers (sensory and motor), which interface the mind with the outside world through a purely physical interaction, which supplies, or is influenced by, computationally suitable information codes, directly linked to proximal properties of the stimulus of the environment (García-Albea, 2003). Secondly, there are modular input and output systems, with the ability to generate inferences and trigger representation states in an automated manner. Finally, with García-Albea (2003), there are the central systems (the heart of the computer), that is, computer systems of general purpose, interactive and sensitive to global properties of all the available information. For Fodor (1986), this functional taxonomy ultimately determines three classes of exclusive psychological processes. However, he is also extremely cautious about it. Writes Fodor (1986):

Since the trichotomy is not exhaustive, it is left wide open that there may be modular systems that do not subserve any of these functions. Among the obvious candidates would be systems involved in the motor integration of such behaviors as speech and locomotion. (p. 69)

In short, and as Gomila (1991) thinks, Fodor defends the existence of a representational system in the mind, whose properties make it similar to a language: productivity, systematicity, intentionality, referentiality: “In the sense that this representational system is innate, and very rich — in fact, maximally rich, since it includes all uncompounded concepts” (p. 36). In the following section, the ontology of modular systems will be described, that is, the inferential mechanism that generates the necessary syntax to encode the information supplied by the transducer systems in mental representations, endowed with a minimum semantics for the operations of the central processor.

Modular systems: autonomy and inferential representationism

156



Based on the above, Fodor (1986) will argue that input systems imply, by definition, a certain syntax, so that what enters such systems seems to be assured in relation to the possibility of a certain representation of the world, until the point that it is finally accessible to thought. Such systems specialize, Murphy (2019) comments, in performing quick calculations, because they are not influenced by information from other modules or the central system. The complexity of the spectrum of accessible information (for example, the range of properties of such informational objects) determines, following Fodor (1986), the assumption of the existence of highly specialized computational mechanisms in the task of generating hypotheses about —precisely— the distal sources of proximal stimulations.

These hypotheses are housed in an explanatory conglomerate that Fodor calls Representational Theory of Mind (RTM). “One generates conditions for the semantic evaluation of an attitude when setting a context for the samples of certain symbols: symbols that, together, constitute a system of mental representations” (p. 145). In other words: the content of mental representations (what is really understood when it is understood) is determined not by the intentionality of certain representational attitudes, but, says Fodor (1994), by the interpretation of a certain primitive nonlogical vocabulary, which is a condition for representational syntax. As the philosopher Liza Skidelsky (2006) observes, such modular systems alternate autonomy and inferential representations:

According to what I will call a substantial conception of modules, these are autonomous psychological mechanisms that are designed for the processing of cognitive information. As computational-inferential me-

chanisms, they have as premises-inputs the transduced representations of nearby stimulus configurations and as conclusions-outputs the representations of the nature and distribution of remote objects (p. 85).

Another way of understanding this kind of contextual determination on the representations that are computed by the input systems is the idea, thinks Fodor (1986), that these modular systems operate on eccentric domains because the computations they execute turn out to be necessarily idiosyncratic. Indeed, the condition of specificity of some of these peripheral systems is evident, precisely given the multivariate nature, so to speak, of the incoming stimuli. In this way, the modules are pre-established, that is, not formed, or, what is the same, essentially primitive and, rather than fast, automatic. When such modules are activated by the corresponding stimulus, they respond by producing data about it, which, being automatic, are neither elaborated nor informed by central cognitive processes (Bacáicoa, 2002). It is this condition of automaticity that, as someone says, “forces” each module to always be an available receptor for all types of stimuli in strict sensory correlation. Fodor (1986) emphasizes:

In short, the operation of the input systems appears to be, in this respect, inflexibly insensitive to the character of one’s utilities. You can’t hear speech as noise even if you would prefer to. (p. 84).

Seen this way, what is connected or disconnected is nothing but the access of certain input systems to certain central systems of the mental machine, specifically to its thought structure. In this way, the possibility of disconnection/connection —its operational flexibility— will be characterized by the rationality with which the organism exploits the resources provided by its representational system. In Fodor’s explanation (1985): for the intelligent use the individual makes of his/her internal representations. This strictly functionalist conclusion, that the final processing of stimuli that are transformed into representations depends on a certain disposition of rationality in each organism, radically places Fodor’s research in line with the harshest physicalisms.

In any case, it should be clarified that the input systems, when they produce the “initial” hypotheses, do not generate real beliefs. Instead, according to Meyering (1994), they only pose perceptual hypotheses about the external world. That is, on the basis of these input systems the central system finally ‘decides’ what to believe. Consequently, Meyering (1994) adds, what Fodor calls ‘perceptual belief fixation’ is the exclusive prerogative of the central system. It is clear, as García-Albea (2003) lucidly warns, that Fodor’s original motivation was to explore the possibility of an alter-

native proposal to the dominant *New Look* approach, establishing a precise demarcation between the most basic aspects of perceptual processing and Higher-order cognitive processes, on which depends, among other things, the fixation of one's perceptual beliefs and, in general, all kinds of non-demonstrative inferences.

Central isotropic systems

Care must be taken, then, in specifying the relationship established by Fodor between modular entry systems and central systems. Of course, there is a fundamental informational connection regarding the semantically catalytic role of the latter. Such connection refers to the fact that the information is part of the same frame of reference of the individual; so to speak, it is about the same line of thought, which, moreover and generally, is computed in the different mental modules in the same code or language system. However, there are substantive differences from the structural-functional point of view itself. While the input systems appear to follow a certain top-down verticality, the central processing systems are distinguished by a more holistic horizontal architecture. Thus, García (2005) states:

Central systems, by contrast, have a highly distributed neuronal base in the brain that is very difficult, impossible, Fodor claimed, to identify; they are more open to learning; they operate slowly; as they are not encapsulated, they receive information from various modules; they integrate information from the outside world with the information recorded in the individual's memories. The core systems are thus holistic and not encapsulated (p. 7).

The central systems have the essential function of providing certain mental representations in relation to the data that the input systems provide. Such systems elaborate, suggests Fodor (1986), probable hypotheses about the state of affairs in reality. These hypotheses, which in the long run constitute belief systems about certain contextual circumstances, seem, in turn, to confirm that Fodor's research suggests a new theory of rationality (innate and physicalist, as is hinted at), which attempts to account for the representational mental processes. In the words of Hermida (1993):

The explicit representation is required of the occurrences of thoughts involved in a mental process, that is, of the data structures in Game ('data structures'), without it being required of the transformation pro-



grams and rules (corresponding to the rules of thought) that could well operate without being explicit (p. 364).

These representational processes constitute the crux of Fodor's TMR, whose 'genome' is the language of thought. The product—it could be said in computer terms, the 'machine language'—corresponds to the propositions expressed precisely by means of these representations. Thereof, semantics and syntax "assemble" their rationality game in a computational way. In short: syntax plays the role of mediator between the causal/formal properties of representations and the semantic properties of the propositions expressed by such symbols, thus allowing the syntactic processes that operate on the representations to preserve the truth of said propositions (Rengifo, 2008). This kind of 'hard disk', which the central systems appear to be, is defined by their state of hyperconnectivity, or if you prefer, by their exponential combinatorial capacity. Fodor explains (1994):

This is explained [the correlation between types of belief states and distinctive intentional object and causal role] immediately if it is assumed that belief states are somehow constituted from elements and that intentional objects and causal roles of each of the states depend on what elements it contains and how those elements are put together (p. 208).

It is the same as saying that central systems allow thought and behavior to be connected. Individuals—it is evident—generate their behaviors because they have a representational system. The fact of deciding such behaviors, observes Medina (2010), is a computational process. As Fodor himself (1986) argues: "(...) there must be relatively nondominant (i.e., domain-inspecific) psychological systems which operate, inter alia, to exploit the information that input systems provide. Following the tradition, I shall call these central systems" (p. 146). In this way, and as a possibility of semantically associating thought and behavior, computational processes must necessarily be symbolic and formal. Symbolic, because they are defined with respect to certain representations, and formal, as Rengifo (2008) reasons, because they are applied to representations based on their higher-level physical properties.

The operational formulation of these nonspecific central systems (this is a decisive difference with respect to the input systems, which are rather defined as encapsulated with respect to a certain data referent with which they contact), would be more or less this: from the inputs from the work of the input systems, the central systems proceed to the fixation of beliefs by means of non-demonstrative inferences. This process of fixing beliefs occurs from two supply lines: one, the provision of data through



the input systems, and the other, the information available and stored in memory. By treating these two types of information, emphasizes Fodor (1986), central systems generate the most probable hypotheses about the state of affairs in the world.

Now, Fodor's intentional realism starts from certain principles that the philosopher considers unobjectionable, for example, the claim that mental states do translate semantics of some kind. Fodor argues (1994):

Roughly stated, we are arguing about whether they have *combinatorial* semantics, the kind of semantics in which there are (relatively) complex expressions whose content is determined, in a regular way, by the content of their (relatively) simple parts (p. 194).

Precisely, this informational semantics responds to the computational structure of a mind that develops certain cognitive processes in relation to the state of things that surround it. Such processes are computational to the extent that their representational characteristic is based on symbols that allow their manipulation. From this, it follows that the main characteristic of the mind is that it is a symbolic representational system within which a certain type of thought takes place, which is expressed through also symbolic computations (Medina, 2010).

Fodor's RTM, consequently, literally becomes a theory of cognitive systems, if the functions of the aforementioned input systems and central systems —periphery and heart, respectively— of this thinking machine are understood as such. Following this reasoning, Fodor (1986) establishes a kind of final conjecture that seems quite obvious: “if the analysis of the inputs is modular and the thought is quinean/isotropic, our brain will consist of a stable neural architecture associated with perception and language, but not thought” (p. 164). This seems to be easily explained by adducing a kind of line difference between thought and behavior (hence the instability of thought referred to), or, if you like, between mental representation and propositional attitude. It is what Martínez (1995) calls the psychology of sense or mental innateness:

On the other hand, it is characteristic of the psychology of common sense or popular psychology to be a psychology of belief/desire, as Fodor emphasizes in *Psychosemantics*, that is, a set of psychological knowledge that human beings possess de facto about mental processes in themselves and in their relation to behavior, in which the concepts of desire and belief play a central role, in such a way that we explain and predict people's behavior assuming that they act according to their desires and beliefs (p. 369).



From this, stems what Fodor (1994) calls the language of thought (LOTH) is none other than the internal code that the RTM requires to make its levels of propositional semantics explicit. The LOTH establishes that to have a thought is to be related to a formation of representations. Presumably, Fodor (1994) points out, having the thought that John loves Mary is, ipso facto, having access to the same representations and representational structures required to have the thought that Mary loves John. However, as will be seen in the section that follows, Fodor's functional-physicalist explanation considers that central processing systems must be understood from an architecture different from the mere purely computational arrangement with which modular systems had been defined until now. peripherals. These central systems lack specific contents that depend on specific neural structures.

For Fodor (1986), all the available data indicate that the central problem-solving process rests on equipotential neural mechanisms, a conclusion reached by assuming that the central cognitive processes themselves are fundamentally quinean and isotropic. Hence, according to Rey (2018), possible thoughts have, for Fodor, a recursive logical structure, which allows people to be able to think a potential infinity of increasingly complex thoughts, from which it would even be doubtful that there is any finite upper bound type.

Fodor's semantic model

Fodor's non-reductionist physicalism (token physicalism) is still explanatory in terms of the causations that it seeks to determine for the cognitive processes and output behaviors of each individual, known until now as propositional attitudes. Precisely this approach suggests the idea of a philosophy of mind that recognizes conditions of causation of different kinds for mental states. Fodor explains (1994):

It is characteristic of the common-sense psychology of beliefs and desires—and therefore of any explicit theory that I am willing to regard as a theory that vindicates the common-sense psychology of beliefs and desires—that it attributes content and causal powers to the same mental things that are considered to be *semantically evaluable* (p. 32).

It is, in short, a semantic recursion mechanism, which is referred to as a reasoning model by means of which belief systems become what they are (truthful formulations about the world) according to the meaning assigned to them. Such recursiveness, undoubtedly, is determined by

a reassessment of the aforementioned propositional attitudes. This claim seems to be articulated around the collection of experiences and intuitive testimonies on which it will be reflected:

To highlight the virtues of this psychology of common sense: its operability and credibility (how often it goes right), its depth and its essentialness (how much we do depend upon it) (Hermida, 1993, p. 361).

Contrary to what could be assumed with respect to a functional-computational project, Fodor's thesis about mental representations does not rise to the top of a bio-informatic epistemology, but rather includes the assumption of the possibility of a connection between common sense and beliefs. A passage from Fodor (1994) himself should be quoted: "We have no reason to doubt—in fact, we have solid reasons to believe—that it is possible to have a scientific psychology that vindicates common sense explanations through beliefs and desires" (p. 37). Indeed, this sort of common-sense rationality is expressed in a mechanism in which a syntactically regulated mental machine can determine, with a high probability of adjusting to the environmental conditions, the semantic properties of the symbols it uses.

Recursion and rationality are, then, conditions of possibility so that the mind can define a certain suite of expected behaviors according to the type of administered semantics. In this regard, Cárdenas-Marín (2016) maintains, in a properly Fodorian line:

According to Kripke, names do not have meaning, so the reference is necessary for it to be pointed out, understood. It should be noted that these referential and significant elements seem to be mostly conventional elements around the name (p. 117).

In this way, the computed sequence is composed of: a) mental representations, b) mental processes and c) intentional causations. On this point, Fodor (1994) mentions: "From this, it follows that the samples of attitudes must correspond with samples of mental representations when they—the samples of attitudes—are episodes in mental processes" (p. 48). The motto, he says, should be: "There is no Intentional Causation without Explicit Representation." This means that having a certain repertoire of behaviors with respect to the environment is being in a certain relationship with an internal mental representation.

Now, this attitude-representation relationship seems to corroborate a perfect computational aspect. Mental states, Fodor (1985) thinks, are relationships between organisms and internal representations, and such



states, causally interrelated, succeed each other according to computational principles that are formally applied to such representations. Hence, the data processing of this operations center is the domain of the mental representations that transform the causal processes (the information from the input systems) into certain propositional attitudes as response states with respect to the environment. The fact that the RTM shows how intentional states have causal properties is, Fodor (1994) asserts, the most disturbing aspect of common-sense intentional realism from a metaphysical point of view. This concern is reduced, finally, to the idea that the concepts—that is, the informational prototypes that make certain codes entered in this resonance box mean certain things and not others— are mental artifacts physically instantiated. As Rellihan (2009) reflects:

When Fodor asks for a “physical” or “mechanical” account of mental processes, he is asking for an account of their implementation mechanisms. Psychology is a special science and, in Fodor’s analysis, for each special science law of the form “Fs causes Gs,” there is something to tell about the “lower-level” law or laws—the mechanisms of implementation—in by virtue of which Fs causes Gs. Thus, just as the laws of thermodynamics are implemented by the mechanisms of statistical mechanics and the laws of inheritance by the mechanisms of molecular biology, then the laws of psychology must be implemented by their implementation mechanisms, whatever those mechanisms may be (p. 314).

163


Recognizing that concepts can be acquired, even if they could not be learned, Fodor (2008) explicitly admits that the connection between experience and the concept it engenders can be completely fortuitous: a concept could emerge “through surgical implantation or swallowing a pill, or hitting the head against a hard surface” (cit. in Antony, 2020, p. 46). In further specification, Fodor (1998) adds: “I affirm that acquiring a concept is to link up nomologically with the property that the concept expresses” (p. 177). The conditions of confirmation of a concept, insists Fodor (1998), are not among its essential properties: “The confirmation [of a concept] is an epistemic relationship, not a semantic relationship and, generally, it is mediated by theory, therefore, is holistic” (p. 47).

It has been said that the principles that apply to mental representations, based on the sequence of mental states, are formal in nature. Fodor, explains Ramírez (2019), intends to offer a robust theory that can face the problems raised around the erroneous representation and the problem of disjunction, establishing asymmetric causal dependency relationships between the properties, which are enough to cause a concrete mental representation. It remains, then, to elucidate that of the formal applied to

this computational theory of the mind. For Fodor, computational processes are formal, in the sense that they apply to representations by virtue of their higher-level physical properties. That is, formal operations are specified without referring to the semantic properties of the representations, such as truth, reference, or meaning (Rengifo, 2008). In other words, the fact that Fodor's computational theory is formalistic, means, asserts Zumalabe (2014), that his information processes are involved in a descriptive relationship with the notion of algorithm, defined in terms of processes that operate on representation.

This means that Fodor's RTM, bypassing such swampy waters for cognitive sciences as semantic holism, embodied realism, and connectionist models, postulates, through its formalization in a computational theory of mind, the specification, Hermida (1993) argues, from "a computer between the sensory systems and the belief box to, through a certain system of computational calculations, transform the occurrence of a psychophysical property into an instance of an internal mental symbol" (p. 369). In any case, as Fodor himself mentions, the multiple realizability of the mental (that is, the physicalist causation of mental states) is an empirical hypothesis. In this sense, Bermúdez and Cahen (2020) point out, its plausibility will depend on the evidence that can be had for the multiple/real realization of the mental.

164



Criticism of irrationalism? by Fodor

The Fodorian theory of mind has faced innumerable theoretical, epistemological, and methodological objections. Among the most forceful criticisms, there is the one known as that of the 'constructivist fallacy', which, as can be expected, shoots into the center of Fodor's conceptual innateness. It is convenient to start with this "first line" of criticism.

The 'constructivist fallacy' argument is directed at Fodor's idea that states that the concepts (at least the fundamental ones, or to put it colloquially, the 'trunks') with which the mind works are innate. Such reasoning, indicates Gomila (1991), known as the 'Fodor paradox', implies affirming that to learn a concept it is necessary to have it previously instantiated, which, to avoid the threat of infinite regression, translates into all non-compounded concepts are innate. Fodor's argument is presented with such radical abstractionism that it would certainly make it difficult, to say the least, to establish a nomological or even a properly physicalist foundation in relation to the emergence of such concepts. In a kind of

anticipation of an expected counterfactual attack, Fodor (1998) asserts: “Informational semantics is a *content* theory and these needs could be seen as *metaphysical* rather than semantic” (p. 111).

Now, and as Gomila (1991) points out, with the argument of conceptual innateness Fodor seems to deny, above all, common sense aspects, such as the diversity of conceptual repertoires depending on the context and the creativity of new concepts, which could hardly be given up. This impasse seems to be the same as that presented in relation to the problem of the epistemological representation of an individual object. Thaliath observes (2019):

The existence of the concept implies an ontological aporia against material objects, as well as mathematical objects, to which Plato seemed to attribute an intermediate ontological state — that is, an ontological state between the meanings and eternal ideas. This seems to have resulted from the ambiguity of an epistemic reference (p. 146).

A second element of Fodor’s theory that has been the target of cognitivist criticism is one that points to the heart of the mental reasoning mechanism: the problem of syntax. If his computational mental theory has been described as a system that depends, both on the causal/nomological relationships established by mental representations with the things that fall under them (Rodríguez, 2006), and on the process of data coding by a ‘central brain’, then, the process of generating mental states and representations depends, critically, on what could be called, in a way, an ontology of syntax.

However, Fodor’s project does not develop a detailed ontology of the syntactic mechanisms that formally determine representational operations. In other words, Fodorian theory fails to specify the syntactic formalism required to account for an informational-computational semantics. If the syntax has been changing with evolutionary processes, or if it is rather a universal syntax, it is clear, in both cases, that such syntax ceases to have a logical parallel with Fodorian computational theory. In fact, in the first case, it would force to establish the mechanisms capable of sustaining these changing computations, which would make the model, if we follow Cela-Conde and Marty (1991), literally into a kind of syntactic coven.

If Fodor’s departure from this objection about the syntax of his representational system is the same thesis of the syntactic-semantic condition that constitutes the representational mechanism —his commented conceptual innateness— it would seem that the argumentation is on the

verge of a tautology. Certainly, if the combinatorial/compositional syntax consists, following Skidelsky (2012), in that complex mental representations are constructed from atomic mental representations by means of syntactic rules, then the 'syntactic chain' is converted, *a fortiori*, in a mechanism as innate as the very fundamental concepts described by Fodor.

A third chord from which the criticisms of Fodor's theory come is, to put it in the nomenclature of the philosophy of mind, the scope of its external justification. Domingo (2003) affirms that Fodor's thesis, at least the one framed in his latest works, 'does not pass the test' of a fourfold justification: phylogenetics, ontogenetics, neuropathology, and neurocerebral. This would mean that Fodor's modular theory fails to demonstrate the expected compatibility with these fields of scientific psychology. From the phylogenetic and ontogenetic planes, Fodor's work is shown, from the beginning, Domingo (2003) notes, reluctant to consider any determination regarding a supposed evolutionary linearity between the brain and cognitive structures. Regarding the neuropathological and neurocerebral fields, Domingo's comment (2003) is no less benevolent:

Fodor does not record the information emanating from research on brain injuries and the motor, sensory, cognitive, linguistic, and emotional consequences they produce, nor does he contemplate the holistic principle of the plasticity of the human brain that allows, within certain limits, the recovery of the functions lost due to injury in other undamaged areas of the brain (...), as regards the neuroanatomical and neurobiological level, the consequences (...) are much more devastating. According to the studies by Damasio (1996), Gazzaniga (1996) or Le-Doux (1999), the brain not only has an extremely intricate network of neural connections that flow into the frontal lobe (...) from practically all regions of the brain, but they have also discovered in it the existence of a double loop-shaped circuit through which the "sensory systems", those that are the best candidates for the supposed mental modularity, would have access almost directly to the basal ganglia and especially to the amygdala (both privileged organs to configure the somatic markers that collect the background state of the body), for all of which two of the basic principles prescribed by Jerry Fodor seem definitely invalidated: informational encapsulation and modular independence (p. 570).

In any case, Fodor does not pass up this criticism. His idea of neural architecture is congruent with the computational mental structure that he defends. Thus, for example, Chow (2016) comments, neural structures and stable patterns of connectivity and information flow would be seen in the parts of the brain dedicated to peripheral processing (perception,



language, motor control, etc.), but this would not be seen in the brain centers involved in general reasoning. Instead, instantaneous and unstable neural connectivity would be seen in the association cortices that ‘seems to go in all directions’.

The ‘last cartridge’ of criticism that will be addressed in this brief review, refers to the problem of the naturalistic explanation of the functioning of mental processes. At this level, there seems to be a greater brand ambiguity, if, on the one hand, mental processes are made dependent on the syntax of mental representations, and if, on the other, these same processes are made dependent, in relation to the fixation of certain beliefs, of the context. Granting that computationally only the possibility of the first premise can be verified, Igoa (2003) will affirm that the resulting paradox is expressed in the need to restrict computational explanations only to the functioning of the modules. Igoa argues (2003):

In the case of non-modular systems, on the other hand, the syntax of the representations they handle (and, therefore, the computational processes) is not enough to explain the work they perform. If the entire human mind were modular, then repeating the title of Pinker’s book, we might know *how the mind works*, but if only a part of the human mind is, we will only know, as Fodor claims, that the mind probably doesn’t work. that way (that is, computationally) (p. 534).

That is to say: Fodor’s modular theory seems, at least from the point of view of its computational ontology, to fail the test of a minimal attempt at syntactic-semantic falsification. However, and as an indispensable counterargument to what could be seen as a definitive epistemological critique, Fodor’s program has never been intended to convert cognitive psychology into the psychology of knowledge. Moreover, Quiroga (2010) supposes, one of the fundamental assumptions of Fodor’s work has always been to postulate a computational theory of mind, leading to a type of methodological solipsism as part of research in cognitive psychology. The question is whether its conceptual innateness, which could also translate into the inability of the philosophy of mind to identify the conditions for the generation of the deepest mental mechanisms)— its ‘extreme epistemological caution’ (Domingo, 2003))— leaves or not Fodor in the field of irrationalism.

Conclusions

From what has been outlined, where Fodor’s approach is based on an almost infinite series of ‘isms’, such as innateness, computationalism, for-

malism, conceptualism, and a long etcetera, we will try to exempt him from a certain part of the criticisms which he bravely faced. Of course, there are a relevant number of objections (epistemological, methodological, ontological) to which Fodor's theory has failed to answer satisfactorily. That of his computational naturalism seems to be the most severe. However, as Cela-Conde and Marty (1991) point out, the theses of 'Citizen Fodor' (as both authors call it in relation to the criticism they make of his computational model, which, from the point of view of possible intelligences, 'theoretically' would have aborted his existence as a simple 'citizen'), have been indispensable in generating a healthy philosophical discussion about mental states, intelligence and the role of computational models in cognitive processes. Bennett and Hacker (2003) themselves suggest, in Braun's (2007) statements, that the attribution of psychological predicates to the brain is primarily a philosophical question, and not so much a neurological one, since it is essentially a conceptual question.

Jerry Fodor has clearly missed the philosopher's stone of the mind. His modular-computational theory, however, seems to be an unquestionable contribution to current models in the philosophy of mind, in particular regarding his idea that informational encapsulation is the primary characteristic of mental modules (Bacáicoa, 2002). This thesis, as it were, of the compartmentalization of information by modular encapsulation, has at the same time become the cardinal breakpoint with the world of cognitive sciences, and that, without considering the dispute over the critical role of the isotropy in higher-level cognitive processes. Paradoxically, Fodor's project leaves several pending tasks to the cognitive sciences themselves. First, the challenge of finding empirically more reasonable explanations for the workings of the mind, which do not fall, is obvious, in evolutionary or biologic explanations. Secondly, the task of solving the problem of the origin of concepts, a question that should not imply, as expressed by Fodor (1998) himself, the blind acceptance of informational atomism.

On a somewhat different side, the notions of semantic memory and referential semantics, as well as the potential implications of both structures in the field of Artificial Intelligence, seem to owe much of their preponderance to Jerry Fodor, now in the domain of philosophy of technology. The philosopher's brief observation that there is no such thing as constitutive conceptual truths, and that consequently there would not be any kind of definitions either, leaves the board tilted towards conceptual intuitionism for now. Apparently, and while something more substantive is not evidenced, the marriage between common sense and belief system turns out to be the greatest philosophical triumph of 'Citizen Fodor'.



Bibliography

- ANTONY, Louise
2020 Not rational, but not brutally causal either: A response to Fodor on concept acquisition. *Theoria. An International Journal for Theory, History and Foundations of Science*, 35(1), 45-57. <https://doi.org/10.1387/theoria.21031>
- BACÁICOA, Fernando
2002 La mente modular. *Revista de Psicodidáctica*, (13), 5-30. Recuperado de: <https://tinyurl.com/yyoa5wb5>
- BERMÚDEZ, José Luis & CAHEN, Arnon
2020 Fodor on multiple realizability and nonreductive physicalism: Why the argument does not work. *Theoria*, 35(1), 59-74. <https://doi.org/10.1387/theoria.20772>
- BRAUN, Ricardo
2007 El futuro de la filosofía de la mente. *Persona* (10), 109-123. Recuperado de: <https://tinyurl.com/y3tdc8l2>
- CÁRDENAS-MARÍN, William
2016 Reflexiones sobre el nombrar a partir de la comprensión del lenguaje de Saul Kripke. *Sophia, colección de Filosofía de la Educación*, 20(1), 103-116. <https://doi.org/10.17163/soph.n20.2016.04>
- CELA-CONDE, Camilo & MARTY, Gisèle
1991 El ciudadano Fodor no existe. Estructura y función en los procesos cognitivos. *Psicothema*, 3(1), 231-241. Recuperado de: <https://tinyurl.com/yyhltq5l>
- CHOW, Sheldon
2016 Fodor on global cognition and scientific inference. *Philosophical Psychology*, 29(2), 157-178. <http://dx.doi.org/10.1080/09515089.2015.1013208>
- DE BRIGARD, Felipe
2017 El problema de la conciencia para la filosofía de la mente y de la psiquiatría. *Ideas y Valores* (66), 15-45. Recuperado de: <https://tinyurl.com/y7kqxtm8>
- DOMINGO, Josep María
2003 El proyecto modular de Jerry Fodor (o sobre el porvenir de otra ilusión). *Anuario de Psicología*, 34(4), 505-571. Recuperado de: <https://tinyurl.com/y3kk7ret>
- FODOR, Jerry
1985 *El lenguaje del pensamiento*. Madrid: Alianza.
1986 *La modularidad de la mente*. Madrid: Morata.
1994 *Psicosemántica. El problema del significado en la filosofía de la mente*. Madrid: Tecnos.
1998 *Conceptos*. Barcelona: Gedisa.
- FULDA, Fermín
2015 A mechanistic framework for Darwinism or why Fodor's objection fails. *Synthese*, (192), 163-183. <https://doi.org/10.1007/s11229-014-0557-4>
- GARCÍA, Emilio
2005 Teoría de la mente y desarrollo de las inteligencias. *Educación, desarrollo y diversidad*, 8(1), 5-54. Recuperado de: <https://tinyurl.com/y6f98dra>
- GARCÍA-ALBEA, José
2003 Fodor y la modularidad de la mente (veinte años después). *Anuario de Psicología*, 34(4), 505-571. Recuperado de: <https://tinyurl.com/y6q57owk>



- GOMILA, Antoni
 1991 El innatismo de Fodor: Consideraciones críticas. *Estudios de Psicología*, (45), 35-48. Recuperado de: <https://tinyurl.com/y67ret8t>
- HERMIDA, Pablo
 1993 La psicosemántica de Jerry A. Fodor. *Endoxa Series Filosóficas*, (1), 359-372. Recuperado de: <https://tinyurl.com/ycm8ft9h>
- IGOA, José Manuel
 2003 Las paradojas de la modularidad. *Anuario de Psicología*, 34(4), 505-571. Recuperado de: <https://tinyurl.com/y5d8kzzy>
- MEDINA, Nicolás
 2010 Realidad mental en la ciencia cognitiva. *IIPSI*, 13(1), 209-220. Recuperado de: <https://tinyurl.com/y3h6rtlh>
- MARTÍNEZ, Pascual
 1995 Wittgenstein y Fodor sobre el lenguaje. *Anuario Filosófico*, 28(2), 357-376. Recuperado de: <https://tinyurl.com/yyndb74t>
- MEYERING, Theo C.
 1994 Fodor's modularity: A new name for an old dilemma. *Philosophical Psychology*, 7(1), 39-62. <https://doi.org/10.1080/09515089408573109>
- MURPHY, Gregory L.
 2019 On Fodor's First Law of the Nonexistence of Cognitive Science. *Cognitive science*, 43(5). <https://doi.org/10.1111/cogs.12735>
- QUIROGA, Lautaro
 2010 *Modelos mentales y razonamiento* [Tesis de grado]. Universidad de Chile.
- RAMÍREZ, Camilo
 2019 Sobre conejos y otras figuras geométricas. El problema de la indeterminación referencial en la teoría semántica de Fodor. *Discusiones Filosóficas*, 20(34), 165-184. <https://doi.org/10.17151/difil.2019.20.34.9>
- RELLIHAN, Matthew J.
 2009 Fodor's riddle of abduction. *Philos Stud*, (144), 313-338. <https://doi.org/10.1007/s11098-008-9212-6>
- RENGIFO, Mónica
 2008 *El rol de la representación mental en la ciencia cognitiva* [Tesis de Magister]. Universidad de Chile.
- REY, Georges
 2018 Remembering Jerry Fodor and his work. *Mind & Language*, 33(4), 321-341. Recuperado de: <https://tinyurl.com/y29tjb4e>
- RODRÍGUEZ, Manuel
 2006 *Sobre conceptos. Atomismo Informacional* [Tesis de Magister]. Universidad de Chile.
- SKIDELSKY, Liza
 2006 Modularidad e innatismo: una crítica a la noción sustancial de módulo. *Revista de Filosofía*, 31(2), 83-107. Recuperado de: <https://tinyurl.com/yytcvhp5>
- 2012 ¿Lenguaje del pensamiento o pensamiento en lenguaje natural? En C. Silva y L. Salvatico (Eds.), *Filosofía e História da Ciência no Cone Sul*. Porto Alegre: Entrementes.



SUBÍA, Andrés & GORDÓN, Jacqueline

- 2014 Esbozo crítico sobre las estructuras cognitivas: Génesis del pensamiento científico. *Sophia, colección de Filosofía de la Educación*, 16(1), 71-82. <https://doi.org/10.17163/soph.n16.2014.03>

THALIATH, Babu

- 2019 Lenguaje y referencia. *Sophia, colección de Filosofía de la Educación*, 27(2), 141-166. <https://doi.org/10.17163/soph.n27.2019.04>

VALLEJOS, Guido

- 1990 Realismo intencional y naturalización del contenido. *Lenguas Modernas*, (17), 5-34. Recuperado de <https://tinyurl.com/y4bspbva>

WELSH, Sean

- 2016 Jerry A. Fodor and Xenon W. Pylyshyn: Minds Without Meanings: An Essay in the Content of Concepts. *Minds & Machines*, (26), 467-471. 10.1007/s11023-016-9399-9

ZUMALABE, José María

- 2014 Acerca del carácter representacional de la mente. La mente representacional. *Psychology, Society, & Education*, 6(2), 125-144. Recuperado de: <https://tinyurl.com/y2w8t3mo>

Document reception date: July 15, 2020

Document review date: September 15, 2020

Document approval date: October 15, 2020

Document publication date: January 15, 2021

Miscellaneous / Misceláneos

MEETING POINTS BETWEEN CRITICAL THINKING AND METACOGNITION TO RETHINK THE TEACHING OF ETHICS

Puntos de encuentro entre pensamiento crítico y metacognición para repensar la enseñanza de ética

ERNESTO JOAQUÍN SUÁREZ RUIZ*

National University of La Plata, La Plata, Argentina

jsuarez@fahce.unlp.edu.ar

Orcid code: <https://orcid.org/0000-0002-0299-8893>

LEONARDO MARTÍN GONZÁLEZ GALLI**

University of Buenos Aires, CABA, Argentina

leomgalli@gmail.com

Orcid code: <https://orcid.org/0000-0002-0713-164X>

Abstract

The traditional vision of critical thinking (CT) founded on a rationalist approach has been questioned since the end of the last century by the 'second wave' of CT, which, despite not being a fully defined movement, has included aspects such as imagination, creativity and cooperative work in its understanding and in its application to teaching. At the same time, current perspectives in moral psychology such as the 'social intuitionist' model proposed by Jonathan Haidt, represent a challenge to the rationalist model of morality that many of the canonical normative ethics suppose. Since both CT and the moral foundation represent essential factors in the teaching of ethics, it is made explicit that the latter also needs to be revised. That is why the present work analyses a perspective of CT alternative to the traditional one based on the potential contribution of metacognition and the social intuitionist model, in order to open new lines of research to update the moral foundation that is assumed in the teaching of ethics. To delve into this, the relevance and applicability of metacognition in the teaching of ethics will be exemplified with situations related to the current Covid-19 pandemic.

Keywords

Ethics, thinking, critical, metacognition, teaching, model.

Suggested citation: Suárez, Ernesto & González, Leonardo (2021). Meeting points between critical thinking and metacognition to rethink the teaching of ethics. *Sophia, colección de Filosofía de la Educación*, 30, pp. 175-195.

* Master in Philosophy (Université Bordeaux-Montaigne), Professor and Graduate in Philosophy (FaHCE, UNLP), Professor in Audiovisual Communication (FBA, UNLP). CONICET doctoral scholarship holder.

** Doctor in Biological Sciences (FCEN, UBA), Professor of Middle and Higher Education in Biology (FCEN, UBA), Adjunct Researcher at CONICET. Associate Professor of the Biology Faculty of the FCEN of the UBA.

Resumen

La visión tradicional del pensamiento crítico (PC) fundada en un enfoque racionalista ha sido puesta en duda a partir de fines del siglo pasado por la 'segunda ola' del PC, la cual, a pesar de no ser un movimiento del todo definido, ha incluido aspectos como la imaginación, la creatividad y el trabajo cooperativo en su comprensión y en su aplicación a la enseñanza. Paralelamente, perspectivas actuales en psicología moral como el modelo 'intuicionista social' propuesto por Jonathan Haidt, representan un desafío al modelo racionalista de la moral que suponen gran parte de las éticas normativas canónicas. Siendo que tanto el PC como el fundamento moral representan factores fundamentales en la enseñanza de ética, se hace explícito que esta última precisa también ser revisada. Es por ello que el presente trabajo analiza una perspectiva del PC alternativa a la tradicional basada en el potencial aporte de la metacognición y del modelo intuicionista social, con el fin de abrir nuevas vías de investigación para la actualización del fundamento moral que se supone en la enseñanza de ética. Para ahondar en ello, se ejemplificará la relevancia y aplicabilidad de la metacognición en la enseñanza de ética con situaciones vinculadas a la actual pandemia por Covid-19.

Palabras clave

Ética, pensamiento, crítico, metacognición, enseñanza, modelo.

176



Introduction

As argued by contemporary researchers such as Haidt (2001), Triskiel (2016), or Tillman (2016), the dominant perspective in normative ethics regarding the characteristics of morality has traditionally been that of a rationalist approach, according to which it is assumed that moral judgments emerge exclusively from reason. For example, traditional ethics such as those derived from Kantian deontology or Millian utilitarianism generally assume that compliance with their criteria depends exclusively on moral reasoning since it is that which makes it possible to distinguish between moral correctness and incorrectness. Thus, influences such as those linked to emotions are usually considered as accessory influences or even as obstacles in following these criteria.

At present, the rationalist foundation on which canonical ethics instituted their normative criteria is problematized by research from moral psychology. Although studies in this discipline do not have a prescriptive purpose as the ethical systems just mentioned do, developments such as those of Jonathan Haidt (2001) show that normative criteria based exclusively on rational cognition are strongly conditioned by a cognition of intuitive type, which is related to emotions and precedes moral reasoning in the formation of moral judgments.

Despite the fact that multiple problematic points of the rationalist approach to morality have been evidenced, the critical perspectives that include emotions as an important factor are still scarce and/or have a marginal role with regard to academic research in normative ethics. Thus, it is impor-

tant to highlight a problem that will run through the development of this article as a whole: if we continue to assume that nothing that is currently studied in the field of moral psychology affects the understanding of morality that underlies normative ethics, this Philosophical sub-discipline runs the risk of reproducing and/or perpetuating dogmatic foundations that, in the light of experimental investigations, show to have lost its validity.

This anachronism in the theoretical foundations of ethics does not only represent a problem within the academy, but this being the philosophical sub-discipline that is responsible for analyzing what are the motivations, decisions, and/or actions that should be considered as correct to the ethical level in order to guide daily actions, formal education could be transmitting extemporaneous assumptions that would harm the adequacy of these topics so essential for social life. In fact, it is possible to affirm that this anachronistic theoretical starting point is present in the teaching of ethics both at the higher level and at the intermediate level. An indication of this is the fact that, when teaching ethics, the anthropological and psychological assumptions that an 18th-century philosopher like Immanuel Kant had at the base of his normative ethics are still often assumed to be valid. As recent examples of this, the developments of Moreno (2018), Mueller (2019), or Madhloom (2019) could be mentioned.

However, as philosophers such as Obiols (2008), Kohan (2008), or Cerletti, (2020) have suggested, didactics in philosophy has its peculiarities compared to other sciences, which could offer alternative ways that allow favoring a revision of the rationalist approach of morality and avoid its uncritical reproduction. To exemplify this, the reflections of Alejandro Cerletti (2008) are propitious:

(...) If it is a question of teaching philosophy, it would correspond to be able to determine what is going to be taught under that name. But, as is known, the question “what is philosophy?” constitutes a proper and fundamental theme of philosophy itself, and it does not admit a single answer, far from it. (...) The fact that pretending to teach philosophy leads, as a preliminary step, to having to rehearse, even temporarily, a possible answer to the question about what philosophy is, and that this attempt already involves introducing oneself into philosophy, shows that the foundation of all teaching of philosophy is basically philosophical and not merely didactic or pedagogical. The questions “what is teaching philosophy?” and “what is philosophy?” They then maintain a direct relationship that links essential aspects of philosophizing (p. 82).

Following the philosopher’s perspective, it is possible to understand that the middle-level philosophy teacher requires the same com-

mitment when developing their teaching as the higher-level teacher, specifically, they must choose a particular interpretation from the answer to the fundamental question ‘What is philosophy?’ So, in tune with this particularity of philosophical teaching, it would be desirable for the teaching of ethics to depart from the dominant perspective in the field of academic philosophy for two reasons. In the first place, in tune with the arguments of Suárez-Ruiz (2019), because this perspective is questionable in the same field of academic philosophy. Second, and mainly, because it is a perspective that is not adequate for the purposes of teaching aimed at fostering a more complex and better-founded capacity for moral reasoning, a fundamental component for the lives of students.

Starting from this brief state of affairs, this article will explore some critical perspectives of the rationalist approach to morality, with the purpose of providing tools for a problematization of this point of view in the teaching of ethics in general. For this, the focus will be placed on a concept that is especially relevant for the teaching of philosophy and, particularly, ethics, namely, that of ‘critical thinking’ (CT). This notion will allow narrowing down the scope of the study, at the same time as finding points of contact in the reviews that are taking place at the level of traditional conceptions of both the CT and the characteristics of morality.

In the first section, we will begin by exploring new trends in understanding CT, focusing particularly on the distinction between its traditional approach and that of the ‘second wave’. Then, in the second section, we will present the main criticisms made from contemporary moral psychology to the rationalist approach to morality based on the ‘social intuitionist’ model of Jonathan Haidt (2001). Finally, in the third, we will proceed to explore a CT perspective that is congruent with a critical view of the rationalist approach to morality and that, in turn, is suitable for its application in the teaching of ethics, based on metacognition.

Two general approaches to critical thinking

One of the main characteristics of the concept ‘critical thinking’ is its normative weight, that is, that theoretical aspect that is not limited to the description of phenomena, but, following Bailin et al. (1999) and Bensley (2011), also includes a prescriptive level, that is, a delimitation between right and wrong. Hence, the use of the CT in the teaching of philosophy supposes that there will be certain activities that will lead to it and others that will not. One of the practices commonly associated with it is the



logical analysis of judgments, following Moore and Parker (1991), and arguments by Fisher and Scriven (1997). Now, beyond the fact that it is perhaps the most widespread, assuming this practice as the primary, implies committing to a certain interpretation of the characteristics of the CT. Precisely, in relation to how this concept is taught in philosophy, there are common points that allow us to distinguish between at least two types of general approaches: a traditional one and a more recent alternative one, called by the philosopher Kerry Walters as the ‘second wave’ of critical thinking (1994).

Regarding the traditional approach, following the characterization of the philosopher Stuart Hanscomb (2017), he would find its first formulations already in the beginnings of Western philosophy. In the words of the researcher:

The historical origins of critical thinking can be identified in two fundamental characteristics of Western philosophy: (1) commitment to the truth (even in the face of social and political pressures to remain ignorant); and (2) the individual development of the virtues associated with wisdom and good judgment (...) (p. 5).

Based on its commitment to wisdom and knowledge, this approach would focus above all on an informal logical analysis, that is, following Kurfiss (1988), not in purely abstract terms but from a logic focused on the study of argumentation in the context of ordinary language. Then, following authors like Salmon (2012), CT from the traditional approach can be understood as a practice dedicated to reviewing and evaluating judgments and arguments used in everyday life, through rational scrutiny.

On the other hand, it has been pointed out that one of the main problems of this approach is that it ends up losing sight of the possible positive influence that processes such as creative thinking or intuitive aspects of cognition could have on the development of CT, since that, through their exclusive anchorage in logical analysis, as suggested by Thayer-Bacon (2000), these influences are usually characterized as dispensable or even as obstacles.

The most recent approach, the ‘second wave’ of the CT, is characterized by defining it not only as the application of logical analysis in the formation of judgments and arguments, but also as a process in which characteristics such as creativity, following Bonk & Smith (1998), imagination, following Gallo (1994), or cooperative work, following Thayer-Bacon (2000), are embedded. More recently, authors such as Ford and Yore (2012) and González-Galli (2020) have emphasized the importance



of metacognition in CT. According to this last author, for example, metacognition—which according to Zohar and Dori (2011) refers to the knowledge and regulation of one's cognition—would be one of the pillars of critical thinking, since it is not possible to make decisions with freedom and with solid theoretical foundations if one does not have a broad conscious knowledge about the modes of cognitive functioning that skew and limit one's own thinking and decision-making processes.

This approach intends to broaden the scope of the CT, given that, as indicated in the previous paragraph, even though the traditional approach includes informal logical analysis, it ends up committing itself to an exclusively rationalist consideration of said activity. Now, an important problem with this more recent approach is that, precisely, such an extension of the concept of 'critical thinking' entails the inconvenience of vagueness in its definition and the difficulty of delimiting the pedagogical-didactic methodology to reach it. According to the philosopher Claudia María Álvarez (2007, p. 22), it is due to the lack of precision and consensus in this second way that the traditional perspective still continues to be the canonical one.

Thus, while the first—the traditional approach—gains precision, it loses aspects of the process that seem to be inherent to the CT, the second—the second wave—by broadening its definition, loses precision and makes it difficult to find teaching strategies that make it effective. Following Álvarez (2007), this problematic point in the characterization of the CT could be considered as one of the causes that even the possibility that philosophy as a discipline can promote critical thinking has been questioned in academic literature.

In relation to the teaching of ethics, following researchers such as Hanscomb (2017, p. 7), it could be affirmed that of the two different approaches to the concept of 'critical thinking', the one that predominates is the traditional one. This could be due to the fact that two of the most important traditions in this philosophical sub-discipline base their normative criteria on rationality. That is, the canonical perspectives of Kantian deontology—with a normative criterion based on the 'categorical imperative' derived from reason- and the utilitarian perspective—with a normative criterion based on the calculation of utilities or, in other words, the impartial maximization of happiness. If we start from these rationalist criteria, the rest of the factors considered by the 'new wave' (such as creativity or cooperative work), would be interpreted as accessory or irrelevant influences in the rational clarification of motivations, decisions and/or moral actions. Perhaps it is for this reason, because of the ratio-



nalistic characteristics of canonical normative ethics, that it is still not possible to speak of a ‘second wave’ of the CT in ethics in particular.

Although, for example, didactic resources such as brainstorming or the search for creative solutions to moral dilemmas are usually common in ethics classes in secondary education, the function of these strategies is generally nothing more than to be means that allow arriving at true critical thinking based on a rational clarification based on logical analysis. In other words, although processes such as creativity or emotional involvement are present in teaching at first, they are usually reduced to the role of instruments subordinated to the logical clarification of arguments and judgments. This clarification may be adequate to tend to a greater capacity for rational judgment, but, as will be argued in the third section, CT should not be reduced to its traditional vision.

The preeminence of the traditional view of CT in ethics teaching has a specific parallel to this discipline since it is linked to an equally traditional conception of the characteristics of morality. Similar to what happens with much of the academic research in this philosophical sub-discipline, in the teaching of ethics a model of morality based exclusively on rationality is usually assumed, which has been questioned in light of recent research in moral psychology.

Critical perspectives of the rationalist model in moral psychology

Contemporary moral psychology is characterized by being an inter-disciplinary field in which research from various sciences converge when analyzing the psychological characteristics of morality. Although the link between this discipline and philosophical ethics may be apparent at first glance, in reality, there are few productions in the philosophical literature that consider this articulation in depth. Among the possible reasons for this scarcity, it could be considered that, while moral psychology deals with the ‘description’ of morality in psychological terms, ethics concentrates on the ‘prescriptive’ aspect of moral decisions and/or actions. This distinction would draw, at the same time, an important epistemic distance between both disciplines, since the role of moral psychology in the discussions related to normative ethics would end up being accessory or even unnecessary.

Now, in the last two decades, lines of research have emerged that present great challenges to the idea of an exclusively rational foundation

of morality, generally assumed by the traditional approach to normativity in ethics. These are experimentally based theoretical perspectives that arise, precisely, from contemporary moral psychology. One of its most important representatives is the aforementioned North American psychologist Jonathan Haidt (2001), who proposed the ‘social intuitionist’ model of morality as an alternative to the prevailing ‘rationalist model’.

Haidt is part of a current of moral psychology based on dual-process theories. Other representatives of this theory are, for example, Daniel Kahneman (2019), Olivier Houdé (2019), Joshua Greene (2013), Cordula Brand (2016), or Jonathan Evans (2008, 2020). According to these theories, the mind has two basic modes of operation. The first can be called ‘intuitive cognition’ (Kahneman, 2019, calls it ‘system 1’), and involves fast, consciously unregulated, and easy modes of thought (they do not require great effort in cognitive or physiological terms). The second can be called reasoned cognition (Khaneman calls it ‘system 2’) and involves slow, consciously motivated, regulated, and with effort modes of thought. Following Gigerenzer (2018) and Gilovich (2009), System 1 is largely made up of numerous cognitive biases or heuristics that guide rapid reasoning for decision making. Haidt’s ‘social intuitionist’ model, for its part, is cited by numerous recognized researchers such as Steven Pinker (2008), Robert Sapolsky (2017), Shihui Han (2017), which evidences that it has now become an unavoidable theoretical approach in the search for an updated characterization of morality.

The main argument of the model proposed by Haidt is that the formation of moral judgments is conditioned, above all, by moral intuitions derived from emotional influences. By ‘moral intuition’ the psychologist understands that sudden appearance in the consciousness of a moral judgment, without any notion of what steps were taken or the evidence used to arrive at said judgment. Unlike the ‘rationalist model’, in which it is assumed that moral judgments are caused exclusively by moral reasoning and where the affective component is accessory, from social intuitionism it is understood, on the contrary, that the fact that said judgments suddenly emerge to consciousness without a clear notion of the steps that have been taken to reach them, correlates with more emotional than rational influences.

Thus, according to the model proposed by the North American psychologist, moral intuitions are the most recurrent cause of moral judgments, and moral reasoning would be characterized, above all, by being a slow process, *ex-post facto*, generally subordinate to the effect of these intuitions. That is, the main function of moral reasoning would be to rationalize



decisions already intuitively conditioned. According to Haidt, this model is more consistent with developments in sciences such as primatology, for example, by Waal (1982, 1991, 1996) and Goodall (1986), psychology, for example, Wilson (1994) and Kagan (1983) and neuroscience, for example, Damasio (1994) and Gazzaniga (1986), while allowing the characteristics of moral judgment to be elucidated more effectively.

It could be said that these types of critical arguments for the rationalist approach to morality are in fact far from novel since they would have already been developed by philosophers like David Hume in the 18th century. In fact, the Scottish philosopher is one of the psychologist's references. For example, following Hume's *Treatise of Human Nature* (1969 [1739]), Haidt argues that, in most cases, moral judgments are analogous to aesthetic judgments, since they generally do not arise from a rational analysis of the characteristics of each particular situation, but of decisions determined by a 'moral sense'. Again, reasoning is no longer presented as the cause of moral judgment, but rather as a consequence of previous intuitive processing. That is, the function of reason is, above all, to justify decisions that have already been emotionally conditioned. Now, beyond the important Humean influence on his reflections, the contribution of the model developed by Haidt is, precisely, the updated experimental basis that supports it.

Summing up so far, Haidt's model escapes the traditional approach to moral judgments as arising from private reasoning and turns attention to the intuitive and social aspects of the phenomenon. A metaphor used by this author—which is very telling—is one that maintains that more than a judge or a scientist seeking the truth, reason is like a lawyer defending his client: emotions. In fact, this particularity would be in tune with an evolutionary vision of morality, from which it is understood that this phenomenon would not have arisen to seek objectivity, but as a way of reinforcing the social ties that ensured human survival throughout evolution:

From an evolutionary perspective, it would be strange if the mechanisms that underlie the formation of our moral judgments had been designed mainly to seek precision, leaving in the background the disastrous effects that being constantly on the side of our enemies and against our own friends would bring. Studies on attitudes, perception of others, and persuasion show that desires for harmony and agreement strongly skew judgment (p. 821).

It is worth noting that, beyond his emphasis on the role of moral intuitions, Haidt does not deny the importance of reason in shaping



moral judgments. The ‘reasoned judgment’ and ‘private reflection’ are still two relevant cognitive components in his model. Through private reflection, for example, it is possible to give rise to new intuitions that contradict the one that was automatically intuited. The emphasis placed on intuitive cognition and social influence in the psychologist’s model has the objective of making explicit that, in light of recent research on the characteristics of morality, the role of reasoned cognition is much less constant than is traditionally assumed.

Another caveat pointed out by Haidt is that his thesis on social intuitionism must be understood as an exposition of how the formation of moral judgments tends to occur at the psychological level, in which moral reasoning is rarely the cause of such judgments, not as a normative dogma of how they should be done. That is, the model represents an up-to-date and experimentally founded description of the characteristics of the formation of moral judgments, but it does not contain prescriptive statements about what people should do when determining what is right or wrong at the ethical level.

Starting from this distinction between a descriptive and a prescriptive level, a possible interpretation would be one that holds that perspectives such as Haidt’s are irrelevant to normative ethics since this sub-discipline deals with the other side of the spectrum of morality, namely, from the realm of ethical prescribing, developments in moral psychology could be regarded as dispensable. Now, based on the critical stance of the rationalist approach that is defended in this article, it should be noted that, if one starts from extemporaneous descriptive assumptions regarding the characteristics of morality, then the effectiveness of the prescriptive postulates would also be conditioned by said anachronistic starting point. Following philosophers such as Kitcher (2011) or Birnbacher (2016), although it is necessary to maintain a difference between a descriptive and a prescriptive level in ethics, this does not mean that the second can make its speculations absolutely independent from the first.

Therefore, beyond the fact that it is an investigation based on a descriptive elucidation of morality, Haidt’s developments allow revealing the main core of contemporary criticisms of the rationalist model that underlies a large part of canonical normative ethics: based on a model that shows that it no longer works, this approach cannot account for how moral judgments are regularly formed, so the normative ethics that assume it would be based on an anachronistic model, that is, one that no longer manages to encompass the characteristics of morality. Maintaining a similar conception of ethical normativity is problematic, since, to



take an extreme example, a normative ethic that requires individuals to have a decision-making capacity that far exceeds what is allowed by their cognitive characteristics could be assumed to be valid. That is, by maintaining an approach inconsistent with the psychological perspectives of the greater current consensus, there is a serious risk of defending ethics that are impracticable on the part of specific people.

Taking into account what has been developed so far in relation to the difficulties of the traditional approach to the CT, as well as the challenges that are presented by contemporary moral psychology to traditional normative ethics, in the third and last section, an alternative research path will be proposed that would allow us to escape, on the one hand, from the problems linked to the 'second wave' of the CT and, on the other hand, from the purely rationalist perspectives of morality.

Educational implications with special regard to the teaching of critical thinking

This section will introduce some key ideas that, in the authors' opinion, could contribute to rethinking ethics teaching so that it is more consistent with the theoretical and empirical developments outlined above. In this analysis, special reference will be made to education aimed at promoting CT, a central objective for many educational currents and to which ethics teaching tends to aspire.

It has been noted above that the two main perspectives in relation to CT have serious limitations. While the traditional perspective falls into excessive rationalism, the "second wave" has the problem of vagueness in its definitions and/or proposals. The proposal in this last section focuses on the notion of metacognition (MC), a factor absent from the traditional perspective and which occupies a marginal place in many 'second wave' proposals. As mentioned, MC refers to knowledge about cognitive processes (including and especially one's own) and the ability to regulate them. Numerous investigations, from different disciplines and theoretical lines, converge that metacognitive capacity is a key aspect in learning processes and, more generally, in the condition of an expert in any discipline. Examples of this are the studies by Azevedo and Alevén (2013), Jorba and Casellas (1997), Pozo (2016), Ritchhart, Church and Morrison (2014), or Zohar and Dori (2011). The proposal that will be presented in this section represents an attempt to take into account the findings of the previously outlined psychology of morality and the research on the

importance of MC to be developed in this section, in order to rethink an ethics teaching that encourages the CT.

The main suggestion to highlight is that exercising critical thinking requires metacognitive knowledge about the way in which moral judgments are formed. This second aspect is the most original of the proposal developed here and the one that places proposals such as Haidt's at its center. To put it another way, it is possible to affirm that a teaching practice that limits itself to providing conceptual inputs for ethical reasoning and that is assumed to be purely rational, will fail in its claim to be applicable in 'real-life', that is, because simply the cognitive characteristics of specific individuals are far from being purely rational. And that would imply, of course, the impossibility of promoting the CT. Thus, in addition to promoting the learning of traditional normative systems, the teaching of ethics should also provide knowledge about the psychological characteristics of moral judgments. These ideas will be illustrated below by discussing what conditions should be in place for a citizen to exercise CT in relation to some of the problematic issues raised by the current Covid-19 pandemic.

In the current context, many countries have established measures of social isolation and suspension of activities (commercial, recreational, etc.) aimed at reducing the rate of infections. In some countries at least, such as the case of Argentina, this type of measures gave rise to a public debate that, schematically, can be understood as a highly polarized discussion between those who consider that these measures are necessary and that the correct thing is to comply with them and those who, on the contrary, consider that such measures are not justified (in reality they are an excuse to restrict individual freedoms for political purposes, etc.) and that, therefore, the correct thing is not to comply with them (even violating the law in the exercise of an alleged 'civil disobedience'). In such a context, each individual faces a series of decisions, beginning with the identification of any of the positions presented and the subsequent determination of actions consistent with said position.

It is now possible to ask what knowledge a citizen would need to make decisions of this kind in an informed manner. First of all, assume that you would need to know something about biomedical sciences (What are viruses? How are they transmitted? Etc.). Second, meta-scientific knowledge is required (What status does the word of epidemiologists have in comparison with other social actors? Why are certain statements considered pseudoscientific?). Third, that person would also need to reflect on what it means to say that something (in this case the mandatory



nature of the measures that restrict certain individual freedoms) ‘is right’ or that ‘is wrong’. Here philosophy would make its contribution, with all the concepts and schools of thought of ethical theory.

Now, given what researchers such as Haidt argue, it is most likely that this person made his decision in a way that has little to do with rational arguments based on concepts from science, meta-science, and philosophy or on evidence. On the contrary, the decision will be based on intuitions whose origin is completely opaque to the individual, and then eventually that individual will make use of concepts from biology or ethics to justify their decision in a *post-hoc* way, that is, with a moral judgment determined prior to said justification.

In relation to the proposed example, opinions have been polarized in association with political-partisan positions, so it is easy to imagine that many of those who sympathize with the ruling political party will tend to consider the restriction measures correct, while those who sympathize with the main opposition party they will tend not to agree with these measures. Most likely, following Girgerenzer (2018), Sapolsky (2018), Greene (2013), and Haidt (2019), this is due to a bias that favors the acceptance of the ‘truths’ decreed by our social group of belonging, our ‘tribe’, a psychological mechanism that helps us ‘fit in’ or ‘belong’, avoiding the serious problems associated with becoming a ‘social outcast’. The entire debate is thus framed in a logic of “us versus them” and this polarization in opinions also supposes a strong moralization of the debate: what others do is wrong.

What is described in this scene does not seem very close to what is usually imagined as an ideal of critical thinking, mainly because it does not seem that the individuals have exercised a decision based on evidence and experimentally founded theories. Other issues related to the Covid-19 pandemic could be mentioned, such as the proliferation of ‘conspiracy theories’, which according to researchers such as Imhoff and Lamberty (2017) show the low levels of rationality in the way people understand the situation. But the main thing in relation to this work is to question what knowledge these individuals lack to consciously choose or, more modestly, what knowledge could increase the degrees of awareness of that decision. It is clear at this point that more details on biomedicine, philosophy of science, or ethics will not solve this problem, since all of them could become conducive tools to detail a *post-hoc* justification. The answer offered here is that what you need is metacognitive knowledge about the intuitive process that led you to make that first decision.

In the light of what was developed in the previous section, the foundation of such metacognitive knowledge would consist mainly of some version of the aforementioned ‘dual-process theories’, which distinguish between an intuitive cognition and a reasoned cognition. Continuing with the example mentioned above, and now placing it in a classroom setting, students should understand that, most likely, the decision they make regarding whether or not to comply with public health measures related to the pandemic is due to, in the first instance, more to the operation of intuitive than reasoned cognition. This would facilitate the momentary suspension of judgment, the reevaluation of the reasons given (from reasoned cognition), and, eventually, of the decision itself.

The interference of this dual process theory in the field of education could, of course, go further, for example, to address the question of why the intuitive system makes the decisions it does. This would require the analysis of various factors, from innate cognitive biases to other automated cognitive responses from socialization. In any case, these pre-conscious influences have nothing to do with the kinds of reasons that can be used to explicitly justify the decision, and that is revealing. The research could go even further, identifying some of those social causes. Thus, for example, a student could become aware that he or she has a certain prejudice in favor of techno-scientific interventions because he belongs to a family of scientists and/or is a student of natural sciences and, therefore, his group social reference adheres to this perspective. This bias could have led the individual to dismiss certain evidence and overestimate others, always with a bias in favor of the belief already installed (called by Wason [1960] as “confirmation bias”). The numerous cognitive biases or ‘heuristics’ identified in this field of study (fundamental attribution error, self-service bias, social conformity, etc.) offer valuable conceptual tools to explore these questions. On this topic, see, for example, the work of researchers such as Haidt (2019), Gigerenzer (2018), Gilovich (2009), or Gilovich, Griffin and Kahneman (2002).

All these concepts are metacognitive knowledge because they refer to cognitive processes and products (own and of third parties). But as was pointed out, MC also implies the ability to regulate one’s own cognitive processes. In terms of the ideas introduced in the previous paragraph, it is about increasing the intervention capacity of reasoned cognition. González-Galli, Pérez, and Gómez Galindo (2020) have referred to this ability with the name ‘metacognitive regulation’. This ‘regulation’ consists of (1) the understanding of what certain patterns of thought consist of, (2) the ability to identify these patterns of thought (in others and in oneself) and, (3) the ability to re-



gulate their behavior. Houdé (2019) even suggests that this ability to control and monitor is a prerogative of a third mode of cognition that, following the terminology of Kahneman (2019), calls ‘system 3’. For his part, Arango Muñoz (2011) distinguishes two levels of CT. The low-level CT refers to a capacity to regulate cognitive processes based on the simulation of said processes, while the high-level CT refers to a regulatory capacity based on a meta-representational structure and the self-attribution of mind States. According to this author, the high-level MC would correspond to functions of Kahneman’s system 2, which here has been called the reasoned cognitive mode. Thus, the knowledge about these aspects of the cognitive structure could facilitate a regulation on the own thinking biases, which can be understood as greater control of reasoned cognition (or system 2) over the intuitive one (or system 1) or as an empowerment system 2.

In summary, the teaching of ethics should not only provide knowledge that serves as inputs for the operation of reasoned cognition in relation to the contents involved in studying or making a decision (methodology of the traditional approach), but also metacognitive knowledge that serves as input for the operation of reasoned cognition in relation to intuitive cognition. One way to contribute to this latter goal would be to teach some version of dual-process theories of mind. It is worth noting that it is not about rehabilitating the old rationalist claim that reason dominates emotion (the ‘charioteer’ who dominates the ‘horses’, according to the famous Platonic analogy) since, following authors such as Damasio (2014) all judgment, including that which involves consciously reviewing a decision based on certain metacognitive knowledge, will necessarily be modulated by emotions. The bet is, rather, that the knowledge about how the mind works allows us to increase and improve the regulation that reasoned cognition can exert on intuitive cognition. To what extent this goal is achievable remains to be seen. In this sense, for example, Kahneman (2019) has been quite pessimistic, while Houdé (2019) gives reasons for greater hope. In any case, realizing that it is now implausible to uphold the traditional rationalist position on morality, it is necessary and promising to explore these possibilities.



Conclusions

In this work an alternative perspective has been offered that seeks to take the first steps to overcome the limitations in the teaching of ethics linked to, on the one hand, the traditional approach of critical thinking and,

on the other hand, the ethical approaches that suppose a model rationalist of morality. The need for this (or any other) alternative to take into account current hypotheses about how the mind works, such as, for example, Jonathan Haidt's 'social intuitionist' model has been advocated. Briefly, it has been suggested that critical thinking ability depends on knowing certain criteria about what 'thinking well' implies. Faced with a complex, relevant, and problematic situation (such as several associated with the current pandemic), the individual should understand the need to resort to scientific, meta-scientific, and philosophical knowledge to make informed decisions. But, in addition, and here is the focus of the proposal developed, one should also understand the need to resort to certain knowledge about how our own cognition works. More specifically, from learning some version of dual-process theories, the student of ethics should understand that his/her mind has two modes of operation, one intuitive and one reasoned, and that, in the absence of consciously directed effort and intentional, the first mode ends up dominating in decision-making. This, of course, has the negative consequence that decision making can be significantly detached from the most reliable type of analysis, namely one based on good theoretical models and relevant evidence. This knowledge and the ability to use it as an input to regulate one's own thinking are the main components of the individual's metacognitive capacity.

Students should also understand that this proposition does not assume that the intuitive mode of reasoning is wrong or, more generally, a negative aspect of cognition. Rather, they should understand that these are adaptive and, indeed, vital functions: life demands the rapid making of many decisions based on intuitive cognition, in circumstances where the slowness of reasoning makes it unfeasible. Instead, it is about being aware that the intuitive mode involves biases and limitations that, at least in certain circumstances, can lead to poor decisions and, based on this understanding, enhance a capacity to regulate one's cognition that gives reasoned cognition more power of intervention.

Although there was no space in this work to develop concrete proposals about how to work in teaching ethics this type of learning, in the case of teaching aimed at developing MC, useful suggestions can be found in other works focused on it in relation to other content. See, for example, the research by González-Galli, Pérez and Gómez Galindo (2020), in relation to the teaching of the theory of evolution, and that of Zohar and Dori (2011), in relation to the teaching of natural science in general.



Needless to say, there are numerous questions arising from what has been said so far, which will remain pending for future developments. For example, the question of whether or not there is a ‘system 3’ relatively autonomous from system 2 (or reasoned cognition), in charge of metacognitive regulation, has direct implications in relation to the question of how to promote this regulatory capacity. More generally, the extent of the ability of system 2 (or 3) to regulate system 1 is not clear. Although, as mentioned in the previous paragraph, there are numerous proposals on how to promote the development of MC, various conceptual problems make this task difficult. For example, the distinction between metacognitive knowledge and regulation is often not clear, nor is it clear to what extent these skills are transversal or, on the contrary, content-specific. Beyond these types of problems currently under discussion, it could be affirmed that this path for the investigation and teaching of the CT makes it possible to escape both the purely rationalist vision of this, as well as the problems of vagueness and indefiniteness typical of the ‘second wave’.

The eventual answers to these and many other questions will be of great relevance in designing concrete teaching practices that can apply the program outlined here. In this sense, the proposal defended in this work does consist of nothing but some, still very general and abstract, great guidelines that could be useful to take the first steps towards the great objective of teaching in general, and of philosophy and philosophy of ethics in particular, which foster the capacity for critical thinking in citizens, an increasingly necessary capacity in an increasingly complex society subject to rapid and continuous changes that confront individuals with difficult decisions of social relevance.

Acknowledgments

The authors thank the National Council for Scientific and Technical Research (CONICET) for the financial support.

Bibliography

- ÁLVAREZ, Claudia María
 2007 *Does philosophy improve critical thinking skills?* Melbourne: University of Melbourne, Department of Philosophy.
- AZEVEDO, Roger & ALEVEN, Vincent (Eds.)
 2013 *International Handbook of Metacognition and Learning Technologies*. Dordrecht: Springer.

- BAILIN, Sharon
2002 Critical thinking and science education. *Science & Education*, 11(4), 361-375. <https://doi.org/10.1023/A:1016042608621>
- BENSLEY, D. Alan
2011 Rules for reasoning revisited: Toward a scientific conception of critical thinking. *Critical thinking: Education in a competitive and globalizing world*, 1-45. Recuperado de: <https://bit.ly/2KxMDbx>
- BIRNBACHER, Dieter
2016 Where and when ethics needs empirical facts. En *Dual-Process Theories in Moral Psychology* (pp. 41-55). Wiesbaden: Springer.
- BONK, Curtis Jay, & SMITH, G. Stevenson
1998 Alternative instructional strategies for creative and critical thinking in the accounting curriculum. *Journal of accounting education*, 16(2), 261-293. [https://doi.org/10.1016/S0748-5751\(98\)00012-8](https://doi.org/10.1016/S0748-5751(98)00012-8)
- CERLETTI, Alejandro
2008 *La enseñanza de la filosofía como problema filosófico* (Vol. 2). Buenos Aires: Libros del Zorzal.
2020 *Ensayos para una didáctica filosófica*. Río de Janeiro: NEFI.
- DAMASIO, Antonio
1994 *Descartes' error: Emotion, reason, and the human brain*. Nueva York: G.P. Putnam's Sons.
2014 *En busca de Spinoza. Neurobiología de la emoción y los sentimientos*. Buenos Aires: Paidós.
- EVANS, Jonathan
2008 Dual-Processing Accounts of Reasoning, Judgment, and Social Cognition. *Annual Review of Psychology*, 59, 255-278. <https://doi.org/10.1146/annurev.psych.59.103006.093629>
2020 *Hypothetical Thinking. Dual Processes in Reasoning and Judgement*. Londres: Routledge.
- FISHER, Alec & SCRIVEN, Michael
1997 *Critical thinking: Its definition and assessment*. Norwich: Edgepress.
- GALLO, Delores
1994 Educating for Empathy, Reason, and Imagination. En K.S. Walters (Ed.), *Rethinking Reason; new perspectives* (pp. 43-60). Nueva York: State University of New York Press.
- GAZZANIGA, Michael
1986 *The social brain*. Nueva York: Basic Books.
- GIGERENZER, Gerd
2018 *Decisiones instintivas. La inteligencia del inconsciente*. Barcelona: Ariel.
- GILOVICH, Thomas
2009 *Convencidos pero equivocados. Guía para reconocer espejismos en la vida cotidiana*. Barcelona: Milrazones.
- GILOVICH, Thomas, GRIFFIN, Dale & KAHNEMAN, Daniel
2002 *Heuristics and Biases: The Psychology of Intuitive Judgment*. Cambridge: Cambridge University Press.
- GOODALL, Jane
1986 *The chimpanzees of Gombe: Patterns of behavior*. Cambridge, MA: Belknap Press, Harvard University Press.



- GONZÁLEZ-GALLI, Leonardo Martín
 2020 Enseñanza de la biología y pensamiento crítico: la importancia de la metacognición. *Revista de Educación en Biología*, 22(2), 4-24. Recuperado de: <https://bit.ly/2KLJgO5>
- GONZÁLEZ-GALLI, Leonardo Martín, PÉREZ, Gastón & GÓMEZ GALINDO, Alma Adrianna
 2020 The self-regulation of teleological thinking in natural selection learning. *Evolution Education & Outreach*, 13(6). <https://doi.org/10.1186/s12052-020-00120-0>
- GREENE, Joshua
 2013 *Moral tribes. Emotion, reason, and the gap between us and them*. Nueva York: The Penguin Press.
- HAIDT, Jonathan
 2001 The emotional dog and its rational tail: a social intuitionist approach to moral judgment. *Psychological review*, 108(4). <https://doi.org/10.1037/0033-295X.108.4.814>
 2019 *La mente de los justos. Por qué la política y la religión dividen a la gente sensata*. Barcelona: Ariel.
- HANSCOMB, Stuart
 2017 *Critical Thinking: The Basics*. Londres: Taylor & Francis.
- HOUDÉ, Olivier
 2019 *3-System theory of the cognitive brain. A Post-Piagetian Approach to Cognitive Development*. Londres: Routledge.
- HUME, David
 1969 [1739] *A treatise of human nature*. Londres: Penguin.
- IMHOFF, Roland & LAMBERTY, Pia
 2017 Teoría de la conspiración. *Mente y Cerebro*, 84, 20-25. Recuperado de: <https://bit.ly/3nPqTX9>
- JORBA, Jaume & CASELLAS, Ester (Eds.)
 1997 *La regulación y la autorregulación de los aprendizajes*. Madrid: Síntesis.
- KAGAN, Jerome
 1983 *The nature of the child*. New York: Basic Books.
- KAHNEMAN, Daniel
 2019 *Pensar rápido, pensar lento*. Barcelona: Debate.
- KITCHER, Philip
 2011 *The ethical Project*. Cambridge: Harvard University Press.
- KOHAN, Walter
 2008 *Filosofía, la paradoja de aprender y enseñar*. Buenos Aires: Libros del Zorzal.
- KURFISS, Joanne Gainen
 1988 *Critical thinking: Theory, research, practice, and possibilities*. Washington, D.C.: Association for the Study of Higher Education.
- MADHLOOM, Omar
 2019 Anormative approach to developing reflective legal practitioners: Kant and clinical legal education. *The Law Teacher*, 53(4), 416-430. <https://doi.org/10.1080/03069400.2019.16670821>
- MOORE, Brooke Noel & PARKER, Richard
 1991 *Critical thinking* (3rd ed.). California: Mayfield Pub. Co.

- MORENO, Anna Carolina
2018 Ethics in Higher Education and Problem-Based Learning. *Asian Education Studies*, 3(1), 57. <https://doi.org/10.20849/aes.v3i1.328>
- MUELLER, Laura
2019 Education, Philosophy, and Morality: Virtue Philosophy in Kant. *Eidos. A Journal for Philosophy of Culture* 3, 4(10), 114-137.
<https://doi.org/10.14394/eidos.jpc.2019.0045>
- OBIOLS, Guillermo
2008 *Una introducción a la enseñanza de la filosofía*. Buenos Aires: Libros del Zorzal.
- PINKER, Steven
2008 The moral instinct. *The New York Time Magazine*. January 13.
- POZO, Juan Ignacio
2016 *Aprender en tiempos revueltos. La nueva ciencia del aprendizaje*. Madrid: Alianza.
- RITCHHART, Ron, CHURCH, Mark & MORRISON, Karin
2014 *Hacer visible el pensamiento. Cómo promover el compromiso, la comprensión y la autonomía de los estudiantes*. Buenos Aires: Paidós.
- SALMON, Merrilee H.
2012 *Introduction to logic and critical thinking (sixth edition)*. Boston: Cengage Learning.
- SUÁREZ-RUIZ, E. Joaquín
2019 Sobre la legitimidad de la interrogación meta-filosófica en filosofía de la biología. *Revista de humanidades de Valparaíso*, (14), 377-393. <http://dx.doi.org/10.22370/rhv2019iss14pp377-393>
- THAYER-BACON, Barbara
2000 *Transforming critical thinking: Thinking constructively*. Nueva York: Teachers College Press.
- TILLMAN, J. Jeffrey
2016 *An Integrative Model of Moral Deliberation*. Londres: Palgrave Macmillan.
https://doi.org/10.1057/978-1-137-49022-3_4
- TRISKIEL, Janett
2016 Psychology instead of ethics? Why psychological research is important but cannot replace ethics. En *Dual-Process Theories in Moral Psychology* (pp. 77-98). Wiesbaden: Springer.
- WALTERS, Kerry S. (Ed.)
1994 *Re-thinking reason: New perspectives in critical thinking*. Nueva York: State University of New York Press.
- WASON, Peter Cathcart
1960 On the Failure to Eliminate Hypotheses in a Conceptual Task. *Quarterly Journal of Experimental Psychology* 12, 129-140. <https://doi.org/10.1080/17470216008416717>
- ZOHAR, Anat & DORI, Yehudit Judy (Eds.)
2011 *Metacognition in Science Education. Trends in Current Research*. Springer.
- WAAL, Frans de
1982 *Chimpanzee politics*. Nueva York: Harper and Row.



- 1991 The chimpanzee's sense of social regularity and its relation to the human sense of justice. *American Behavioral Scientist*, 34, 335-349. <https://doi.org/10.1177/0002764291034003005>
- 1996 *Good natured: The origins of right and wrong in humans and other animals*. Cambridge: Harvard University Press.
- WAAL, Frans de & LANTING, Frans
1997 *Bonobo: The forgotten ape*. Berkeley: University of California Press.
- WILSON, James
1994 *The moral sense*. Nueva York: Free Press.
- ZOHAR, Anat & DORI, Yehudit (Eds.)
2011 *Metacognition in Science Education. Trends in Current Research*. Springer.

Document reception date: August 15, 2020
Document review date: October 15, 2020
Document approval date: November 15, 2020
Document publication date: January 15, 2021

DIDACTICAL PROJECTIONS
OF THE ARGUMENTATIVE THEORY OF REASONING

Proyecciones didácticas de la teoría
argumentativa de la razón

RODRIGO SEBASTIÁN BRAICOVICH*

Independent researcher, CONICET, Rosario, Argentina
rbraicovich@gmail.com

Orcid code: <https://orcid.org/0000-0003-2785-7293>

Abstract

The goal of the article aims at establishing a dialogue between three lines of inquiry within contemporary epistemology: Virtue Epistemology, Bounded Rationality and Argumentative Theory of Reasoning. Faced with the problem that we are interested in dealing with here, i.e., the search for a theoretical framework that might allow us to design pedagogic strategies (both within the framework of the didactic of philosophy and outside of it) based on realistic premises, Virtue Epistemology will be presented here as a strongly optimistic current from an epistemic viewpoint. The paradigm of Bounded Rationality will represent the exact counterpart, insofar as it seems to lead to a pronounced pessimism concerning the possibility of designing strategies that may allow us to improve the agent's epistemic practices. In the middle of these two extremes, the Argumentative Theory of Reasoning (developed in the last decade by Hugo Mercier and Dan Sperber) represents a promising alternative for two reasons: in the first place, because it offers an answer to the problem (faced by the paradigm of Bounded Rationality) of the adaptive character of human reason from an evolutionary viewpoint; secondly, because it allows us to overcome the epistemic pessimism that is essential to the paradigm of Bounded Rationality when planning pedagogical strategies that are not only realistic but also effective.

Keywords

Argumentation, rationality, critic, bounds, virtue, epistemology, evolution.

Suggested citation: Braicovich, Rodrigo (2021). Didactical projections of the argumentative theory of reasoning. *Sophia, colección de Filosofía de la Educación*, 30, pp. 197-215.

* Doctor in Humanities and Arts with a mention in Philosophy. He has published articles on cognitivism and psychology of action from the perspective of classical antiquity and from contemporary thought. This research has the support and financial support of the National Council for Scientific and Technical Research (CONICET) of Rosario, Santa Fe, Argentina.

Resumen

El objetivo del artículo consiste en poner en diálogo tres líneas de investigación dentro de la epistemología contemporánea: la Epistemología de la Virtud, el paradigma de la Racionalidad Limitada y la Teoría Argumentativa de la Razón. Frente al problema que interesa analizar aquí, a saber, la búsqueda de un marco teórico que permita diseñar estrategias pedagógicas (tanto al interior de la enseñanza de la filosofía como fuera de ella) sobre premisas realistas, la Epistemología de la Virtud será presentada como una corriente marcadamente optimista desde el punto de vista epistémico. El paradigma de la Racionalidad Limitada representará la contrapartida de dicha corriente, en la medida en que parece conducir a un pesimismo marcado respecto de la posibilidad de diseñar estrategias que permitan perfeccionar las prácticas epistémicas de los sujetos. Frente a estos dos polos, se sugerirá que la Teoría Argumentativa de la Razón (desarrollada en la última década por Hugo Mercier y Dan Sperber) representa una alternativa prometedora por dos razones fundamentales: en primer lugar, porque ofrece una respuesta al problema (enfrentado por el paradigma de la Racionalidad Limitada) del carácter adaptativo de la razón humana desde un punto de vista evolutivo; en segundo lugar, porque permite superar el pesimismo epistémico esencial al paradigma de la Racionalidad Limitada al momento de planificar estrategias pedagógicas realistas y efectivas.

Palabras clave

Argumentación, racionalidad, crítica, limitada, epistemología, virtud, evolución.

198



Introduction

The cognitive revolution that took place in the middle and end of the last century forced a substantial revision of the classical conception of human rationality, that is, of the conception of it that the West had inherited from classical thought and which had found its paradigmatic expression in regards to epistemological optimism, in Enlightenment thought. The paradigm of Bounded Rationality, in particular, contributed to a decisive questioning of the traditional trust in the essential perfectibility of the human species from a rational development (both individual and collective) that would operate as the key to human progress. Herbert Simon's initial studies of the epistemic limits inherent in human decision processes, together with the systematic study of cognitive biases, led, in effect, to an essentially bleak picture of trust in the human capacity to instantiate efficient and rational decision-making mechanisms. Faced with such a scenario, the Argumentative Theory of Reasoning, developed in the last decade by Hugo Mercier and Dan Sperber, appears as an innovative alternative, insofar as it allows a rereading of the supposed limitations of rationality from reinsertion of human cognitive architecture in its original evolutionary setting. As we will try to show, even though this approach does not endorse the reinstatement of the exacerbated optimism in human rationality typical of the classical conception, it allows at least to escape the markedly pessimistic paths of the Bounded Rationality pa-

radigm, while opening avenues of exploration and design of realistic and effective teaching strategies from the point of view of argumentation.

The exhibition will be articulated in the following manner: in the first section, the optimism that essentially and explicitly characterizes the most important and developed aspect of the Virtue Epistemology will be exposed, showing how it represents a continuity with respect to the classic paradigm of rationality (both ancient and Enlightened). The second section will address the Bounded Rationality paradigm as an exact counterpoint to the optimism of the classical paradigm, insofar as it aims to highlight the structural limitations of human cognitive architecture, either through the study of limits in the computability of the problems faced by human beings in decision-making contexts, such as through research on the cognitive biases that run through human reason. Faced with both extremes, the third section will try to show that the Argumentative Theory of Reasoning, even when it starts from the paradigm of Bounded Rationality, offers a novel alternative to such extremes, insofar as it allows us to understand the emergence of human Reason in light of an evolutionary landscape that explains the central role that persuasion assumes in its operation. The fourth section addresses the reasons why the Argumentative Theory of Reasoning allows to reinterpret the cognitive biases studied from the paradigm of Bounded Rationality, understanding (at least) some of them not as shortcomings of human reason but as characteristics that are a positive return once they are restored to their original evolutionary stage. The last section proposes some projections of the Argumentative Theory of Reasoning in the field of pedagogy and, especially, at the time of designing didactic strategies both within the teaching of philosophy and outside it.

The epistemic optimism of classical rationality and the Virtue Epistemology

As a distinctive epistemological current, the Virtue Epistemology has been traversed from its very beginning in the last decade of the last century by the presence of two clearly differentiated aspects with little mutual interaction. The first of these aspects is represented by the reflections of Ernst Sosa and John Greco, fundamentally, in relation to the problem of trustworthiness, and one of its fundamental objectives is to respond to the problem of skepticism¹. The second aspect that opens up, simultaneously, within this current is represented by an extremely diverse and growing set

of reflections of a normative nature in relation to the ways and strategies to generate and/or become ideal epistemic agents². Such is the divergence between both aspects, that the second of them not only does not recognize Sosa and Greco (or A. Goldman) as relevant antecedents for their own explorations, but even some of their defenders consider the problem of skepticism as a second-order problem. The explicit starting point of this aspect, on the contrary, is found in the reflections initiated, in the middle of the last century, by the model of the Ethics of Virtue, and, based on this, it tends to interpret the epistemic virtues more as character traits than as instruments to reach the truth (as Sosa and Greco did)³.

But what are the epistemic virtues and what differences them form the ethical or moral virtues? In general, enough terms to cover the broad spectrum of virtues analyzed by the authors (and resorting to a formulation of Aristotelian inspiration), epistemic virtues can be defined as stable dispositions of character that allow the subject to carry out practices related to knowledge in an ideal form, or, alternatively, the dispositions of the character necessary to carry out an honest, careful, sensitive to detail, deep, persevering, thoughtful, cautious investigation, etc. What defines, then, the epistemological virtues and the differences from the ethical virtues is the fact that they relate specifically to the problem of knowledge and not to the problem of the relationship with others (not at least directly). And this determines, in turn, the spectrum of virtues that will be the object of study by epistemologists: epistemic courage, epistemic humility, open-mindedness, epistemic rigor, etc.

The classical roots of this conception of what should be an optimal exercise of rationality are evident not only in terms of the idealized and optimistic conception that epistemologists of virtue possess of human rational capacities but of the very concept of epistemic virtues. —Concept that is modeled on the Aristotelian treatment of the ethical and dianoetic virtues (and that inherits, on the other hand, one of the central problems that afflict the moderate cognitivism of the Aristotelian approach, namely: the problem of *akrasia*⁴) —. This Aristotelian matrix that is at the basis of the Virtue Epistemology program has proven to be extremely fruitful in organizing research on intellectual virtues, not only in relation to the definition and conceptualization of the different possible virtues that characterize optimal rational exercise, but also in terms of detecting possible obstacles to acquiring these virtues, and in terms of reflecting on the possible ways of accessing them.

From the specific level of pedagogy, this has led to outlining specific strategies that would allow the student to achieve objectives such as



carrying out a systematic and rigorous investigation, exercising a rational and solid defense of their own conclusions even in front of an adverse audience, or undertaking a dialogue/investigation with an open mind to opinions that are completely opposite to their own, forcing themselves to respect the rules of justice, tolerance, and patience with the interlocutor. The careful and in-depth analyzes that the defenders of Virtue Epistemology have offered both of the isolated epistemic virtues and of the virtuous epistemic agents have represented, in this sense, the fundamental and most innovative contribution of this current to the field of education, insofar as they offer an integrated framework, and at the same time flexible and dynamic, to build ideal knowledge practices, embodied in an ideal of a rational, critical and self-critical knowing subject.

Since Zagzebski's first steps three decades ago, thereby opening up an absolutely new terrain of theoretical exploration, Virtue Epistemology has produced a surprisingly strong corpus of pedagogical tools designed not only to assist in the acquisition of epistemic virtues on the individual plane but, in the long term, to collaborate with what some of the most optimistic epistemologists consider a true transformation of the world based on the development of these virtues⁵. It is precisely in the essentially practical dimension that epistemology carried out from the Aretaic perspective assumes, at the same time, advocating the abandonment of abstract traditional gnoseological problems, where precisely the strongest reason for its appeal lies, both for those who are dedicated to research and for those who are dedicated to teaching or reflecting on it. Now, how realistic is the epistemic ideal defended by the Virtue Epistemology? How accessible are the epistemic virtues defended by these authors and how surmountable are the obstacles whose existence they themselves recognize? Is it, after all, a viable research program? In subsequent sections, it will be suggested that the paradigm of bounded rationality and, more specifically, the Argumentative Theory of Reasoning offer reasons to cast serious doubt on the optimism that characterizes the Virtue Epistemology regarding the natural capacities of the subject of reaching (or at least approaching) the ideal of epistemic subject defended by the said current. In spite of this, it will be suggested that the specific variant of the Argumentative Theory of Reasoning opens some paths that, against the pessimism that systematically crosses the paradigm of Bounded Rationality, allows us to think about the effective restructuring of the Virtue Epistemology that leaves behind the enlightened optimism typical of the original versions of these currents.

The epistemic pessimism of the Bounded Rationality paradigm

As a general and programmatic model, the Bounded Rationality paradigm finds its origins in Herbert Simon's (1955) early reflections on the limitations that inevitably structure human rationality. The core of this paradigm, in general terms, consists of the idea that human rationality is limited in its operations by a series of factors (time, computability of the problem, epistemic limitations, etc.) that render its performance necessarily suboptimal. Human reason does not operate, in other words, as a perfect and error-free inferential machine, but, on the contrary, is traversed by serious limitations in its operations that call into question the ideal character that the classical tradition had assigned to it. Far from representing a truism, the fact that this idea has lost part of its controversial and counter-intuitive character in the academic field, it should be noted, is fundamentally due to the impact that said paradigm had from its inception in the field of social sciences and in certain sectors of the humanistic disciplines. But it is necessary to bear in mind that the limited conception of rationality represented a decisive break with a tradition that had been virtually hegemonic from classical antiquity until the 1950s, and that started from the presupposition of the absolute rationality of the underlying inferential processes to every human decision.

The most important and systematic developments of this paradigm, however, began to come from the research carried out around cognitive biases by Daniel Kahneman and Amos Tversky in the 1970s (Kahneman & Tversky, 1979; Tversky & Kahneman, 1981), researches developed fundamentally against the *Rational Choice Theory*, which is the theory that, in the field of economics, at that time embodied the most paradigmatic expression of the rationalist assumptions of the classical tradition. What did the theory of cognitive biases propose? In general terms, that human reason is completely vitiated by cognitive biases, that is, spontaneous, unconscious, and intuitive tendencies to process information from the environment by resorting to inferences that have nothing to do with the model of rationality proper to the classical logic. The repertoire of biases studied by both authors became ever greater and deeper, integrating trends such as 'availability bias' (the tendency to take into account, in decisions, only the information that is at hand, rather than looking for the most relevant information), 'false consensus bias' (the tendency to assume that what one believes or values is more widespread in the population than it actually is), or 'confirmation bias' (the

202



tendency to pay attention only to information that confirms one's beliefs and to dismiss information that contradicts them).

At the end of decades of research on these trends, the conclusions reached by those who, along with Kahneman and Tversky, dedicated themselves to studying these biases, were extremely negative in relation to the human capacity to put into play a critical, self-critical, and efficient exercise of rationality, conclusions that seem to openly contradict the practical expectations that cross the reflections developed within the Virtue Epistemology, and that seem to condemn to the limbo of the pure idealistic reverie of the pedagogue the possibility of design strategies that allow the optimal development of epistemic virtues. And it is precisely as an alternative to this scenario of epistemic pessimism that the paradigm of Bounded Rationality seems to inevitably lead to, that the Argumentative Theory of Reasoning model will emerge at the beginning of the last decade.

The Argumentative Theory of Reasoning: The emergence of Reason and the evolutionary landscape

The systematic study of cognitive biases showed that the traditional rationality model (defended in classical economics, as indicated by the Theory of Rational Action) did not represent at all the real dynamics of decision-making: both when consuming goods, products, or services, such as when making decisions of a political or personal nature, or when facing situations related to couple relationships or one's professional career, the decisions that are made are, for the most part, the result of inferential processes unconscious, biased and, in most cases, logically deficient. A quick reading of some of these biases, as well as the frequency with which they are brought into play on a daily basis in decisions, cannot help but lead us to wonder, curiously, how it is possible that, as a species, it has been possible to get this far (in terms of survival) with such a poorly built vehicle.

This question, on which authors such as Stanovich and West (2000, 2008), Evans (2008), Evans and Stanovich (2013), Bargh and Chartrand (1999), among others, have written in recent decades, is precisely the one that operates as a trigger for the Argumentative Theory of Reasoning: Is it really conceivable that a capacity as deficient as this has arisen as a product of natural selection, considering the serious deficiencies attributed to it from the theory of cognitive biases and from other systems of dual processing? From the perspective of classical evolutionism, a phenotypic modification in an organism becomes the object of natural selection only

if it is adaptive, that is: if it confers on said organism (and its offspring) an adaptive advantage in a certain evolutionary scenario. If it is admitted, as both Simon and Kahneman and Tversky do, that the theoretical model of evolution by natural selection is the best model of explanation that has been proposed so far to explain not only the emergence, mutation, and extinction of species, but also the emergence, mutation, and extinction of phenotypic traits, the image that the theory of cognitive biases portrays of human reason seems to be markedly non-adaptive. How, then, to explain its emergence and proliferation? It is there, precisely, where TAR introduces its most interesting argumentative turn in relation to the Bounded Rationality paradigm, without decoupling from it⁶: according to Mercier and Sperber (2019), human reason is markedly deficient, in effect, but only if it is assumed that the objective of reason is to reach the truth, or to achieve an increasingly adequate knowledge of the world (as they assumed was the case, from ancient times onwards, both philosophy and classical psychology).

204



But is that really the case? Is it really true that when in an argumentation what you are trying to do is seek the truth, get to know the world better and the situation in which you find yourself, simply to understand it or to be able to make the best possible decision? Mercier and Sperber (2019) suggest that no: when arguing, when reasons are demanded and one's own reasons are offered, what is being sought, in most cases, is not the truth, but rather to persuade the other regarding the truth of one's position. In this way, we find here one of the two central distinctions that TAR forces us to make in order to understand the operative mechanisms of human reason, namely: the distinction between natural and artificial contexts of reason's operation. This distinction is central for two reasons: first, because it defines the specific context of the emergence of reason: the dialogue with the other. The reason, in this sense, is a product designed for public consumption⁷: an isolated individual, who lived alone in the middle of the jungle and had no contact with other individuals of the same species, would never feel the need to argue in favor of his/her own beliefs, or even reflecting on the reasons that lead him/her to do what him/her does.

This brings with it a second element that the authors care to emphasize, and it has to do with the (non) place assumed by knowledge and truth in the development of rationality: in most natural contexts of argumentation (from the point of view of the evolutionary scenario), as already mentioned, the search for truth is not the objective at all; it is merely persuasion that is being pursued, generally by any means —and at almost any cost. The truth, after all, has as much survival value as the font

chosen by the publisher when buying a book. In the field of spontaneous human interaction, what prevails, at least from the perspective suggested by the authors, is not the truth, but the effects of a certain discourse on the interlocutor (s). And this is fundamentally due to the fact that the dialogue with the other in which the ability to argue emerges as an evolutionary niche is not an objective, cold and speculative dialogue, nor is it a neutral or consequence-free exchange: in the evolutionary landscape in the one that gradually takes shape human reason, convincing or not convincing the other can mean the difference between having access to certain goods, settings or situations, or not having it. Taken to an extreme, mastering that ability can mean the difference between survival or extinction. Reason is, considered from this perspective, a social and agonistic product: it is the daughter of conflict, of the struggle for access to certain goods and advantages - be they symbolic or material.

Far from being reduced to a relapse into the pragmatic horizons of classical sophistry, the perspective addressed by this theory aims to help understand human reason as a historical phenomenon, as a product marked by the evolutionary scenario in which it arose, and whose marks they are still present in its current structure. The displacement that this operates with respect to the classical conception of reason (on which much of the reflections and projections around the didactics of philosophy is based) is evident: while the traditional conception interprets reason as a tool In order to reach the truth, objective consensus, etc., TAR places reason in the natural environment of human evolution, and postulates the scenarios of objective, neutral and disciplined search for the truth as artificial or directly unnatural scenarios.

As noted above, from the evolutionary paradigm from which the authors start, a certain phenotypic trait (in this case human reason) is adaptive to the extent that it fulfills the function for which it was 'selected', and can operate in a suboptimal manner when put to work in alternative scenarios: just as the hand of a chimpanzee or a bonobo cannot be expected to be efficient in playing the clarinet, neither should human reason be expected to be efficient in the objective search for truth —simply because it is not the role for which it was selected. When human reason is removed from the horizon of agonistic argumentation in which it evolved and put to work in another setting, it is logical that its performance is poor, and it is logical that it is traversed by completely counterproductive biases. None of this implies, of course, that all the operations of reason are ineluctably guided by the search for persuasion, or that human beings are incapable of planning and sequencing solid arguments in favor of

their own beliefs. All that TAR affirms is that when the opposite happens, that is, when the subjects privilege the search for the truth over the persuasion of the interlocutor, or when they design and plan along logically structured and sequenced argumentations, they are faced with different situations from the original evolutionary scenario of reason.

The reconsideration of cognitive biases

I said at the beginning that TAR introduces a break within the Bounded Rationality paradigm, but without abandoning the general horizon defined by said paradigm. For TAR, reason is, in effect, traversed by cognitive biases that permeate its operations, and its performance is undoubtedly tied to limitations such as time or the computability of the decision alternatives. Mercier and Sperber's criticisms of the Enlightened optimism of currents such as the Virtue Epistemology are, in this sense, as strong as those of Kahneman (2012), Evans and Stanovich (2013), Gigerenzer (2008), or Nickerson (1998).

However, the consideration of the evolutionary landscape in which human reason arises leads the authors to make a reconsideration of the argumentative efficiency of reason, thereby tempering, at least in certain aspects, the epistemic pessimism typical of the Bound Rationality paradigm. But why is this reconsideration due? It was previously stated that, in its daily operations, and as this last paradigm has insisted ad nauseam, human reason is not particularly efficient when it comes to producing solid and systematic arguments, which is due, according to Mercier and Sperber (2019), to the fact that this is not precisely the function for which it was selected by the evolutionary process. The other side of this argument, however, has been virtually neglected and consists in the fact that, as suggested by a battery of experiments from experimental psychology reviewed by the authors, reason is extremely efficient when it does what it is designed to do, to do, namely: argue in an agonistic context.

The informal discussion contexts that more adequately represent the evolutionary scenario of reason represent, to some extent, the antithesis of the courts of justice, or of the logical, exhaustive and systematic argumentation scenarios that the traditional conception of rationality has used as criterion for evaluating the efficiency of human reason.

Unlike the sequenced, planned, and articulated argumentation of philosophical treatises or legal arguments, the dynamic that is spontaneously established in informal discussion contexts is essentially interac-



tive, which implies that participants exchange a succession of arguments brief and often impromptu or, at the very least, appropriate to the specific circumstances of not only that particular discussion, but also the specific moment of the discussion. In such scenarios, being “lazy” is an understandable and sensible decision, and this for two reasons. The first of these is that having extensive arguments prepared in advance for each of the statements themselves would require unsustainable cognitive work. The second reason is that it would probably represent unnecessary work, since, on the one hand, it is most likely that most of these claims will not be contested, and, on the other, because the dynamic nature of the dialogue allows new reasons to be improvised when it has been failed in trying to convince the interlocutor.

This relocation of reason in the evolutionary context allows a decisive rereading of cognitive biases that forces us to qualify some of the most pessimistic conclusions (from the epistemic point of view) reached by Kahneman, Tversky, Nickerson, and others, since it allows think that at least some of the cognitive biases studied exhaustively from the paradigm of Bounded Rationality may not be, strictly speaking, deficiencies of reason, but rather positive characteristics. Mercier and Sperber’s extensive analysis of the confirmation bias is a paradigmatic example of their proposed reinterpretation of these biases and allows us to glimpse the hermeneutical advantages of the approach proposed by the authors.

Indeed, the confirmation bias (that is, the unconscious and spontaneous tendency to pay attention only to the information that confirms one’s own beliefs and to dismiss those which do not), traditionally considered one of the most harmful tendencies since the classical study de Nickerson (1998), appears from the TAR perspective as a necessary characteristic when considering informal contexts of discussion and the essentially agonistic and persuasive (evolutionary) function of human reason. The reasons for this are clear: when you want to convince an interlocutor to accept your own belief as valid or true, what you need to do is find reasons that confirm your own position, and not his, and any information or argument that can undermine that persuasive goal becomes absolutely irrelevant. Considered from this perspective, then, the confirmation bias demands to be understood not as a weakness of human reason, but as a strength, to the extent that it allows the subject to actively seek and deploy the reasons that support the beliefs that try to impose. As Mercier and Sperber (2017) point out:

The biases and laziness of reason are not flaws; they are characteristics that allow reason to fulfill its function. Individuals have a tendency

(bias) to find reasons that support their own point of view because this is how they can justify their actions and convince others to share their opinions. One cannot justify oneself by presenting reasons that refute one's justification. One cannot convince another to change his mind by giving him arguments against it or in favor of the idea that he wants to make him abandon. And if people reason lazily, this is because, in typical interactions, that is the most efficient way to proceed. Rather than doing the hard work of anticipating counter-arguments, it is generally more efficient to wait for the interlocutor to do so (if at all) (p. 331).

To this is added, finally, a final decisive distinction that the authors propose to understand the spontaneous dynamics of reason in natural contexts, which is the distinction between the efficacy of reason at the time of producing arguments and its efficacy in evaluating arguments proposed by others. According to the authors, and again relying on the results of a set of research from experimental psychology, the limitations of human reason when producing arguments are not replicated when evaluating them: if at the time of the production of arguments one is lazy, superficial, etc., and is constantly crossed by biases (which, considered in itself, is not, as already indicated, a flaw, but something to be expected), when evaluating the arguments proposed by the interlocutors, it is much more effective, profound and critical. As Mercier and Sperber (2017) point out: "Individuals have the ability to reason objectively, rejecting weak arguments and accepting those that are solid, only they do not use these capacities on the reasons that they themselves offer" (p. 235) This is precisely what one would expect from a tool, such as the human capacity to argue, born in an agonistic context, in which the energy devoted to the active persuasion of the interlocutor ends up turning, when the roles are exchanged, into a defensive energy, embodied in the critical examination of the opponent's arguments.

208



Pedagogical projections of the Argumentative Theory of Reasoning

The central contribution of TAR in relation to the problem of epistemic optimism that characterizes currents such as the Virtue Epistemology, and with the epistemic pessimism that characterizes the Bounded Rationality paradigm, consists, as I have tried to show, in suggesting that certain cognitive biases must be interpreted, from an evolutionary perspective, not as an obstacle or a shortcoming, but, on the contrary, as a

cognitive advantage, or a positive aspect of reason (“It’s not a bug; it’s a feature!”). This shift with respect to the Kahneman and Tversky paradigm is decisive, from the point of view of the internal consistency of the theory, insofar as it answers the question that was mentioned that operates as a trigger for the reflections that led to formulating the TAR, namely: How is it possible that an instrument so limited in its operations and crossed by biases has been adaptive and, consequently, naturally selected? The response of Mercier and Sperber (2017), in relation to this question, is simple: the adaptive character of human reason lies precisely in (some of) those characteristics that the Bounded Rationality paradigm considers as shortcomings, but that, when they are restored to the correct evolutionary landscape, they are shown as positive and beneficial characteristics for the original function for which the reason was selected, namely: to argue to persuade (and not to seek truth or knowledge).

This shift, however, is interesting for another reason, this time of a pragmatic nature: insofar as it operates as a corrective to the epistemic pessimism typical of the Bounded Rationality paradigm, it allows to give meaning again to the design of pedagogical strategies tending to improve the epistemic practices and habits of the subject —something that was virtually meaningless if one started from the overwhelming pessimism of that paradigm. This does not imply, of course, a return to the optimism typical of the Virtue Epistemology, which starts from a quasi-Rousseauian Illustrated conception of the subject, a subject that would not be traversed by cognitive, moral, or political biases, and would be guided, at least most of the time, out of the desire for knowledge and truth. None of this excessive, naive, and, to a certain extent, willful trust in man’s rational capacities will be restored by TAR. What does open up is the challenge of thinking about pedagogical strategies that start from the fact that there is a certain cognitive structure (crossed by biases and unconsciously guided, most of the time, by the need to persuade) that is the result of an evolutionary process, that can make use of precisely those characteristics, instead of ignoring them, and put them to work in scenarios that, among other things, replicate the characteristics of the evolutionary landscape of human reason.

At this point, two perspectives are fundamentally opened (divergent but complementary to each other): one constructive and the other destructive. The constructive perspective outlines, to a certain extent, the conditions under which a certain didactic strategy can be effective in relation to the objective of stimulating the argumentative capacities of the participants —or, at least, it forces us to reflect on those conditions,



instead of merely supposing that any didactic strategy is effective by the mere fact of appealing to dialogue, self-criticism or the search for reasons.

The first corollary that derives from the premises proposed by TAR is the fact that when arguing, the quality and solidity of the arguments will depend on the audience one is faced with, on how counter-argumentative the interlocutor is: to produce good arguments, it takes the presence of a critical interlocutor, who pushes to produce solid, convincing arguments. The mere act of defending a certain position in an exposition before a group, for example, becomes completely unproductive if the subject knows in advance that the position presented is not going to be openly objected and questioned. The depth and solidity of the arguments, in short, will be in direct function with the critical and active interaction with the interlocutors⁸.

210



The second corollary, and here is what is fundamental from the constructive point of view, is that the only way to overcome or counteract the negative effect of the cognitive biases of human reasoning is by putting them to work in our favor, which can be achieved, basically, in two ways: stimulating proactive reasoning and designing spaces for confrontational argumentative debate. What is meant by proactive thinking? According to Mercier and Sperber (2017), when individuals reason in isolation they tend at times, and depending on the scenario they know they will face when exposing their convictions, to emulate an agonistic argumentative context, anticipating a possible dialogical context and trying to find arguments that confirm their own position. Proactive thinking is precisely that exercise of reasoning, in an isolated and individual way, looking for arguments in favor of one's own beliefs, as if one were arguing with others, and anticipating their objections and thinking in advance of their answers. It is clear, of course, that this is not what is done all the time, but only when it is known or suspected that one is going to be faced with a situation in which they will be required to realize their own reasons. The second strategy suggested by the authors to put to work the cognitive biases in favor of oneself consists of the construction of spaces for argumentative debate —spaces that tend, by their own dynamics, and provided that they are organized by a competent mediator, to transform the confirmation bias into a tool for the logical display of the reasons that support the position of each of the participants.

But TAR contributes to understanding not only what kinds of scenarios and strategies are really effective in stimulating argumentative rationality, but also which ones are not —and that is where what can be called the negative perspective comes into play. In the first place, if the

confirmation bias is an effective characteristic of human reason, (and if, additionally, there are reasons that allow it to be interpreted as a positive characteristic of reason —at least within certain contexts), then any didactic strategy constructed on the idea of a self-critical thought seems to be destined to fail in view of the cognitive architecture that has been inherited from the ancestors: few subjects, according to these premises, spontaneously question their own beliefs. In general, for convictions to be reviewed, it is necessary that one of the following scenarios occurs: that they conflict with the beliefs of another subject, or with some characteristic of the scenario in which they are immersed, either because someone forces one to account for them, or because they collide in some way with reality, or, finally, because they are no longer effective, that is, because they no longer produce the effects that they produced until now⁹. Second, from the fact that human reasoning is particularly effective in argumentative contexts, it does not follow that *any* group discussion strategy can be effective in itself. As Mercier and Sperber (2017) state:

When participants have clearly aligned convictions from the start, this leads to polarization. When subjects begin the discussion with ideas that are in conflict with each other and do not have a shared goal, this tends to exacerbate the differences. Group discussion is typically beneficial when participants have different ideas and a shared goal (p. 334).

Taken together, the positive indications and the aforementioned restrictions put on the stage the need to attend to the specificity of the artificial argumentation scenarios designed for pedagogical purposes, and the need to understand the spontaneous dynamics of the argumentative capacities themselves. Human reason, after all, is not a general and universal resolution module, but a specialized module (or a set of them) that arose within a specific evolutionary scenario. Failure to take these characteristics into account when designing didactic strategies can only lead to the design of naive and ineffective pedagogical strategies and, at the end of the day, to the failure of the dreams of the Enlightenment to which virtue epistemologists continue to cling.

Conclusions

Attention should be paid, as a final consideration, regarding a last point that is not at all exclusive to TAR but concerns the didactics of philosophy globally considered, and is that of the complementation between the theoretical framework and empirical support: TAR offers not only a



general theoretical framework (that of rationality as a product of natural selection) but also a host of studies from the field of experimental psychology that corroborate, at least provisionally, the predictions of the theory. The design of pedagogical strategies based solely on theoretical assumptions about human rationality, but without any type of empirical research that supports its possible effectiveness, seems doomed to walk the path followed, by way of example, by a didactic strategy such as brainstorming, a strategy whose marked ineffectiveness in stimulating argumentative debate and in leading to the search for new solutions seems to have already been clearly demonstrated¹⁰. Dismissing the contributions of other disciplines in the design of didactic strategies, in this sense, no longer seems to be a recommendable *modus operandi*, and this becomes particularly decisive in relation to the contributions of psychology and, fundamentally, of experimental psychology: What is the best way to ensure a participant's commitment to the debate after their position has been openly questioned? What kinds of attitudes do subjects tend to adopt when faced with aggressive debate scenarios? What are the effective benefits in this regard of ensuring a respectful and tolerant space for debate? What are the ways in which subjects usually resolve cases of cognitive dissonance in group discussion scenarios, where a quick response is required?

This type of questions are essential in designing effective strategies, and can only be satisfactorily answered by an approach that offers, first of all, a solid theoretical framework and articulated with the rest of the disciplines (humanistic and non-humanistic) in terms of the concept of human rationality, and, second, considerable, renewed and dynamic empirical support. TAR meets both requirements. It is not the only alternative available, of course. But it seems to be a solid, plausible, and highly flexible platform to rethink our teaching practices and the teaching strategies that we institutionally implement.

Notes

- 1 Although Sosa 1980 is usually considered as the touchstone of this first aspect of the Virtue Epistemology, Sosa (2011) and Greco (2010) represent two more systematic and accessible entry routes to its general guidelines.
- 2 Within this second aspect, Zagzebski (1996) represents, to a large extent, the founding text, both from a methodological and thematic point of view. Roberts and Wood (2007) and Baehr (2011) constitute the two most recent reference systematic approaches, in addition to the compilation by Fairweather and Zagzebski (2001).
- 3 Roberts and Wood (2007) offer a synthetic but comprehensive and programmatic definition of this second aspect of the Virtue Epistemology: "Virtue epistemolo-



gy, as we understand it, explores dispositional properties of persons that bear on the acquisition, maintenance, transmission, or application of knowledge and allied epistemic goods such as truth, justification, warrant, coherence and interpretative fineness. Personal traits that regularly promote such goods are virtues, and ones that impede or undermine them are vices. Relevant dispositional properties are of at least two kinds. [...] It is an a posteriori normative conceptual discipline; it aims to describe knowers at their best, so it describes an ideal” (p. 257).

- 4 Cf. in this regard Battaly (2014).
- 5 Roberts and Wood (2007) represents a paradigmatic example of this emphasis.
- 6 The central core of the TAR is developed in Mercier and Sperber (2017 and 2019). Although there is a decisive distance between both texts with respect to the dual models of explanation of human action and a shift towards models such as social intuitionism (such as that defended in Haidt, 2001), there are no essential differences regarding the interpretation that the authors propose the axes discussed in these pages. Additional projections of the theory are found in Mercier (2011 and 2019) and Mercier and Heintz (2014). The translations by Mercier and Sperber (2017) are, in all cases, by the author of this article.
- 7 It is not by chance, in this sense, that Mercier and Sperber (2017) explicitly link, in the most recent exposition of the TAR, the concept of reason with that of ‘reputation’: “The reputation of a person is, to a large extent, the continuous effect of a conversation unfolding in time and social space about the reasons of that person. By giving our reasons, we aspire to participate in the conversation about ourselves and defend our reputation. [...] Giving reasons to justify one’s actions and reacting to the reasons offered by others is, first and foremost, a way of establishing reputations and coordinating expectations” (pp. 142-143).
- 8 What is at stake in this statement is nothing other than the epistemic need to logically navigate each path to its ultimate consequences, which inevitably refers to the Popperian idea of letting our hypotheses die instead of us, and represents, of somehow, a mirror image of the most important premise of Socratic methodology, namely, forcing the interlocutor to unfold the idea to the maximum, until finding its limit, and, eventually, its internal contradiction or its conflict with other ideas defended by the subject. As both Socrates, Popper, and Mercier and Sperber understood, this is something that can only happen within the dialectic proper to the argumentative conflict (either real or through the dynamics of the scientific-philosophical enterprise). Finally, as Mercier and Sperber (2017) point out, this dispels the myth of the ‘solitary genius’: the great achievements of reason have never been the product of an individual mind, but rather a collective product, the result of interaction, always conflictive, between various individuals over many generations (pp. 315-327).
- 9 This explains, incidentally, the exceptional character of the capacity for self-criticism in highly hierarchical relationships, on the part of those who are in the position of power. As Mercier and Sperber (2019) point out, “many of our beliefs are prone to remain unchallenged because they are only relevant to ourselves and we do not share them, or because they are controversial only with the people we interact with, or because we have sufficient authority to affirm them” (p. 26).
- 10 Cf., by way of example, Diehl and Stroebe (1987) and Mullen, Johnson and Salas (1991).

Bibliography

- BAEHR, Jonathan
2011 *The Inquiring Mind: On Intellectual Virtues and Virtue Epistemology*. Oxford: Oxford University Press.
- BARGH, John & CHARTRAND, Tanya
1999 The unbearable automaticity of being. *American Psychologist*, 54(7), 462-479. <https://doi.org/10.1037/0003-066X.54.7.462>
- BATTALY, H.
2014 Acquiring Epistemic Virtue: Emotions, Situations, and Education. En A. Fairweather, O. Flanagan (Eds.), *Naturalizing Epistemic Virtue* (pp. 175-196). Cambridge: Cambridge University Press.
- DIEHL, Michael & STROEBE, Wolfgang
1987 Productivity loss in brainstorming groups: Toward the solution of a riddle. *Journal of Personality and Social Psychology*, 53(3), 497-509. <https://doi.org/10.1037/0022-3514.53.3.497>
- EVANS, Jonathan
2008 Dual-processing accounts of reasoning, judgment, and social cognition. *Annual Review of Psychology*, 59, 255-278. <https://doi.org/10.1146/annurev.psych.59.103006.093629>
- EVANS, Jonathan & STANOVICH, Keith
2013 Dual-Process Theories of Higher Cognition: Advancing the Debate. *Perspectives on Psychological Science*, 8(3), 223-241. <https://doi.org/10.1177/1745691612460685>
- FAIRWEATHER, Abrol & ZAGZEBSKI, Linda (Eds.)
2001 *Virtue Epistemology: Essays on Epistemic Virtue and Responsibility*. Oxford: Oxford University Press.
- GIGERENZER, G.
2008 Moral intuition = Fast and frugal heuristics? En W. Sinnott-Armstrong (Ed.), *Moral Psychology. 2. The Cognitive Science of Morality: Intuition and Diversity* (pp. 1-27). MIT Press.
- GRECO, John
2010 *Achieving knowledge: A virtue-theoretic account of epistemic normativity*. Cambridge: Cambridge University Press.
- HAIDT, Jonathan
2001 The emotional dog and its rational tail: A social intuitionist approach to moral judgment. *Psychological Review*, 108(4), 814-834. <https://doi.org/10.1037/0033-295X.108.4.814>
- KAHNEMAN, Daniel
2012 *Pensar rápido, pensar despacio*. Madrid: Debate.
- KAHNEMAN, Daniel & TVERSKY, Amos
1979 Prospect Theory: An analysis of decision under risk. *Econometrica*, 47(2), 263-291. <https://doi.org/10.2307/1914185>
- MERCIER, Hugo
2011 What good is moral reasoning? *Mind & Society*, 10(2), 131-148. <https://doi.org/10.1007/s11299-011-0085-6>



- MERCIER, Hugo & HEINTZ, Christophe
 2014 Scientists' Argumentative Reasoning. *Topoi*, 33(2), 513-524. <https://doi.org/10.1007/s11245-013-9217-4>
- MERCIER, Hugo & SPERBER, Dan
 2017 *The Enigma of Reason: A New Theory of Human Understanding*. Cambridge: Harvard University Press.
 2019 ¿Por qué razonan los humanos? Argumentos para una Teoría Argumentativa (C. McDonnell & J. M. Vivas, Trads.). *Cuadernos Filosóficos / Segunda Época*, 15. <https://doi.org/10.35305/cf2.vi15.54>
- MULLEN, Brian, JOHNSON, Craig & SALAS, Eduardo
 1991 Productivity loss in brainstorming groups: A meta-analytic integration. *Basic and Applied Social Psychology*, 12(1), 3-23. https://doi.org/10.1207/s15324834basps1201_1
- NICKERSON, Raymond
 1998 Confirmation bias: A ubiquitous phenomenon in many guises. *Review of General Psychology*, 2(2), 175-220. <https://doi.org/10.1037/1089-2680.2.2.175>
- ROBERTS, Robert & WOOD, Jay
 2007 *Intellectual virtues: An essay in regulative epistemology*. Oxford: Oxford University Press.
- SIMON, Herbert
 1955 A Behavioral Model of Rational Choice. *The Quarterly Journal of Economics*, 69(1), 99-118. <https://doi.org/10.2307/1884852>
- SOSA, Ernest
 1980 The Raft and the Pyramid: Coherence versus Foundations in the Theory of Knowledge. *Midwest Studies In Philosophy*, 5(1), 3-26. <https://doi.org/10.1111/j.1475-4975.1980.tb00394.x>
 2011 *Knowing Full Well*. Princeton: Princeton University Press.
- STANOVICH, Keith & WEST, Richard
 2000 Individual differences in reasoning: Implications for the rationality debate? *Behavioral and Brain Sciences*, 23(5), 645-665. <https://doi.org/10.1017/S0140525X00003435>
- STANOVICH, Keith & WEST, Richard
 2008 On the relative independence of thinking biases and cognitive ability. *Journal of Personality and Social Psychology*, 94(4), 672-695. <https://doi.org/10.1037/0022-3514.94.4.672>
- TVERSKY, Amos & KAHNEMAN, Daniel
 1981 The framing of decisions and the psychology of choice. *Science*, 211(4481), 453-458.
- ZAGZEBSKI, Linda
 1996 *Virtues of the mind: An inquiry into the nature of virtue and the ethical foundations of knowledge*. Cambridge: Cambridge University Press.

Document reception date: July 15, 2020
 Document review date: September 15, 2020
 Document approval date: October 15, 2020
 Document publication date: January 15, 2021

THE MODES OF ATTENTION

Los modos de la atención

DANIEL EDUARDO CHAVES PEÑA*

Caro y Cuervo Institute, Bogota, Colombia

daniel.chaves@caroycuervo.gov.co

Orcid code: <https://orcid.org/0000-0002-0912-5542>

JAIME YÁÑEZ CANAL**

National University of Colombia, Bogota, Colombia

jyanezc@unal.edu.co

Orcid code: <https://orcid.org/0000-0001-9839-1123>

Abstract

In this text, it is claimed that a phenomenological approach to attention could provide important distinctions concerning different levels of consciousness. After criticizing some classical ideas about attention, the phenomenological ideas are introduced pointing how relevant they are for conceiving key aspects of attention that are usually overlooked in other theories. By revisiting seminal ideas from Husserl, Gurwitsch, Sartre and Merleau-Ponty, the relationship between the workings of attention and the modes of consciousness explored by phenomenology is underscored. From this point of view, two basic modes of attention are distinguished: a passive form which is involved in the forms of synthesis responsible for the structure of the immediate contents of experience, and an active mode, characterized by the sense of agency which allows the subject to make distinctions, individuate and highlight different aspects from the structure of experience. There is a dynamic relation between these two forms of attention and how they can be identified with two modes of consciousness: while the passive form corresponds to pre-reflective consciousness, the active form is equivalent to the more reflective ways of directing the attention. The pre-reflective mode of consciousness characterizes the continuous forms of being related with the world without exerting meta-cognitive monitoring over our experiences. The active mode attention can only operate on the basis of pre-reflective consciousness.

Keywords

Attention, consciousness, phenomenology, pre-reflective, active, passive.

Suggested citation: Chaves, Daniel & Yáñez, Jaime (2021). The modes of attention. *Sophia, colección de Filosofía de la Educación*, 30, pp. 217-235.

* Researcher at the Caro y Cuervo Institute. Teacher of the Master in Linguistics.

** Professor Department of Psychology, National University of Colombia. Director of the Research Group “Studies on Socio-Moral Development”.

Resumen

En este texto se analizan algunas concepciones clásicas y alternativas del fenómeno de la atención. Luego de revisar algunos de los planteamientos tradicionales a la hora de concebir este proceso cognitivo, se defiende la importancia de una perspectiva fenomenológica de la atención. En este sentido se retoman las ideas de fenomenólogos como Husserl, Sartre y Merleau-Ponty con el objeto de establecer una distinción de niveles en el proceso atencional. Específicamente, se distingue entre las formas pasivas y activas de la atención. La separación y caracterización de niveles es fundamental, pues permite establecer estratos del fenómeno que a menudo se pasan por alto en las teorías de la atención. La concepción fenomenológica de la atención postula distintos niveles de consciencia que ponen en evidencia las formas de significación de las que dispone el sujeto en su relación con el mundo: la forma pasiva se corresponde con la consciencia prerreflexiva, mientras que la activa puede vincularse a las formas reflexivas de dirigir la atención. En cuanto a las formas pasivas, se enfatiza en las formas de la organización de los contenidos de la experiencia, y en lo que concierne a las formas activas, se resalta cómo el sentido de agencia es fundamental en la determinación de la corriente de experiencias. Tales distinciones son fundamentales para una caracterización apropiada del campo de atención.

218



Palabras clave

Atención, consciencia, fenomenología, prerreflexiva, activa, pasiva

Introduction

Attention is understood in traditional postures as a charge of energy that is deposited in certain events according to the intensity, strangeness, or novelty of these events. The subject under this gaze is subjected to the fluctuations of world events and his perception and consciousness are reactively understood. The conceptualization and debate on this concept of attention go hand in hand with new approaches to the problem of consciousness. Consciousness is the problem that allows us to consider the human being as an active being that establishes parameters to organize and select the information he receives and the ways in which he interacts with his environment.

A consistent theory of consciousness must include as a fundamental component of its explanation a thorough analysis of its relationships with attention. In the phenomenon of attention, an essential aspect of conscious life is manifested: the active dimension of the mind in the capacity of organization, selection, and differentiation of the contents of experience. In order to present these dimensions of conscious experience, it is necessary to criticize that classical conception of attention that reduces it to a psychological faculty that is in charge of housing the phenomena that link the subject with the environment, that is, the capture of sensations in function of the intensity or qualitative contrasts of external stimuli.

Consciousness is the “hard problem”, the most relevant problem in current research in cognitive sciences since it brings to the fore the sense

of unity of experiences and the sense of agency. The approach to the phenomenon of attention will allow us to understand some of the debates on the conceptualization around consciousness and the contribution of phenomenological perspectives to the question.

This article focuses on one of the fundamental aspects of attention, that is, the phenomenon of salience or prominence of the content above others. By analyzing this phenomenon, the article attempts to answer the following questions: What element is in charge of the organization and selection of the content of experience that is focused by the attention? Is it a reflective or implicit process of consciousness? Why does conscious experience not exhaust itself in the focused object, but rather seems to encompass the other potential contents of attention? In the text, these questions are approached from different perspectives, positioning ourselves with the phenomenological proposal, which makes it possible to highlight the active role of subjectivity and the ways in which the subjects consistently perceive their experience.



Critique of the classical conception

Why is the characterization of the classical model insufficient? The type of cases that one has in mind when thinking of attention as the merely passive capture of sensations are rather simple and extreme cases: for example, the circumstance is often cited in which an unusual phenomenon suddenly breaks into consciousness by virtue of its sheer intensity (i.e., the collision of a car that produces a loud noise that demands attention be directed to perceive such an event). Considering this type of phenomena, we can mention the psycho-physical investigations of Hardy Leahey (1994) and Fechner (1966) and some versions of cognitive psychology with the works of Broadbent (1954; 1958), Conway et al. (2001), and Driver (2001), who were aimed at establishing the relationships between the intensity of the stimuli and the moment or threshold of ‘consciousness’. According to what was stated, consciousness in these perspectives was directly associated with the phenomenon of attention, understood as the psychic energy that reacts to the intensity of a stimulus. Consciousness operates in these cases as an “awareness” of the occurrence of an event. On the basis of these phenomena, attention is understood as a psychological faculty that is limited to the purely receptive capture of sensations that constitute the raw material on which certain representations of the world are made.

In opposition to these classical views that saw attention as the light of a flashlight that was directed by the salience of certain stimuli from the world, other views have been proposed in psychology that establish an internal mechanism for the orientation of attention. Obviously, it cannot be ignored that there is this automatic and quite simple way of operating attention, which allows organisms to react to variations in the surrounding world. In the animal world and in the most elementary forms of cognitive functioning there are certain stimuli that awaken a certain energy charge and that quickly generate reactive behaviors or automatic responses. These types of reactions, which can be called expressions of passive attention, are not the only ways in which attention is expressed. To forms of passive attention that act as forces determined by the surrounding world, or as causal events in the outside world, active attention originating from within psychic life is often opposed.

220



The second group includes the most common phenomenon of attention, namely, cases in which attention is deliberately directed towards phenomena that are of interest to the cognitive agent. If, for example, in an outdoor drawing class the representation of a tree is requested with a model present, the attention will capture its shape, its colors, the type of leaves, etc., in such a detailed way that it would not have a place if not for the perceptual project that the draftsman has voluntarily drawn. It is clear that without the participation of a deliberate project of active attention, all these characteristics and aspects would go unnoticed; but at the moment in which one actively attends, consciousness establishes a horizon of significance (in this case, the qualitative and morphological properties of the percept) where it is possible to make cognitive discoveries, or by fine-tuning perception, to articulate what is known about the tree with what is currently contemplated.

However, this way of posing the difference between reactive or passive attention and an active mode cannot be the starting point for the analysis. First, because not even in the case of passive forms does attention operate reactively; the point is that the car crash has no value per se, by virtue of its intensity, to reach consciousness. The fact that it is noticed as something that attracts attention depends on the situation in which the subject is: thus, for example, when being at a NASCAR or Monster Trucks exhibition, the crash of the cars may no longer be an impression that demands an automatic reaction of attention. Therefore, it is not the sensory properties of the stimulus that guarantee its conscious uptake, but the situation or context in which consciousness establishes a field of experience in which it is possible to become more sensitive to surroun-

ding phenomena. Now, this clarification does not imply that the intuitive distinction between a passive and an active mode of attention is abandoned, since such a difference concerns the fact that some phenomena simply burst into consciousness without there being an intention drawn beforehand that points to grasp it, while others, on the other hand, are discovered or recognized because a volitional intention directed at them precedes them. If then, one wants to understand this fundamental difference in modes of attention, their specific characteristics, and functions, it is necessary to explore in what sense these modes of attention unfold in a field of consciousness.

Attention and the field of consciousness

By saying that consciousness operates from a field or horizon of significance where attention is expressed, it seeks to highlight the volatility and dynamics of psychic operation and the presence of dimensions that can constantly vary as the subject unfolds in his world. This becomes evident when we start from the fact that attention runs continuously and discontinuously between the multiple contents of experience: attention can be directed to an event in the external world; and at the same time consider the activities that must be developed during the day, however, if something unusual happens in the street and I can then highlight in my consciousness what happens in the perceptual field. More than a cognitive function, attention refers to the mode of existence of experiences in the stream of consciousness. Thus, the ways in which attention is distributed in the course of experiences determine the way of being conscious.

This fact had already been highlighted by W. James (1989; 2000), and constitutes the basis for the identification of attention with the dynamics and structure of the 'field of consciousness'. The structure of the field of consciousness designates precisely the minimum organization that makes the attention flow between the focused content of experience and the contents that correlatively move towards the margin. The focus of attention on some of the contents and their different properties has the effect that the other contents momentarily recede towards the margins of the field, without disappearing and without their presence being fully determinable.

If a momentary cut is made on the stream of consciousness, it can be noticed that, simultaneously, there are multiple contents competing for attention: this is what is kept in mind when you say, for example, 'I could not hear what you were saying because I was concentrating on



reading.' Depending on the interests and intentions of the moment, a sort of hierarchical distribution of attention is generated between the different experiences: that is, the modes of the margin and the focus of attention correspond, respectively, to a lesser or greater degree of determination in the contents of the experience. In this regard, an example provided by Sartre (2006) is illustrative to point out the global nature of consciousness that is not exhausted by focused content: after having been reading all day, already at night, when one begins to experience some distraction, the images currently represented do not articulate with the past, although one does not feel tired; but it turns out that due to the long day of reading, it is finally discovered that our eyes are irritated. The pain had remained on the fringes of the field of consciousness, but nonetheless, this experience was shaping the overall content of consciousness at that moment. The point that Sartre wants to highlight is that the experience of pain, despite not being focused, configures the global consciousness of the moment.

222



Returning to the image that awakens a horizon of perception, it is clear that events compete to attract the subject's attention according to what motivates his experience at a given moment, without consciousness being understood as the pilot that by predetermined manner accompanies the variable performance of attention. Nor is consciousness to be understood as a rider that operates reflexively on automatic acts of perception. This idea is emphasized since, from the phenomenological perspective, consciousness is not identified with an explicit reflection process that controls all cognitive processes. Rather, consciousness is understood as a constant presence that operates from pre-reflexive ways and that in a particular way determines the direction of attention and the processes of reflection and explicit reporting. This position, clearly phenomenological in orientation, demands more space for its clarification.

Pre-reflective consciousness as a basic form of consciousness

Phenomenological positions do not understand consciousness according to reflection processes, nor as forms of monitoring of a higher or meta-cognitive level, nor as the expression of acts of introspection. Contrary to this, consciousness is understood as part of a primary experience¹.

For Sartre (2006) reflection is a kind of derived consciousness, that is, it is the process when consciousness takes itself as an object. This consideration of consciousness implies a differentiation between subject

and object, which means that the subject distances himself from himself to analyze himself from a third-person perspective. For Sartre, this fragmentation of the consciousness would lead to a regression to infinity, since the consciousness that analyzes itself needs to reflect on that same process indefinitely, or, to avoid the above, it should suppose an initial unconscious process² that would make the self-reflection loop possible. For these reasons, consciousness must involve several levels and a primary consciousness, of a pre-reflective nature.

For the subject to be able to reflect on his experience, he must have a feeling of unity, a feeling that he is the subject of the experience. This is pre-reflective awareness, a sense of self-presence with oneself in all our experiences. Zahavi (2005) illustrates this idea by referring to a situation described by Sartre himself in which the subject is completely absorbed in reading a novel. If the novel succeeds in capturing his full attention, the subject may even forget himself and many other things in the outside world. The reading of the novel is carried out without the need to reflect on this process, or the activity we are doing. But if suddenly someone appears and interrupts the subject by asking the subject what he has been doing for the last few hours, he will have no difficulty in reporting that he has been reading a novel. With this situation, it can be understood that despite not reflecting on the act of reading, or what reading produces, the subject can always know that it is always present in their experience. Our self has been in the present experience without having to see itself as an object of reflection from a third-person perspective.

Based on this example, one can understand Sartre's differentiation between pre-reflective and reflective consciousness³. The first is that self-knowledge in which the subject is always immersed. The second, reflective consciousness, is that process of reflection where the subject can refer to himself in the same way that he can refer to objects in the world.

Of course, pre-reflective consciousness, being primary, is always present and can manifest itself without there being a second-order process of reflection or monitoring. Instead, this last metacognitive capacity always demands the presence of a subject that is perceived as an always present unit. For Sartre "there is a pre-reflective cogito that is the condition of the Cartesian cogito" (quoted by Zahavi, 2005, p. 30).

The concept of attention must be understood closely with this characterization of the levels of consciousness. Normally, the subject can attend to an infinity of events without having to reflect on their value or meaning, much less consider something explicitly that ensures the coherence or the linking of his experiences. Of course, if this pre-reflective flow is altered



by some unexpected or unanticipated event, the reflective attitude takes command of our actions to focus and reorganize our behavior.

Origin and organizational factors of perceptual experience

So far it has been shown how the experiences that occupy the stream of consciousness require a certain degree of attention to exist as such. Similarly, it was emphasized that experiences take place in the field of consciousness in the primordial mode of prereflexivity, since a subsequent act of reflection is not required to be aware of experiences; indeed, pre-reflective consciousness conditions and motivates acts of reflection. However, these approaches still fail to provide the key to one of the functional aspects of attention; they only indicate in what sense experiences exist with a certain degree of attention. The basic function of attention consists in making prominent or separating from the flow of consciousness one of the contents that thusly becomes the 'subject' of our interest. What makes it possible for one of the contents of the stream of consciousness to stand out among the others? The phenomenological treatment of the prominence of a piece of content will allow a better delimitation of what has previously been called the passive and active modes of attention.

The phenomenon of the prominence of content in the flow of consciousness concerns the problem of the organization of sensory experience. According to Carpintero (1996) and Driver (2001), in the psychophysical theories of the 19th century, it was sought to account for this phenomenon by pointing out the quantitative differences, contrast, and similarity between sensation data. One of the basic assumptions of this theory consisted of what Gestalt theorists would later call the 'constancy hypothesis', which proposes that there is a one-to-one correspondence between physical stimuli and sensations: to the extent in which the stimuli exceed a certain threshold of intensity, they will be able to be noticed in the conscious level. Already in the first section, some of the difficulties of this theory were shown; at this point, it is possible to summarize the problem as follows: There are phenomena of perceptual experience that do not have a direct corresponding in the level of intensity or salience of the stimuli, and that therefore require the acceptance of an instance or organizational form. This is what happens, for example, in the *phi* phenomenon, where an apparent movement can be perceived between two lights that remain objectively separated. It is also what is present in am-

224



biguous images (the duck-rabbit or the image that can show two faces or a glass), where the configuration of the perceptual phenomenon depends on the choice of the contour that delimits one or another figure.

As a reaction to the atomistic assumptions of English empiricism that explained the organization of experience as the mere addition of atoms of sensation, the approaches of James (1989), the phenomenology of Husserl (1986, 2001), the school of Graz (Meinong, 1981), and Gestalt theory (Koffka, 1967; 1979) sought to establish the organizing principles of experience in different factors of subjectivity. In a quick way it can be said that despite the coincidences in their criticism of associationism and the positions of psychophysics, they present radical differences among themselves. The position of James (1989) and that of the Graz school (Meinong, 1981) can be grouped in the same trend since they argue that the organization and differentiation of experience is something imposed extrinsically to the stream of consciousness, either by virtue of active attention (James) or by a higher-order act of the intellect (Graz school). For its part, the position of Husserlian phenomenology together with Gestalt theory make up another group insofar as they consider that the organization of experience is an immanent aspect of sensitivity or of the stream of experiences itself. The differences between these postures can be overlooked and instead expanded on some ideas about attention. Since the text is aimed at examining the value and scope of active attention and the process of differentiation and organization of the content of experience, some ideas of the cited authors will be highlighted to clarify the central points in the clarification of some aspects of consciousness.

At this point, we resort to the characterization that Gurwitsch (1979; 2009) performs on James and the functions that he attributes to attention. The relevance of this characterization lies in pointing out a certain explanatory impasse that James's theory faces when it assumes the selective function of attention as a principle of the organization of the stream of experiences. In this regard, says Gurwitsch (1979):

According to James, even when the 'field of consciousness' is organized, it should not be considered as a primary, authentic, and original characteristic of experience. And this is because the organization would be given, superimposed on consciousness. James stayed true to this thesis throughout his career' (p. 37).

Against the atomism of the empiricist explanation, James (1989) considers that the most basic components of experience are not the atoms of sensation but the so-called 'sensible wholes'. Sensible wholes designate the



temporal flow of experiences prior to any act of conceptualization; heavily influenced by Bergson (2006)⁴, James characterizes the stream of consciousness as an undifferentiated whole of ‘fused’ states. Thus, the problem for James is not how disjointed parts come together in the mind to configure a coherent object (which would be the problem of consciousness for English empiricism), but rather how consciousness is capable of to dissociate or separate the aspects relevant to the cognitive agent from the formless mass of the sensible wholes. The function that James assigns to active attention is thus understood: the organization and differentiation of the field of consciousness is the effect of the selective activity of attention that, in the continuum of sensible wholes, introduces segmentations and differentiation of content.

What is the difficulty facing James’s theory of active attention? The central point of Gurwitsch’s critique is formulated in the following way: it is not possible for attention to separate and differentiate the contents of experience if it does not possess in advance an image of what it is seeking to separate; in other words, the organization of the contents of consciousness must precede the processes of attention and differentiation of information. Trying to overcome this difficulty, James proposes that attention has acted haphazardly in the first encounters with objects. He seems to assume this, even going against his thesis on the volitional nature of the mind, that the random functioning of attention, together with the repetition of experience, would bring about the phenomenon of separation on the stream of consciousness. By accepting this explanation, it is not understood how prior knowledge that has been haphazardly isolated by attention can be brought to the fore again by a random mechanism. This is highly unlikely. Once it is accepted that selective attention operates randomly, then it must operate in the same way in all cases. Similarly, if two things are initially presented at random and are grouped in a certain way, it is because in the subject there must be a prior form of organization that gives them meaning, or at least groups them under particular schemes.

Furthermore, according to what Köhler (1959; 1967) argues, the influence of past experience on the current one is not sufficient to explain the phenomenon of prominence. The camouflage structures that Köhler has analyzed are relevant in this case. Certain figures (see figure A) objectively contain others (see figure a) that are familiar from past experiences. In the first group of figures presented below, you can see how a certain element is hidden in another image. The E in figure a is hidden in the first figure (A). On the other hand, in the other group of figures (on the right), the presence of figure a in A becomes evident. The 4 (from a) is easily observed in the first figure of this group (A).



Figure 1
Camouflage structures



Source: Gurwitsch (1979, p. 43).

The fact that figure *a* is hidden or made manifest does not, therefore, depend on whether the figures are familiar, since both E and 4 are equally familiar. What is presented in the perceptual field depends rather on the fact that the lines that trace the gestalt physiognomy of figure *a* maintain their structure and do not merge with those of figure A. In this way, Gurwitsch's point (1979) is understood:

... It is quite impossible that the mere repetition and accumulation of experiences result in the very separation of the units in question. In order for these to serve as a vehicle for growth through experience, it is first necessary that they separate; In other words, they must first emerge from the bosom of the field and detach themselves from each other (p. 48).

Now, this does not mean that previous experience does not play an essential role in the phenomenon of the prominence of certain contents of consciousness. Gurwitsch's reply to James points out that previous experience, by sedimenting significant sets, participates in what he calls the 'exploratory phase' of the constitution of prominence, that is, the active search for a configuration usually invokes the function of memory insofar as the subject tests different configurations that have already been consolidated, trying to find a resonance with what is given in the perceptual field. The 'exploratory phase' is distinguished from the 'achievement phase', which designates the highlighting of one configuration above others, that is, the moment when the figure finally stands out against the background. According to Gurwitsch, this process of prominence operates at the most basic level of the sentient organization, and it is the phenomenon that precedes the capture carried out by selective attention. Said in the terms of the previous section, the organization and differentiation of the perceptual field takes place at the most basic level of the pre-reflective experience.



Taking into account these difficulties of James's theory, Gurwitsch (2009) tries to account for what would be the origin and the organizational factors immanent to the current of consciousness through a recourse to Gestalt theory and Husserlian phenomenology. In the study of more complex configurations of points, lines, curves, and figures, Gestalt theorists proposed four factors that contribute to the phenomenon of the organization of parts into unitary sets: 1) Proximity; 2) Equality; 3) The enclosure and 4) The appropriate continuation. As Merleau-Ponty (1984) has pointed out, although these factors have been interpreted within Gestalt theory as the objective conditions of the organization of stimuli, they nevertheless admit a phenomenological reading, that is, as aspects structural structures that are intrinsic to the perceptual structures experienced⁵.

228



Attention and passive syntheses

It is necessary to emphasize the importance of the phenomena of 'closure' and of 'appropriate continuation'. Although these factors were established especially in the field of visual experience, their importance goes beyond this area. The importance of the 'appropriate continuation' factor becomes evident in the cases of temporal structures of experience, that is, structures that require a conclusive unfolding (i.e., a conversation or a melody). In Husserlian phenomenology (Husserl, 1986; Zahavi, 2005), temporality constitutes the fundamental passive⁶ synthesis of all experience. This is evident in the case of the melody, whose unified experience would not be possible if the consciousness were set on to capturing the present notes. Indeed, to have the experience of the unfolding of a melody, it is necessary that the consciousness not only retain the previous notes, but also, based on the notes heard, anticipate and foreshadow a possible outcome that characterizes the very texture of the melody. Retention, understood as an awareness of the recent past, the moment of present impression, and a certain measure of anticipation constitute the time horizon that guarantees the experience of a unitary phenomenon of meaning.

These are passive syntheses because the unification occurs at the level of pre-reflective experience, without having to participate in an act of a higher order that operates the unification of the notes: the synthesis unfolds on the level of pure sensitivity. It should be noted that temporality, while essential, is not the only passive synthesis. Husserl works in a similar way the syntheses of homogeneity, heterogeneity, contrast, similarity, and order, which constitute the terrain of phenomenological inves-

tigations of sensible content; they are what makes possible in the field of pre-reflective affectivity the thematizations of explicit consciousness, also known as active synthesis of consciousness.

In this way, by not accepting that there are processes of prominence and differentiation that arise from experience itself, James' theory closes itself off to an explanation of the origin of the organization and is forced to impose extrinsically what is an immanent aspect of the stream of experience: its proto-differentiated character as a function of passive syntheses of sensibility that prepare the ground for 'selective attention' activities.

Thus, consciousness expresses itself through different states or levels within a horizon that flows and that is expressed in all experiences. The most basic form or level of consciousness is the pre-reflective mode that determines everything and that always accompanies all experience. This pre-reflective awareness is the first way in which the notions of passive and active attention are understood, but this, in turn, demands greater specificities. Let's go back to certain phenomena already exposed.

It is an almost common event that in the midst of a more or less homogeneous stream of experiences (i.e., a conversation), something calls for attention (a melody) without having been aware of what was happening around. Or the cocktail phenomenon, of which perception scholars speak (Driver, 2001), which consists of shifting the focus of attention from a conversation with an interlocutor to another conversation that develops a topic of ours for the subject, or that names just a character related to our sympathies. Can something be heard without having the intention to listen to it? Or, in other words, how do you hear something that was not paying attention to? How does something attract attention, without having been part of our attention focus? In accordance with what we have stated above, it is true to say that objects call our attention without a prior deliberate act of attention. The direction of attention is not random in these cases but obeys organizational and selective forms that operate at the level of pre-reflective experience. That which suddenly calls our attention is subject to a stream of experiences that act as a unified and coherent horizon (the melody, or the theme treated by a couple of neighboring companions, becomes the focus of attention since the part that currently unfolds is linked to affective interests and the history of experiences of the subject in question). At this point the consciousness turns towards the melodious part that currently floods the field of consciousness, but, as we have already pointed out, this awareness is not reduced to the level of the present moment; the melodious part reactivates the parts that had not been attended before and that were nonetheless



present at the level of the pre-reflective experience. Thus, the phenomenon appears before consciousness as a unitary phenomenon of meaning.

The case presented is an example of the sudden realization of experienced content that is not preceded by a voluntary search project. In this case, it is possible to affirm that, to the extent that attention is directed elsewhere, the unheard conversation only reaches the status of white noise for consciousness. However, at the moment in which a sequence of sounds, by virtue of mechanisms and operations that escape explicit consciousness, makes the attention turn on what was heard as white noise, and now, by the passively motivated act, it becomes a unified sequence whose meaning is directly accessible. It is in this sense that, at the level of pre-reflective experience, passive forms of unity and synthesis operate that prepare the ground for explicit choices or thematizations of consciousness.

230



The place of active attention in experience

In the previous section, the importance of passive syntheses in the organization and differentiation of sensitive content was highlighted. But this is only one component of the investigation, namely, what makes an involuntary mode of attention possible. It is time to show the role of the active dimension of consciousness in the synthesis of perceptual phenomena, that is, when a perceptual project is deliberately outlined. At this point, it is worth highlighting the degree of control and self-determination that active attention introduces in the stream of experiences. Faced with the continuous bombardment of sensory data on the senses, active attention has the power to invoke, on the basis of a sedimented experience, an internal object, which creates a kind of attractive emptiness, on which the object or the desired aspect differentiate. But this process of selective attention does not only consist in selecting certain events that are offered to perception but in organizing and accounting for certain details according to the knowledge and experience of them. This becomes evident if two people, with different musical abilities and training, are confronted with a certain melody. It is obvious that only the expert will discover in the melody the harmonic components, rhythm, the musical figures that it describes, and the octave range in which it develops, while the inexperienced subject will hardly distinguish the sequence of notes that characterizes the melody. In this case, attention operates as a kind of differentiating and organizing grid of sensations.

The last two examples allow us to formulate two ways in which attention is presented and the ways in which acquired knowledge and

previous experience can guide action in ways that we would relate to the active dimension of the mind. These two examples can be differentiated according to the degree to which the subject directs his processes of perception and the explicit ways in which he guides his action. Following O'Shaughnessy (2002) at this point, the properties introduced by the active dimension of consciousness in the organization of perceptual experience are the following: i) spatial-temporal structuring of phenomena, (ii) individuation of aspects or objects of the perceptual content, (iii) intelligibility of the individuated contents of experience.

The properties of active attention in the case of visual experience are presented below: (i) when it is said that active attention prints a Spatial-temporal structuring to the phenomena that it takes as its object, it is meant that the content in question is provided with a Spatial-temporal anchoring framework in which it unfolds as a unitary phenomenon of meaning. In contrast to the passive attitude of the visual experience, active attention introduces a differentiation and a spatio-temporal organization that the phenomenon would not have had, had it not been for the voluntary intention of looking at the visual spectacle. In the active attitude of the visual experience, the contents of the visual field acquire a characteristic degree of differentiation and spatial determination: for example, when one made a car tour in a little-known part of the city, a representation tends to be configured of the distance or size relationships of the buildings that will serve the purpose of a future orientation in that space.

Property (ii) is derived in a sense from the first. The 'individuation' of perceptual properties and objects is made possible because a global perceptual intention (wanting to listen to a melody as melody) introduces a framework of synthesis of the temporal phases of the object in question. It is necessary that the attention, as it follows the unfolding of the melody, retains the past phases and anticipates in some way the following notes, and only in this way can we say that we are listening to a melody.

Property (iii) of 'intelligibility' indicates that the implementation of an intentional perceptual activity gives rise to reason and understanding acting together with the acquired knowledge, to guarantee the recognition, over time, of a uniform perceptual object.

It is in the execution of an intentional perceptual project that the properties of active attention become present in the configuration of perceptual contents. The global perceptual intention puts into play a capacity for synthesis of what is given in perception; Without that intention, there would be no individualized contents in space and time, since every perceptual phenomenon requires a synthesis of its past, current, and future pha-



ses. Precisely in the case of perception, attention has the function of anchoring the subject in perceptual projects that delimit space-time horizons in which an expansion of the cognitive map of reality can be carried out since attention enables the individuation of content to the extent to which what is given in perception is articulated with previously acquired knowledge.

If you are engaged in an active perceptual project (i.e., looking at and detailing the monument), it is clear that the intention acts in the manner of an agent that synthesizes the different profiles of the monument as belonging to a single object. Thus, it is possible to get to know what its shape and its different appearances are depending on the orientation and movements around it. Similarly, the intentional project of active attention introduces a specification of the spatial properties of the object and the relationships it maintains with the place and the other objects that surround it; it is these structuring and differentiation characteristics provided by active attention that guarantee the intelligibility of the phenomenon not only as an event belonging to a stream of consciousness but also as an object that belongs to a certain general type of objects (monuments) that present such or which shape, that is, as an object that can be recognized and identified in different situations.

Only an active attention project provides a firm basis for the constitution of lasting knowledge in memory, in such a way that, if a detailed report of the visited monument is requested, the cognitive agent would be able to report with a sufficiency of details. the characteristics of the phenomenon in question. This is the measure of order and meaning that active attention introduces into perceptual experience.

Conclusions

This discussion on some of the modalities and properties of attention is justified by the lack of a clarification of the active and passive dimensions it. The use of the terms active and passive to characterize the modes of attention is inappropriate if, in the first place, passivity is conceived as a mere reaction to variations in the intensity of the stimuli, since according to what has been proposed, the most basic phenomenon of attention, namely, the prominence of one content above others, obeys or becomes possible as a function of a set of organizational structures of consciousness. In this way, the phenomenological clarification of the passive dimension teaches that attention operates by virtue of the organization and differentiation of the contents of the pre-reflective experience.



By clarifying the limits of what has been called ‘passive attention’, the way is open to characterize its active mode. The structures of consciousness of passive attention provide the subsoil for potential individuation of content, but it is only at the level of the activity of consciousness that the possibility of differentiating a content is currently exercised insofar as it is articulated with intentions of the subject and the knowledge system has already been acquired. Likewise, it is on the active plane that the subject’s capacity for agency and control in choosing content is staged. A way of advancing in the investigation of the sense of agency that characterizes a good part of the subjective experience would, then, have to delve into the ways in which active attention operates, the way in which attention is articulated with the subject’s knowledge system as a function of an intention drawn beforehand. In the same way, the study of the agency must contemplate the different moments of the child’s development to be able to delimit the multiple relationships that are established between the different forms of knowledge and the qualitative changes in the intentional processes.

Notes

- 1 In contrast, for higher-order theories, or meta-cognitive stances within information processing and traditional developmental psychology (Carruthers, 2005; Lycan, 1995; Piaget, 1976; Vygotsky, 2000), which makes a mental state a conscious state consists of the act of being taken as an object by a second act (introspection or reflection); thus, for example, we would not be aware of what we perceive until a meta-cognitive process takes as its object the primary state (in this case, perception). In this context, the meaning of reflection is taken in its literal sense, as the reflection of an image in the mirror. Content is “reflected” on a higher plane which in turn is served. In this way, what makes a conscious state is an act of linking between a meta-cognitive state and a primary state.
- 2 Phenomenologists (Husserl, 1986; Sartre, 2006) oppose the idea that consciousness emerges from a reflective process or higher-level monitoring, as this inevitably leads to a return to infinity: if mental states are conscious in the sense of being taken as intentional objects by a second mental state, then these higher-order mental states, if they are to be conscious, must also be taken as objects by a third state, and so on ad infinitum. Proponents of higher-order theory have responded with the non-conscious mental states approach (Carruthers, 1994, Lycan, 1995). According to these authors, by accepting the existence of non-conscious mental states the regression stops. In this way, perception or second-order thinking would be non-conscious. However, phenomenologists consider that this solution, by appealing to non-conscious mental states, leaves us with an explanatory gap, because effectively, how is it possible that two non-conscious mental states can make one of them become conscious? Without a doubt, it is difficult to conceive that the phenomenal qualities of experience emerge from this meta-cognitive relationship.

- 3 In phenomenology, Husserl's work had several changes and various reactions according to its period of conceptual development. Husserl's early works generated reactions from Heidegger, Sartre, Merleau-Ponty, Scheler, and other authors. These argued the need to postulate a prereflective instance as the central aspect of consciousness. How this pre-reflective instance was understood would be what would differentiate the different positions. For Heidegger, acting in an already constituted world is the prereflective and the foundation of all human operations. Merleau-Ponty locates this prereflective operation in the body and Sartre in that feeling of unity that always gives us the feeling of presence. These debates will be overlooked in this text since we are interested in highlighting some common ideas in order to understand consciousness in a certain way.
- 4 In Bergson's philosophy (2006), the life of consciousness is characterized according to two modes in which it can operate: on the one hand there is the purely qualitative flow of the states of consciousness; In this plane of the temporal flow, the states are fused with each other, and there is no differentiation between before and after; these differentiations are what the second main mode of consciousness introduces, that is, the mode of reflective thought, which establishes those discrete aspects of experience by dissecting and spatializing the flow of consciousness, allowing one content to be differentiated from another. The sensible wholes to which James refers point to the purely qualitative dimension of temporal flow, prior to the operation of the differentiating activity of attention.
- 5 It is known that Köhler and Koffka were students of Husserl, and that many of his views were influenced by the father of phenomenology. However, the influence was mutual, since Husserl himself, and some followers of the phenomenological movement (especially Merleau-Ponty), incorporated some of the theses of the Gestalt school.
- 6 The subject of passive syntheses of consciousness concerns, according to Husserl, the phenomenological study of the 'unconscious'. Of course, it is not about the Freudian unconscious, but rather it could be equated with what Freud called the sphere of the pre-conscious, namely, the domain of the mental that prepares the ground for that of which we can have an explicit awareness. For a clarification of the concept and history of the unconscious.

234



Bibliography

- BERGSON, Henry
2006 *Ensayo sobre los datos inmediatos de la consciencia*. Madrid: Sígueme.
- BROADBENT, Donald
1954 The role of auditory localization in attention and memory span. *Journal of Experimental Psychology*, 47, 191-196. <https://doi.org/10.1037/h0054182>
1958 *Perception and communication*. London: Pergamon Press.
- CARPINTERO, Helio
1996 *Historia de las ideas psicológicas*. Madrid: Pirámide.
- CONWAY, Andrew R.A., COWAN, Nelson & BUNTING, Michael F.
2001 The cocktail party phenomenon revisited: The importance of working memory capacity. *Psychonomic Bulletin & Review*, 8, 331-335. <https://doi.org/10.3758/BF03196169>
- CARRUTHERS, Peter
2005 *Consciousness: essays from a higher-order perspective*. New York: Oxford.

- DRIVER, John
2001 A selective review of selective attention research from the past century. *British Journal of Psychology*, 92, 53-78. Recuperado de: <https://bit.ly/3rytA1y>
- JAMES, William
1989 *Principios de Psicología*. México: Fondo de Cultura Económica.
2000 *Pragmatismo: un nuevo nombre para viejas formas de pensar*. Madrid: Alianza.
- FECHNER, Gustav Theodore
1966 *Elements of psychophysics*. New York: Rinehart and Winston
- GURWITSCH, Aron
1979 *El campo de la consciencia: un análisis fenomenológico*. Madrid: Alianza
2009 *The selected Works of Aron Gurwitsch: Studies in phenomenology and psychology (1901-1973)*. New York: Springer.
- HARDY LEAHEY, Tomas
1994 *A history of modern psychology*. Englewood Cliffs, NJ: Prentice-Hall.
- HUSSERL, Edmund
1986 *Ideas relativas a una fenomenología pura y una filosofía fenomenológica*. México: Fondo de Cultura Económica.
2001 *Analyses concerning passive and active synthesis: lectures on transcendental logic*. Netherlands: Kluwer Academic Publishers.
- KÖHLER, Wolfgang
1929a/1959 *Gestalt psychology: an introduction to new concepts in modern psychology*. New York: A Mentor Book.
1929b/1967 *Psicología de la configuración*. Madrid: Morata.
- LYCAN, William
1995 *Consciousness and experience*. Cambridge: MIT Press.
- MEINONG, Alexius
1981 *Teoría del objeto*. México: UNAM Instituto de Investigaciones Filosóficas.
- MERLEAU-PONTY, Maurice
1984 *Fenomenología de la oercepción*. Barcelona: Planeta de Agostini.
- O'SHAUGHNESSY, Brian
2002 *Consciousness and the World*. New York: Oxford University press.
- PIAGET, Jean
1976 *La toma de conciencia*. Madrid: Eds. Morata.
- SARTRE, Jean Paul
2006 *El ser y la nada*. Buenos Aires: Losada.
- VYGOTSKY, Lev
2000 *El desarrollo de los procesos psicológicos superiores*. Barcelona: Crítica.
- ZAHAVI, Dan
2005 *Subjectivity and selfhood*. Cambridge, Mass: MIT Press.



Document reception date: July 15, 2020
Document review date: September 15, 2020
Document approval date: November 15, 2020
Document publication date: January 15, 2021

PHILOSOPHY AND PANDEMIC

Filosofía y pandemia

SAMUEL MADRID GUERRA BRAVO*

Independent researcher, Quito-Ecuador
sguerrab@puce.edu.ec

ORCID code: <https://orcid.org/0000-0001-8019-4578>

Abstract

This work presents three critical aspects related to philosophy in these times of pandemic. The first has to do with the end of Minerva's Owl as a universal symbol of philosophy, that is, the end of the idea that philosophy only manages to explain the world once the events have occurred. The idea of a simultaneity of philosophy with the facts and a certain transforming power of thought is defended. The second makes a critical distinction, from a Latin American and Global South horizon (which is where Latin Americans must think if we want to philosophize with meaning), between 'Metaphysics / Ontology of the universal and abstract being' and 'Historical ontologies of the be-here'. The significance and value of historical ontologies as theoretical decolonization devices are defended against metaphysics. The 'historical onto-logies of being-here' ask themselves, not about being abstract, but about existence and daily life endangered by the pandemic. This allows in the third part to position life, not only as an ethical value capable of guiding human action, but also as a universal foundation and a critical category. As a conclusion, the idea that the pandemic has revealed the true end of Eurocentric modernity and has opened the challenge of thinking in diverse but equal societies in the right to existence and life is upheld.

Keywords

Philosophy, pandemic, metaphysics, ontology, historicity, decolonization.

Suggested citation: Guerra, Samuel (2021). Philosophy and pandemic. *Sophia, colección de Filosofía de la Educación*, 30, pp. 237-263.

* Independent researcher. He was a professor at the School of Philosophy of the Pontifical Catholic University of Ecuador (PUCE). He is a regular contributor to magazines in his area and Editor of the Logos Magazine of the Faculty of Philosophical-Theological Sciences of the PUCE.

 Resúmen

Este trabajo presenta tres aspectos críticos relacionados con la filosofía en estos tiempos de pandemia. El primero tiene que ver con el fin de la Lechuza de Minerva como símbolo universal de la filosofía, es decir el fin de la idea de que la filosofía solo llega a explicar el mundo una vez que han acaecido los hechos. Se defiende la idea de una simultaneidad de la filosofía con los hechos y un cierto poder transformador del pensamiento. El segundo realiza una distinción crítica, desde un horizonte latinoamericano y del Sur Global (que es desde donde los latinoamericanos debemos pensar si queremos filosofar con sentido), entre ‘Metafísica/Ontología del ser universal y abstracto’ y ‘Onto-logías históricas del ser-aquí’. Se defiende la significatividad y el valor de las onto-logías históricas como dispositivos teóricos de descolonización frente a las metafísicas. Las ‘onto-logías históricas del ser-aquí’ se preguntan, no por el ser abstracto, sino por la existencia y la vida cotidiana puestas en peligro por la pandemia. Ello permite en la tercera parte posicionar a la vida, no solo como un valor ético capaz de orientar la acción humana, sino como fundamento universal y categoría crítica. Como conclusión se sostiene la idea de que la pandemia ha revelado el verdadero fin de la modernidad eurocéntrica y ha abierto el desafío de pensar en sociedades diversas pero iguales en el derecho a la existencia y a la vida.

238



 Palabras clave

Filosofía, pandemia, metafísica, ontología, historicidad, descolonización.

Introduction

Philosophy is identical to the spirit of the age in which it appears; philosophy is not above its time, it is only the consciousness of the substance of its time, or the thinking knowledge of what exists in time. In the same way, no individual can be above his time; the individual is the son of his time; the essential of the time is the very essence of it; the individual manifests itself only in a certain way. Nobody can get out of the substance of his time, as nobody can get out of his own skin. Therefore, on an essential consideration philosophy cannot skip its own time.

(Hegel, 1980).

The world has lived in these months a chess game of deadly circumstances against which philosophy has been forced to prove its power or its weakness, its actuality or its expiration. The drama is that it had to do so in the face of the merciless threat of death represented by an ‘invisible enemy’: the coronavirus.

There are some issues that require special debate in Latin America and the Global South. For example: Can philosophy say its word simultaneously to the events of the pandemic or should it keep quiet and wait for it to be overcome or solved by science to reflect on what has already happened? This question is the first to be discussed in this article.

The second question is a clarification of the real and true power of philosophy; power that according to the proposed thesis must be based, after the end of Eurocentric metaphysics, on a historical ontology of ourselves. The difference explains how between ‘metaphysics/ontology’ (which Europe used as a mechanism of domination) and onto-logy (alternative of thought that makes it possible to advance from ‘not-being’ to which colonialism reduced us to ‘being- here ‘or being-historical that we are).

The third question makes an assessment of life as a universal foundation and as a privileged manifestation of ‘being-here’ in times of pandemic. The double vulnerability of life in the region, in the face of coloniality and in the face of the coronavirus, provides the opportunity for onto-logical reflection.

It concludes with a hypothesis: the pandemic has become the true end of Eurocentric modernity. And, hopefully, in the true end of expansionist and colonialist imperialism. A new stage of humanity has opened that some call transmodernity and that, apparently, will not take place in terms of transhumanism (overcoming man and humanity by artificial intelligence), but in terms of an open and solitary neo-humanism between peoples and individuals who see, beyond the value of science and technology, which is not denied, the need to take care of themselves/others and their common home.



The virus of death (coronavirus) plays chess with the Owl of Minerva (symbol of philosophy)

The title of this first section evokes *The Seventh Seal*, the famous film by Ingmar Bergman in which a tormented knight who returns to his castle after ten years of futile struggles in the Crusades, challenges Death to a game of chess in search of answers to key questions in life. The expression ‘Minerva’s Owl’ refers to Hegel, on the one hand, and contemporary philosophers who have issued their reflections on the coronavirus pandemic, on the other hand.

Hegel, the apple of discord

Hegel wrote a memorable paragraph that became a canon for the philosophy of the last two centuries, in the Preface to the *Elements of the Philosophy of Right*, and which says:

A further word on the subject of issuing instructions on how the world ought to be: philosophy, at any rate, always comes too late to perform this function. As the thought of the world, it appears only at a time when actuality has gone through its formative process and attained its completed state. This lesson of the concept is necessarily also apparent from history, namely that it is only when actuality has reached maturity that the ideal appears opposite the real and reconstructs this real world, which it has grasped in its substance, in the shape of an intellectual realm.³⁰ When philosophy paints its grey in grey, a shape of life has grown old, and it cannot be rejuvenated, but only recognized, by the grey in grey of philosophy; the owl of Minerva begins its flight only with the onset of dusk. (Hegel, 1975, p. 26).

This paragraph is going to be, for now, the reason for discord. Lately, it has been seen on social networks how various philosophers have expressed their ideas in writings (articles, essays, narratives) that are contemporary with the development of the pandemic. And this ‘contemporaneity’ of philosophy with the global emergency of Covid-19 has given some to think and has annoyed others, especially those who combine with the idea that philosophy takes flight, like Minerva’s Owl, late afternoon.

However, and given the multiplicity of reflections that philosophers have issued in these same days, you cannot close your eyes. It is possible then that this profusion of narratives is telling us something that we refuse to listen to: that the metaphor of Minerva’s Owl may not be adequate to judge, not the pandemic, but philosophy itself. And to help this hypothesis another memorable text can be mentioned, written by Hegel himself (1975) in the same *Elements of the Philosophy of Right*:

To comprehend what is, is the task of philosophy, for what is, is reason. As far as the individual is concerned, each individual is in any case a child of his time, thus philosophy, too, is its own time comprehended thoughts. It is just as foolish to imagine that any philosophy can transcend its contemporary world as that individual can overlap his own time or leap over Rhodes. If his theory does indeed transcend his own time, if it builds itself a world as it ought to be, then it certainly has an existence, but only within his opinions - a pliant medium in which the imagination can construct anything it pleases.

By contrasting these paragraphs, it can be seen that Minerva’s Owl metaphor conceives philosophy as ‘thought of the world’, that is, as an idea/reason/conscience/spirit that no longer thinks of the ‘external’ world but rather thinks of itself: a pure concept that obviously “appears in time after reality has completed its formation process and is already ready and



finished” (Hegel, 1975, p. 63). This argument can even be reinforced if it is mentioned that, for Hegel, the ‘long time’ or ‘long duration’ that has been required for philosophy to become spirit/reason that thinks itself refers to that Philosophy, the spirit of a people and culture at a certain time, is the result of the work of all past centuries, from primitive stages and cultures to the modern stage that Hegel lived (and the modernity that we live, we would say now)¹.

In this succession of stages of historical peoples (because there were other peoples ‘without history’, according to Hegel), philosophy appeared as innovative and powerful when the peoples entered into decline. Why? Because the spirit, disillusioned with the terrestrial world that had become confused, chaotic, and corrupt, took refuge in the world of thought. Then, the ideal appeared over the real and philosophy was nothing other than the thinking spirit that thinks itself. In these cases, the philosophy required the maturation of the history and the spirit of those peoples, and it was logical to equate philosophy with the Minerva Owl that takes off at dusk.

The question of discord then arises: is this absolute idealism the one advocated by the defenders of ‘philosophy as Minerva’s owl? If they do it in Hegel’s sense, that’s fine, it’s an option. However, it is presumed that what they really want to defend is only the idea that philosophy, being a reflection, requires slow, systematic, patient, rigorous meditation, which must appear when the vertigo of empirical facts has passed and when the physical and medical sciences have rendered their verdict on the pandemic.

But Hegel (1975) counterattacks: according to him, philosophy has the task of ‘conceiving what is’ and that turns the philosopher, as an individual, into a ‘child of his time’. Under this consideration, philosophy is ‘it’s time apprehended in thoughts’, and it is “foolish to believe that a philosophy can go beyond its present time as an individual can jump over its time, beyond Rhodes” (p 63). And, Hegel says, this philosophy that thinks the present time is ‘simultaneous’ with the configuration of the people in which it is presented and with everything that constitutes the configuration of that people: government, morality, social life, skills, customs, art., science, religion, military, and external relations (and pandemics, we would add). But above all, it is ‘simultaneous’ with “the decline of states... and with the origin and growth of something newer in which a higher principle finds its generation and development” (Hegel, 1980, pp. 261-262).

More clearly a rooster does not crow. However, one of the most discussed topics in these times is focused on knowing if philosophy can say something simultaneously to the evolution of the pandemic and its



circumstance or if it should wait for it to conclude its cycle by then, and only then, think about it and make judgments about it².

Covid-19 against Minerva's Owl

The matter began with an early criticism of the publication of the book *La Sopa de Wuhan* (2020)³, which collects articles on the pandemic from the pens of philosophers such as Giorgio Agamben, Jean-Luc Nancy, Slavok Žizek, Byung-Chul Han, Judith Butler, Alan Badiou, María Galindo, Paul B. Preciado, and others⁴. The criticism, contained in a statement signed by pro-Chinese collectives based in Spain, is directed mainly at the cover and the title of the book that suggests that the coronavirus originated in Wuhan (China). The Collective understands that such a cover and such title, by pointing to China as the place of origin of the pandemic, shows hatred, racism, and xenophobia, since it would be blaming it for having originated the global pandemic: something that has not been proven. “If there is something that western colonial capitalism likes to do,” says the statement, “it is to place the problem in an alterity that removes it from any responsibility” (Chinese Diaspora Network in Spain and Others, 2020, p. 1). The perverse thing about the cover would lie, then, in pretending all is “design and creativity”.

But this is not what matters. The interest of this article is focused on the content of the book seen as a totality, that is, as an analytical, reflective, and critical group with the ‘times of pandemic’. And here the discussion begins: these articles/essays/narratives have been written and issued, not when the pandemic has been controlled or solved by the physical and medical sciences, but when it is in uncontrollable expansion throughout the world. There is, therefore, a ‘simultaneity’ of philosophy with the pandemic. The controversy, according to Zarria (2020), arises because there are those who think that this ‘simultaneity’ is inappropriate for philosophy, that ‘hastiness doesn’t suit it’⁵, and that this haste in philosophy ‘does not lead to the mountain, but to the ravine’.

More fuel for the fire

The publication of multiple articles/essays by world-renowned philosophers on the same days that the pandemic strikes mercilessly, brings to the fore something that deserves to be thought about: that philosophy, at this time, is not even the owl of Minerva nor the Messenger of the Dawn. These

242



philosophers are saying, in reality, that philosophy as ‘it’s time apprehended in thoughts’ has little or nothing to do with ‘dusk’ (for which it would now require to ‘shut up and think’, ‘stop the pen’, ‘open the window’), nor with the ‘dawn’ (which would suppose prophecy, prediction, with the corresponding haste). The intermediate position of González and Martínez (2020) does not even fit, willing to “make the effort to throw in unfinished and stammering thoughts, since philosophy has the responsibility of providing meanings and concepts, of naming things, of indicating paths” (p. 1).

Philosophy to be such must conceive (put into concepts) ‘what is’. ‘What is’ is reason, according to the idealist Hegel, but not for Marx (1973)—for example—for whom ‘what is’ is material reality. And it is this material reality (Covid-19 as a virus of death and the material circumstances of its appearance) that determines/conditions thought. In this regard, philosophy has been, is, and will be a matter of reason that thinks, abstracts, and conceptualizes, but not of reason that thinks itself (Hegel), but of reason as a determined/conditioned capacity for thought by material reality. When philosophy abides by these determinations, it cannot go beyond its time because “it is only the consciousness of the substance of its time, or the thinking knowledge of what exists in time” (Hegel, 1980, p. 108).

Then, if philosophy can only think the present time and the present of the world is the coronavirus pandemic that haunts and overwhelms us, to pretend that it must take its flight at nightfall (uncertain future) is to pretend ‘to go beyond its present time’, which is ‘foolish’ (that is, not adjusted to the determinations of reason that thinks the present time). These determinations of philosophy also affect the philosopher as an individual and Hegel (1980) has warned:

(...) No individual can jump over his time [...]; the individual is the child of his time; the essence of the time is the very essence of it [...]. Nobody can get out of the essentials of his time, as nobody can get out of his own skin (p. 108).

Consequently, neither philosophy nor the philosopher can, in an essential consideration, skip their present time and place themselves comfortably in the ‘dusk’ (refuge of idealists, where the ideal prevails over the real).

Only under one aspect, can philosophy be above its time

Only under one aspect, philosophy can be above its time, says Hegel: as Reason that identifies itself, ultimately, with spirit itself in the highest flowering of itself. Only in this formal aspect (which, by the way, for He-

gel is the real), philosophy ‘is above, because it is the spirit that is known as content’, because ‘it is truly the reality of the spirit’ (Hegel, 1975).

Thus, “the ideal is manifested against the real and takes charge of this world in its substance” (p. 63). This real-world, full of disorder and misery, of deceit and corruption, no longer satisfies, it breaks, declines, falls; Philosophy then appears as a reconciliation of this decadence, but “this reconciliation occurs in the ideal world - Hegel insists - in the world of the spirit, in which man takes refuge, when the earthly world no longer satisfies him” (Hegel, 1980, p. 111). This philosophy as reconciliation symbolizes Hegel (1980) with Minerva’s Owl that takes off at nightfall:

If philosophy presents itself and — painting gray on gray — unfolds its abstractions, then the fresh color of youth, of life, has passed. Therefore, what it produces is reconciliation, but only in the world of thought, not in the terrestrial world (p.111).

244



It is logical that the philosophy-as-Owl-of-Minerva thinks of what has already happened, what cannot be ‘rejuvenated’ but only ‘known’.

Those who defend this duskish vision of philosophy actually affirm that in the current context it is not yet time for philosophy, that the world in which we live has not yet entered into decline, that we must wait, be cautious, patient, prudent, serene, humble and let the empirical sciences do and say their part, as expressed by Zarria (2020). In the meantime, philosophy must be silent, at least for a while, stop the pen, open the window, wait patiently for the sunset, when the physical sciences have said everything about the pandemic. And then philosophize.

Beyond Hegel

There are those who think that the spirit of the age we are living in — this capitalist, colonial, patriarchal, individualistic Modernity— has been showing signs of decadence for decades and that now is the time of philosophy, not later. Multiple manifestations highlight this decline: knowledge as a power of domination/marginalization; the absolute predominance of the self; instrumental reason; savage capitalism, neoliberalism, and individualism; the irrational exploitation of nature, global warming, and the melting of the poles; the migration of millions of people fleeing poverty and abandonment; the concentration of wealth in few hands; the primacy of the market over human beings and the criminal exploitation of workers; the loss of value of work, of solidarity, of the community; the racism; xenophobia; the pandemics of the 21st century and, above all, the

Covid-19 pandemic that right now immerses the individual and society in general in fear and death, in confinement and loneliness.

What do those who defend the thesis of philosophy expect of Minerva's owl? when they argue that slow reflection is necessary, that we must wait until the pandemic has been consummated so that philosophy can think about what has already happened, that for philosophy "is imperative to be slow, to ruminate on concepts and arguments, to an attentive, detailed and parsimonious reading of reality" (Sicerone, 2020). Pause, slowness, parsimony, measure, prudence, patience; keep quiet, ruminate, wait: this is the language of those who are still waiting for dusk to think. Meanwhile, the essentials of our time, which is life threatened by the developments/pathologies of modernity itself and the current pandemic, slip through their fingers like water. Meanwhile, people suffer, die, and are not happy, as Camus would say.

If we are in one of the declines that Hegel revealed for the different stages of human history, this means that today is the time of philosophy, because today (and not when the pandemic has expired) thought is life, activity, necessity, determination. Of course, philosophy must be attentive to what the physical, medical, and social sciences say, but it has specific fields (ontological, epistemological, anthropological, ethical, political...) that demand to be thought in this moment. For when should thinking, for example, about who we are today and what is our relationship with logos (reason, conscience)? What is the meaning of living, dying, suffering, being alone? How do human beings understand ourselves in the face of the pandemic? What is good or bad in the context of the global pandemic, in the specific characteristics of the reality in which we find ourselves? What are the correct ethical attitudes towards others and towards myself? What is the true meaning of the State's decisions? What are the philosophical implications of selecting those who must die and those who must live?... It is now, in the face of the global and local emergency, when philosophy can start over, justify its existence and consider itself necessary to the thinking spirit.

But Hegel is Hegel and we must not forget that his idealism makes him look at philosophy as an aspect of the total configuration of the spirit, as the reconciliation of the spirit with itself, which occurs only in the formal sphere, that of pure concepts. With this vision, Hegel turned things "upside down" (spirit as the essence of reality). Fortunately, there was in the history of philosophy those who put things back 'on their feet' and philosophy, re-located in the realm of materiality, of threatened life, it has once again become the thought that meets an objective need: that of not only interpreting the world in different ways but of 'transforming it' (Marx, 1973, p. 11).

Other conditions inherent in philosophy

To avoid being considered prophets, futurologists, catastrophic or apocalyptic, professional philosophers have assumed their task of thinking 'what is' (their reality, their time, and the reason that thinks them), placing themselves in the time horizon that welcomes them and putting them certain orderly and systematic methodologies and categorical schemes are underway that have allowed them to advance from reality to concepts, from facts to foundations. This procedure that allows philosophers to understand the ultimate determinations of a specific or global reality is contemporary with the facts and its value must be measured by the possibility of problematizing and conceptualizing reality, history, facts, and reason itself that thinks about them, in an incessant search for the substance of this time, and should not be measured by psychological aspects such as prudence, patience, serenity, waiting.

Philosophy can conceptualize and must do so many times under the present demands of a reality that demands that the meaning of its occurrence be exposed (brought to light) through thinking reason in a global and sustained analysis. It would then be, if one wants to call it that, a philosophy of the present (Marx, Nietzsche, Heidegger, Benjamin).

In other cases, the philosophy will certainly come to judge (make judgments) after the events have occurred and the reality has concluded its unfolding, but this is a formal possibility that is at the antipodes of the materiality of the events. And in those antipodes of formal thought, it is possible - Hegel himself has said it - 'to capture anything'.

The sensible thing is for philosophy to abide by the conditions of possibility that reality itself offers it, as the most fervent idealist who could not wait for the reality of his time to mature and who strove to finalize the writing of the *Phenomenology of the Spirit* as Napoleonic cannons roared around Jena. This shows that Hegel himself, at least on that occasion, was doing philosophy while the reality was in process, without waiting for the flight of Minerva's owl. Do these contradictions annul Hegel's thought? No, just as the thinking of today's philosophers is not annulled by the fact that they contradict or change their vision. The decisive thing is that the philosopher thinks systematically and rigorously the substance of his time, everything else enters the field of the normal vicissitudes of thinking, when one has the courage to think.

Finally, there will also be cases in which philosophy thinks the future that does not exist but that it is necessary to foresee it, anticipate it, design it with reason and analysis: let's think, for example, of Feuerbach,

246



anticipating a philosophy of the future⁶, or Nietzsche, writing for two centuries later⁷.

Checkmate to twilight and dawn philosophies?

In sum, philosophy does not depend on psychologizing attitudes such as haste or patience, serenity or humility. It is in its power to think about the emergency caused by Covid-19 with the depth, analysis, and criticism that are specific to it. The idea that philosophy could only say definitive words about Covid-19 when the pandemic has passed and Minerva's little owl has taken flight at dusk also seems unreal: a) because reality is always in motion and is never 'ready and finished', since what is considered 'done' is nothing but the image and dynamism of a new moment; and, b) because thought never rests either and new aspects, approaches, understandings, concepts will always emerge, which were not seen, considered or evaluated at dusk.

If philosophical thinking consists of apprehending concepts for a certain time, that depends on: a) on the level of self-awareness that is possible at this time in the different areas where reflection is carried out, b) on the resources/phases/methods inherent to the Philosophy as systematic thought: link with limit or extreme situations, rationality, the vision of totality, the process of abstraction, radicalism, generation of concepts, rigor, criticality, problematization, transcendentalism, etc...⁸

The philosophers who have written about the pandemic fully meet the essential requirements of philosophy as such, and it is they who give consistency to their essays, regardless of how debatable what each of their arguments may be. By depending on the inherent characteristics of thought itself, on the one hand, and the commitment to apprehend their time in concepts, on the other hand, their contributions show the contemporaneity that befits all philosophy as knowledge committed to the essential demands of its environment.

This has little or nothing to do with a conservative vision of the philosopher, which confines him to intellectual isolation, in addition to physical isolation, in which he could supposedly develop a 'measured' and 'ruminated' reflection. The philosophers anthologized in the book *La sopa de Wuhan* and many other philosophers and thinkers (Hürgen Habermas, Edgar Morin, Alain Touraine, Emilio Lledo, Roberto Espósito, Martha Nussbaum, Adela Cortina, Enzo Traverso, Fernando Savater, Enrique Dussel, Naomi Klein, Amelia Valcárcel...) who have made their publications

in different media have broken the prejudice that urges them to ‘be quiet’ when the pandemic is in full swing and to ‘think’ when it has expired.

The ‘contemporaneity’ of those who think ‘simultaneously’ with the occurring facts, if they do so with the parameters and methods proper to philosophy, does not make them morning pundits, or forecasters of an uncertain time, or opinionologists with a veneer of philosophy, or authors of a provisional thought. Their reflections, however brief, have shown that it is not necessary to wait for dusk or dawn but to have, at all times, reason ready, an attentive look, a clear framework of analysis, and a ‘toolbox’ (Wittgenstein) that allow them to reach the ultimate determinations of reality that prompts their reflection. The encouraging fact is that philosophers have responded promptly, from their respective horizons of understanding to the demand of their respective realities, without turning the ‘Minerva’s owl’ philosophy into a ‘messenger of the dawn’.

Neither evening nor morning, philosophy rather plants its foothold where and when societies or peoples need to have citizens committed to the task of thinking and bringing to light the concepts that express the meaning of what is happening. And that is more than enough for philosophy.

248



From the “metaphysics of universal being” to the “historical onto-logies of being-here”. The dialectic being/not-being

Thought from a Latin American and Global South horizon, that is, from a context of coloniality and pandemic (which is the one that corresponds to us and from where we must think in order to philosophize with meaning), it is seen that the question of ‘being’ has been confronted to new historical situations and new meanings that have made possible a new way of understanding the classic Parmenidean exclusion between ‘being’ and ‘not-being’, which is at the base of Eurocentric metaphysics.

The ‘not-being’, to which the American Indian was reduced by the ethical objectification/murder to which he was subjected by the conquest and colonization, became a negative variant of the same ‘being’ that made possible the degradation of the indigenous, black and mestizos to the condition of objects, instruments, quasi-human beings, barbarians without a soul, without reason, without spirituality, who had to be violently incorporated into civilization and Christianity. This metaphysical reason explains that the Latin American history of the last five centuries has been that of a ‘being’ diminished, preyed upon, underpowered, diminished, dehumanized by the gaze of the conqueror and the imposed imperial sys-

tem: that is, a ‘non-being’. A ‘non-being’ that, despite the nihilizing vision that led to the indigenous peoples’ genocide and the devastation of their cultures, persisted in not being left out of ‘being’.

The American ‘non-being’ was not and is not outside of being, it was and is there as negativity inserted in the ‘being’ itself, which can be overcome using an ontological dialectic of a historical nature. Since the ‘non-being’ is not nothing, leaving the ‘non-being’ means that the negated entities re-know themselves as existence, as life, as ‘being-here’. This re-constitutive vision of themselves (of ourselves) as ‘being-here’ that goes beyond the colonialist ‘not-being’ is what we call ‘historical ontology of being-here’.

The consequence of all this is that philosophy in Latin America and the Global South cannot simply embrace the ‘end of philosophy as metaphysics’ proclaimed by a Eurocentric Heidegger, but has to redefine itself as a discipline that thinks conditions of possibility of our re-constitution as ‘being-here’, together with the re-habilitation of the Latin American logos (reason, rationality, knowledge, discourse). This re-constitution of the ‘being-here’ and the logos, as imperative of the present, leads to redefining ontology as onto-logy, that is, as a logos of historical-temporal entities, concrete and situated, open to the other (nature) and the others who live with us in a world that, broad and alien⁹, seeks to turn it into a common home.

This scheme makes it possible for Eurocentric metaphysics to appear as what it has been in our region: “science” that ideologically manipulated the Parmenidean conception of “being” and “not-being” in its wars of expansion and colonialism. By establishing itself as a system of categories that thinks about the re-constitution and deployment of the Latin American being-here- and its logos, historical onto-logy becomes a concrete possibility of ontological decolonization that deconstructs Eurocentric metaphysics from its very foundations.

The true power of philosophy

Philosophy demonstrates its maximum power when it is capable of reaching, with its methods and its reflective, rigorous, and systematic thought, the substance, the *arché*, the ultimate cause, the foundation of what exists. The philosophy that expresses or brings to light these ultimate determinants of the world-reality then becomes the thinking reason, the consciousness of its time or its time apprehended in concepts, as Hegel pointed out. These ultimate determinants can be and have been different at different times in the development of philosophical thought: the absolute

spirit (Hegel), the socio-economic alienation (Marx), the unraveling of universal and absolute values (Nietzsche), the being- there as temporality (Heidegger), existence preceding essence (Sartre)... It can also be mentioned in a retrospective vision: Nature (Spinoza), the Self (Descartes), God (Scholastica), the One (Plotinus), Being (Aristotle), the Good (Plato)... Each of these foundations has been thought of as the essence of what it is, and, consequently, as the ultimate determinant of reality.

The 'Being' as a theoretical foundation has been the traditional theme of Metaphysics/Ontology developed by Europe. Ultimately defining him as God (Aristotle, Christianity), such metaphysics was transformed into onto-theo-logy. Despite the distinctions of reason that Europe made between 'Metaphysics' and 'Ontology', they used them interchangeably (and ambiguously) to always refer to the same thing: 'Being/God' as a universal and absolute foundation. Based on this in-distinction, modern-expansionist Europe carried this philosophy and imposed it everywhere as the sole and absolute truth, eternal and necessary. In this way, Europe converted onto-theo-logical philosophy into a political ideology of expansion (thought or vision of the world used as justification or concealment of conquests and colonialisms) at the service of the imperial powers that conquered and dominated the planet.

Under this condition, philosophy as metaphysics arrived in America in the 16th century, it remained as such throughout the various colonialisms of the last five hundred years (Spanish, Portuguese, English, French, Dutch, North American); and it has managed to "liquefy" and establish itself in the minds and souls of the colonized as "Western and Christian culture," until today. In the academies, of course, the matter ran easier: the study of Aristotelian-Thomist metaphysics was (and still is today in Catholic centers) compulsory.

To structure itself as systematic knowledge in Europe, philosophy organized its range of knowledge into 'disciplines': knowledge about being-god (metaphysics/ontology, theology), about knowledge and truth (logic, epistemology), about the world-cosmos (cosmology), about man (anthropology), about human acts (ethics), about beauty and art (aesthetics)... To 'liquefy' as culture (to make the meaning of abstract concepts digestible or assimilable for ordinary people) and to settle in the mind and soul of the colonized, religious preaching and fear, school and collegiate education, and the slow and sustained configuration of the world of values and customs was employed. The core that has supported and still supports 'that Greek-European philosophy' imposed as 'unique and universal philosophy', has been and is metaphysics/ontology.



This ‘metaphysical knowledge’ that configured an ideal world in Plato, became a *real politik* with Aristotle and has accompanied the Greco-Roman-European-North American expansionism ever since. The successive world empires theoretically based their wars of expansion, conquest, and colonization on the metaphysical distinction (and, therefore, universal and necessary) between being/not-being, and from it, they extracted the conceptual derivations of civilization-barbarism, faith-reason, Christians-infidels, progress-underdevelopment, freedom-nature, historical peoples-peoples without history, democracy-tyranny..., which served them and serves them to subdue and dominate.

In summary: the true power of the philosophy imposed in America was rooted in this onto-theo-logical vision used as a political ideology that defined and defines as ‘not-being’ the discovered and colonized realities, ordering them to barbarism, to irrationality, to inauthenticity, to underdevelopment, to a-historicity. Beyond the vision of totality and the logical rigor of its concepts, the metaphysics of universal being was used in the praxis of politics and of everyday life as an instrument to discriminate, separate, hide, deny, make invisible, devalue¹⁰.

Need for a critique of the metaphysical condition

How has this metaphysical condition of philosophy been criticized or overcome? Europe has purged itself through a gradual deconstruction of its onto-theo-logical horizon throughout modernity, culminating in Heidegger and Sartre, who made the later conceptualizations about the ‘end of philosophy as metaphysics’ and the ‘end of the philosophies of the essence’.

And what about Latin America and the Global South? How would the spheres where coloniality still prevails require orienting one’s thinking to overcome the Eurocentric and colonialist metaphysics of universal and absolute being? If this metaphysics is liquefied and installed in the deepest recesses of being, feeling, thinking, believing, how can we get out of it?¹¹

Getting out of it will take time and a laborious effort to philosophize from our realities. The category of ‘being’ as a foundation continues to operate in the background of current Latin American cultures, even if one does not want to see or understand it.

Getting out of it will take time and a laborious effort to philosophize from our realities. The category of ‘being’ as a foundation continues to operate in the background of current Latin American cultures, even if one does not want to see or understand it. The issue, therefore,

if we want to stay on the horizon of what is usually understood by philosophy, is to re-define or re-semanticize the question of ‘being’ from or from existential and historical conditions that allow us to open thought to question of ‘being-here’. With what theoretical, critical, deconstructive resources could we achieve this? With these, for example:

- Discovering our real location in world history and in the geopolitics of our time, which overcomes the traditional Eurocentric division of world history into ancient, middle, and contemporary ages¹².
- Conquering a “beachhead in the field of the onto-logical and epistemic” as an initial space in/for the deployment of decolonial and liberation knowledge.
- Introducing a clear and sharp distinction between “metaphysics of universal being” and “historical onto-logies of being-here”, which reveals or brings to light the imperial character of Eurocentric metaphysics and the new theoretical possibilities of onto-logies historical being-here¹³.
- Appealing to new ‘philosophical *-loci-* places’ and elaborating theory from the colonized and not from the colonizers, from those denied by the system as non-being, that is, as objects, things, work animals, reprehensible, expendable.
- Putting into crisis the Greek-European-North American logos (reason, word, science) imposed as a universal horizon of understanding, and showing a decolonial logos that enables an understanding, reading, and expression of our existence and historical realities.
- Appropriating, re-semanticizing or processing new categories of thought, valid in the field of philosophy, such as: ‘historical ontology of ourselves’, ‘otherness’, ‘historicity’, ‘alienation’, ‘multiplicity’, ‘diversity’, ‘proximity’, ‘mediation’, ‘liberation’, ‘deconstruction’, ‘decolonization’.
- Defining and redefining the characteristics of a decolonial, transmodern, ecological, anti-imperialist, anti-patriarchal, anti-fetishist philosophy..., that thinks Latin America and the Global South as true ‘philosophical places’, and opens paths of thought that lead to inclusive, integrative worldviews, evaluations of ourselves and of our social, economic, political, cultural realities.
- Carrying out deconstruction/decolonization processes in the field of social sciences, particularly in philosophy (onto-theo-



logical, epistemological, anthropological, ethical-political deconstruction...), in sociology (bourgeoisies/elites/oligarchies vs lower-middle classes, classless, marginal), in politics (rulers and ruled), in the economy (owners of capital and the means of production vs those who only have their labor), in culture (among those who have logos and who 'borrow' it¹⁴).

- Generating patterns of thought and values that can be replicated or assimilated in other fields of living, knowing, doing, feeling, believing, being men, dying, transcending.
- Generating patterns of thought and values that can be replicated or assimilated in other fields of living, knowing, doing, feeling, believing, being men, dying, transcending.
- Making the gains circulate in the field of thought not only in academies but also in subordinate spaces.

An initial systematization of this 'historical ontology' that enables the re-constitution / re-habilitation / liberation of the 'being-here' is necessary. With this, we will have freed the same ontology from its Eurocentric metaphysical matrix and we will have re-formulated it as an ontology, as *logos* of historical entities and what it has to do with them: existence itself, life, time, the world, nature... Thus, opens the possibility of thinking from another horizon (or from an 'other' horizon) problems related to the historical entity such as that of life threatened by the pandemic and colonialism, truth, ethics, humanism, etc., which are problems that ultimately have to do with the 'being-here' that we are and with the *logos* that allow us to think and re-think ourselves.

Historical ontologies as mechanisms of philosophical decolonization

Beyond the political use (transformation of wisdom about being into a political ideology of expansion and conquest) that Europe made of philosophy, it reached an ontological rank in the Greek centuries that became a *sine qua non* condition for all philosophy¹⁵. The Greeks did not invent philosophy, but they did discover the question of 'being' as its fundamental determination. This is still in force in the West and obliges the philosophy that pretends to be so in the strict sense, to always reach that ontological rank.

It is the 'imperial turn' of the Eurocentric philosophy that defined the non-European as non-being what the colonial circles criticize and

reject. Latin America and the Global South need to seek the onto-logical-decolonizing angle that allows progress from being denied (depredated, underpowered, hidden, devalued) to the historical being that we are, to the 'being-here'¹⁶. Nor is it a question of imitating the overcoming of the ontological horizon that Europe carried out; the question lies in the radical critique of the 'being-imperial' that enables the re-positioning of the colonized spheres in the 'being' as 'being-here'.

Regardless of the uses and abuses that Europe has made of philosophy-as-metaphysics, those of us who pretend to do philosophy have to feel called by the question of being, consequently, by an ontology of ourselves. Philosophy must express this onto-logical determination and find the path that leads from 'not-being' to 'being-here'.

This orientation of thought enables the critique of the Eurocentric philosophy, postulated to this day in academies, in forums, and in alienated culture as unique, universal, and absolute. It is necessary to assume the criticality inherent in the philosophy itself and to release the possibility of thinking about our own philosophical decolonization. To the extent that an onto-logical range is reached (from not-being to being-here), philosophy will be true wisdom, a true search for the truth of being.

Some may be confused by the postulation of an onto-logy of being-here in the face of a Europe that has consistently discussed overcoming the ontological horizon in the last four centuries. The 'end of metaphysics' consists, according to Heidegger¹⁷, in overcoming the question of 'what is it to be' and to think from now on the 'sense of being'. This legitimately corresponds to the European reality. For us, the children of colonialism, the real onto-logical problem of our philosophizing is thinking about who we are today and how our being-here is possible. It is this onto-logical process that philosophy has to be put into concepts. In this way, philosophy will continue to be philosophy but thought in/from colonial spheres that fight for their liberation.

Life as a privileged manifestation of 'being-here' in times of pandemic

Historical ontologies in the face of the pandemic

The un hiding/emergence of 'being-here' constitutes the onto-logical foundation of a decolonizing/liberating project in the fields of thought. On that basis, we can speak of philosophy with legitimacy, since we will have re-

254



converted Eurocentric philosophy into knowledge of decolonization, subjectivation, and historical realization of ourselves. This project encompasses the colonized and colonizers and opens ways to understand and confront the multiple problems that historical time presents us, some more serious than others, such as the coronavirus pandemic that besets us.

Everyone, those who conceptualize and those who simply live the problem, have faced the Covid-19 pandemic in terms of direct, unprecedented, or re-signified experiences. Among them: the experience of one's existence, not in abstract terms but in its unique presence and uniqueness; the experience of life threatened; of self-care; of the Others as proximity or threat; of the imminent danger of dying; of loneliness; of the political use of human frailty; from the contempt of old age; of the polysemy of language and the manipulation of meanings by governments or dominant elites; of hope in science as a saving resource; of the fallen faith; etc. These and other experiences turned into the inescapable present of those who live, die, suffer, stay or go, bring to light the temporality and historicity of 'being-here'.

The fundamental experience has been that of life itself, of its value, of its power, of its vulnerability. No less intense has been the experience of death, illness, physical suffering, goodbyes without the presence or consolation from loved ones. The experience of confinement and loneliness has also marked the lives of many. The world of possibilities from which to choose has shrunk. Political power, military power, economic power have shown their oversizing and ineffectiveness when it comes to protecting or saving the lives of fellow citizens. The society of the spectacle has felt and feels unguarded. Social inequalities have been relativized—for those who believe in the equalizing power of death—or have been highlighted—for those who have moved away from contagion based on their economic power. The normality in which we lived suddenly appeared to us as insufficiency, as a crisis, as a biological risk. The 'new' normality, depending on the perspective of the one who looks at it, judges it, or suffers it, is an unknown or a challenge.

In addition to these, Latin America and the Global South have had other historical experiences that interest philosophy. First, the experience of universality. This has allowed that, beyond coloniality or despite it, these regions were identified, not as the 'backyard' of any power, but as an integral part of a universal whole challenged by the pandemic. It has become clear that one thing is the concept of the universal generated by metaphysics, and another—very different—is the experience of the universal as constituting ourselves from within. We, the colonized, who

because of colonialism had been relegated to the realm of particularity, undervaluation, and oblivion, emerged with the pandemic as an integral part of a totality that included us despite regional, political, racial, and cultural or technological differences. The colonial spheres had, in the XXI century, the experience of the universal that Europe had, for example, from the XVI century with the world-system generated by expansionism and colonialism. Along with these historical experiences, Latin America and the Global South have also had the intellectual-philosophical experience of the onto-logical, of 'being-here', of existence, of the world, of life, and of death as universal manifestations of what it is, here and now, in history, although it may stop being due to the coronavirus.

256



Responding to the challenges generated by the pandemic at the level of thought

These experiences of the fundamental and substantial, of the historical and circumstantial (*circum-stare*) and this need to think about our reality and to think about ourselves to reach the ultimate determinants of our existence, have been reflected in articles and studies published in the last months, which show a pre-occupation and an unusual desire to understand, not only the causes of the pandemic but the 'universal singularity' (Kant) of human existence and life.

You have to pay attention above all to life, human life challenged by a microscopic virus. Here, philosophy has endeavored to understand the problem from the realities that concern us. As an example of this, we can mention two Mexican philosophers who, without giving up thinking from the determinants of their region, achieve a critical universalism that deliberately avoids shipwreck in a 'compulsive repetition' of what has been said by 'European, North American and masculine'¹⁸.

According to González and Martínez (2020), there is here a philosophical attitude that must characterize the Latin American and Global South reflections:

It is not the same [they argue] to think in times of this coronavirus from European countries with their health systems, which have been overwhelmed and their economies anticipating a crisis, than, from Latin American countries, with health systems that were already saturated and underserved, with economies for which this crisis will be added to the others. [And they add:] It is short-sighted and Eurocentric to judge that the confinement that exists in Spain, Italy or France is only due to State coercion,

without even doing the exercise of imagination that, in other latitudes, for example, in Mexico, this has been the privilege of a few. [They reaffirm that] the interpretations that philosophy has to make must be more plural, more sensible, and more respectful of differences (p. 1).

Life as foundation and category

The Mexican philosophers María Antonia González Valerio and Rosaura Martínez Ruiz (2020) address the issue of life as a category, stating that it is for them:

(...) Particularly relevant is the understanding of the category of life on the margin or opposed to that of culture. Above all, because it corresponds to a certain paradigm and biological ideology of the twentieth century that has striven to separate the living, to study it, and determine it in mechanistic terms. [... And they emphasize] how to speak of biological life, of neutral life when human life always occurs in different social, cultural, economic, political, and family conditions? When does human life appear unaffected? Neither human life nor the pathogen that now threatens occurs indifferently. It is ontologically unsustainable to pretend that this pandemic puts us at the juncture of deciding between biological and social life (p. 2).



Life is in itself a biological, social, political, and cultural fact, therefore, aspiring to an ontological autonomy of the biological dimension is epistemically unsustainable. This is due to the fact that “marking clear cuts between the matter and the idea is impossible or perversely fanciful” (González & Martínez, 2020, p. 3). It is enough to open your eyes to see that the current health, ethical and economic crisis has made it clear that “life is never naked,” that is, that it never takes place outside the public sphere or outside the political sphere. And the authors add with full conviction that:

Many believe that what we are experiencing is exclusive to a period of abnormality, when rather, we are at a critical moment of our biological, political, ethical, and ontological interdependence. In these terms, this crisis is nothing more than a device that makes visible in a dramatic way how our life depends on and is sustained by others and by all other living beings and forms of non-living nature (such as water, air, and stones) (p. 3).

Linked to life is the issue of climate change. The world knows, even if the empires ignore it, that the depredation of nature generates imbalances in the climate and in the effects of the climate on living beings. Nature, which for Spinoza was divine (*Deus sive Natura*), has been desecra-

ted and manipulated by enlightened modernity. Modern man (with the exception of some indigenous cultures) does not understand the ways of being of nature, does not coexist with it, and exploits it, predates it. Given this, Mexican philosophers say: “the climate change that we are experiencing, whose consequences will be increasingly dramatic and violent, is also a consequence of an inequitable assessment of the different ways of being of nature” (González & Martínez, 2020, p. 3).

The defense of life involves not only rational concepts but also values, attitudes, and feelings. The aforementioned philosophers express two mixed feelings: one optimistic: “There is a great desire for hope and trust in science, technology and medicine” (González & Martínez, 2020, p. 4); and a pessimistic one:

This pandemic, with all that it destroys and all that it reveals and exposes, will not be a juncture to build another possible world or to end patriarchy, capitalism, or neoliberalism (González & Martínez, 2020, p. 4).

The experiences of centuries of colonialism, of thousands of lived crises, leave little room for confidence in a dignified future existence, so that:

(...) The questions about the meaning and goodness of existence that are made will be diluted as soon as the urgency passes. Such poverty of spirit if we think that this will make us better! Although this does not deny that the crisis clarifies a political agenda of struggles and resistance for which we will have to redouble our efforts” (González & Martínez, 2020, p. 4).

On this horizon, it is impossible to escape self-criticism: according to the authors, it is discouraging to think that the moment we decide to change something only comes when “we have fear up to our necks and when our inability to assume death makes us evade (us) running frantically in search of solutions” (González & Martínez, 2020, p. 4). In any case, reason has paths from which we cannot and must not escape, since:

(...) As the pandemic progresses and even when it, by its own course, reaches its end, new and incalculable horizons of thought and collective action will appear. For the moment, the greatest is to build and act from global solidarity, even though it is known that the countries with more economic resources are hoarding supplies, ventilators, and medicines; even when staying at home is a privilege of social classes throughout the world (González & Martínez, 2020, p. 5).

Finally, two epistemological notes by the cited authors. The one: “Criticism must be an intervention in the course of history that fractures



it so that, in that crack, the horizon of a better future opens, of a future to come” (González & Martínez, 2020, p. 5). And the other:

We must associate the effort to dismantle forms of knowledge, epistemological frameworks, linked with the reproduction of objectionable practices of power with projects of social transformation that seek to achieve substantial democratic goals such as freedom, equality, and justice (González & Martínez, 2020, pp. 4-5).

These quotes that allow other voices to be heard reveal one thing: the pandemic has once again brought to the fore the need to philosophize on the horizon of a common decolonization project in/for areas that are still living in situations of dependency and coloniality, like Latin America and the Global South. Such a project has to take place, not only in the socio-political-economic field but also in the sustained exercise of critical and irreverent thinking. It is not a question of a prior preparation of thought for a subsequent transforming action: thought itself exercised and exposed with critical criteria and methods is already a form of transformation, at least on the theoretical level. There is no other way of understanding philosophy other than as a method of analysis for the knowledge, understanding, and transformation of the world. These concepts are not new; put them into practice, that’s what’s new.

259



Conclusions

Controversial issues that directly relate philosophy to the coronavirus pandemic have been reviewed, among them: the decline of dusk philosophies, the end of the ‘metaphysics of universal and abstract being’, the affirmation of the ‘historical onto-logies of being-here’, and the emergence of decolonial-critical thinking that heralds, as a legitimate exercise of utopia, the advent of a new world age.

All this seems to signify, now more than in the last century, a true end of Eurocentric modernity. However, and opening the doors to controversy: Eurocentric modernity did not end when postmodernists decreed in the second half of the 20th century the end of man, the end of reason, the end of history, the end of great stories, the end of ideologies, the end of utopias, etc...¹⁹ Nor did it end with the fall of the socialisms of Eastern Europe (1989) that promoted the so-called globalization. These events were not the end of one era and the beginning of another, although this has been affirmed, since the postmodern unfolding was a properly European event, and globalization, particularly, involved the

powers of advanced capitalism. Neither of the two historical events was truly universal in scope.

The Covid-19 pandemic, which started in an emerging power like China and later spread globally, has involved the entire planet. Its fundamental reference was not modernity subjected to criticism or financial capital dividing the world into developed and underdeveloped countries, but the simple existence and the struggle for life in the face of an invisible and mortal enemy. Euro-centered modernity and globalization found an unsuspected limit in the biological nature of the pandemic, which has not distinguished between hegemonies, ideologies, capital, or the market.

Europe, of course, will continue to be a benchmark given its level of economic, scientific, and cultural development, but it is no longer the 'center' of the world. Neither is the United States, despite its technological and military development, as other emerging powers such as China and Russia are successfully challenging its hegemony. The world is no longer concentrated in certain continents, regions, or countries that considered their expansionist and colonialist efforts as a form of universalization of their particularity. Faced with this reality imposed by the pandemic, the metaphysical category of the universal has lost its absolute value and, by not adequately adjusting to existing realities, has yielded its theoretical field to another truly planetary category: the pluriversal.

The planetarization of the pluriversal is putting a true end to the modernity that has determined and still determines the dependent and colonial history of the last five centuries. In the consciousness of people exposed to the possibility of dying, the paradigms of capital that values itself and of the market, of freedom and democracy seem to give way in favor of the paradigms of caring for human existence and for the threatened life, a harmonious relationship with nature, and an openness to multiple forms of development and culture. Science and technology put at the service of empires must turn their gaze to health care, food, housing, education, and other rights postponed in large sectors of the population.

These phenomena, generated or driven by the pandemic, should not go unnoticed by philosophy. As never before, a Latin American and Global South reason feels the need to rethink and criticize the inherited alienations of modernity and globalization in order to overcome them. A true epistemological decolonization is underway. The resources or mechanisms indicated in the second part of this work can help this process.

The coronavirus pandemic forces us to land in our realities and in our respective historical contexts. Philosophy, as it cannot be otherwise—the other way would be permanent alienation—has been under this



requirement and this urgency, as revealed by the contributions of many thinkers and philosophers who in these same days and at the same time as the pandemic, have offered their reflections and points of view. The power of philosophy as a critical and analytical expression of the meaning of what happens is in our hands. Let's not waste it on decontextualized, pessimistic, or insubstantial theoretical ramblings.

Notes

- 1 The so-called postmodernity, as many - among them, Habermas (1985) - have pointed out, is but the last stage of modernity.
- 2 Santiago Zarría (2020). The author harshly criticizes the philosophers, labeling their reflections as “opinology with a certain philosophical veneer.”
- 3 On the cover “Sopa de Wuhan”: Statement for ASPO (editorial) and Pablo Amadeo (editor), April 1, 2020. Signed: Chinese Diaspora Network in Spain; Catàrsia, Asian descendants collective (Barcelona); Liwai, intercultural action (Madrid); Oryza, Asian anti-racist collective (Madrid); Tusanaje (Valencia); Cangrejo Pro Company (Madrid); TIC Tac. - Workshop on combative anti-racist transfeminist critical interventions (Barcelona).
- 4 2020, Book published on the internet by ASPO / Preventive and Mandatory Social Isolation/, under the editorial work of Pablo Amadeo, March 2020.
- 5 María Antonia González Valerio and Rosaura Martínez Ruiz (2020). Carlos Vargas (2020) agrees with the approach of these two teachers.
- 6 See Feuerbach (1984).
- 7 See Nietzsche (1956; 2004).
- 8 See Guerra Bravo (2019a).
- 9 The expression alludes to *Broad and alien is the world*, the famous novel by the Peruvian Ciro Alegría (1941).
- 10 This political vision does not pretend to deny certain ‘benefits’ that the students of the colonies drew from metaphysics, for example, the ability to think in order, to use concepts rigorously, to debate with arguments, to rank, distinguish, sub-distinguish, etc.
- 11 Not even indigenous cultures that originally had different worldviews have been able to escape the violent contamination of the Western and Christian. In fact, all cultures (indigenous, black, mestizo) are infected (contaminated) with knowledge and beliefs imposed by the processes of conquest and colonization.
- 12 Dussel has criticized the European version of world history, which is still found in all study manuals. The Argentine author makes another reading of world-historical processes: Cf. (2007a; 2007b; 1994).
- 13 The separation between “being” and “entity” was never clear in Europe: these concepts were used interchangeably to deal with questions that had to do with ‘what is’. Nor was the separation between “metaphysics” and “ontology” clear. Metaphysics was defined as the ‘science of being in general’ or ‘science of being’. Even when the term ‘Ontology’ came into circulation with Christian Wolf (1679-1754), the two ‘sciences’ continued to be understood as equivalent. Heidegger (1978) introduced in the 20th century the so-called ‘ontological difference’ to distinguish between ‘being’ and ‘being’, a distinction that made it possible to understand man as ‘being-there’, as a privileged manifestation



of 'being'. The history of philosophy then appeared as a history of Metaphysics that reached its culmination (final) when the experimental sciences separated and became independent from their philosophical matrix (19th / 20th centuries). After the "end of philosophy as metaphysics" (p. 134), Heidegger postulated an 'other beginning' that he called 'Thinking': an activity of reason that is neither metaphysics nor science and that thinks' essence or meaning of being. The 'being' had been 'forgotten' as Plato and later philosophy dealt with 'being' and not with 'being as being'. Heidegger's phenomenological ontology again approached the 'question of being' and opened its way to the question of 'being' through an analytic of 'being-there' or of existence, and of its events (historical manifestations, events of 'to be'). Cf. Guerra (2019b).

- 14 See Guerra (2019a).
- 15 See Gadamer (1992).
- 16 Hence, limiting ourselves to repeating the European ontology in the academic courses of the universities is a way of consolidating coloniality from ourselves.
- 17 See Heidegger (2002), *Contributions to philosophy. About the Event*, Buenos Aires: Editorial Biblos.
- 18 They are María Antonia González Valerio and Rosaura Martínez Ruiz, whom we have criticized in the first part for their attachment to the idea of philosophy such as Minerva's Owl, and from whom we value overcoming this attachment when they make critical remarks regarding the European origin of the articles related to the pandemic and postulate, at the same time, the need for philosophical reflection to land in our region. See González and Martínez (2020).
- 19 Habermas had already warned at the time that postmodernity was but the last stage of modernity.

262



Bibliography

- AGAMBEN, Giorgio
 2020 *¿En qué punto estamos? La epidemia como política*. Quodlibet, 9 de julio de 2020.
- ALEGRÍA, Ciro
 1941 *El mundo es ancho y ajeno*. Santiago de Chile: Editorial Ercilla.
- DUSSEL, Enrique
 1994 *1492: El encubrimiento del otro. Hacia el origen del "mito de la modernidad"*. La Paz: Plural Editores.
 2007a *Política de la liberación. Historia mundial y crítica*. Madrid: Editorial Trotta.
 2007b *Materiales para una política de la liberación*. México: Plaza y Valdés Editores.
- FEUERBACH, Ludwig
 1984 *Principios de una filosofía del futuro*. Barcelona: Ediciones Orbis.
- GADAMER, Hans George
 1992 *Hacia la prehistoria de la metafísica*. Córdoba (Argentina): Alción Editora.
- GONZÁLEZ AROCHA, Jorge
 2020 Dossier: Filosofía y coronavirus. Los poderes del Gobierno y la libertad individual. *Dialektika*. Recuperado de: <https://bit.ly/34QoYu9>
- GONZÁLEZ VALERIO, María Antonia & MARTÍNEZ RUIZ, Rosaura
 2020 Covid-19: crítica en tiempos enfermos. *Filosofía&Co*. Recuperado de: <https://bit.ly/3aNTUPi>

- GUERRA BRAVO, Samuel
- 2019a *Repensando la filosofía, Visión decolonial y transmoderna desde Latinoamérica y el Sur Global*. Quito: Abya-Yala.
- 2019b *La ontología histórica como horizonte para la educación. Sophia, Colección de Filosofía de la Educación*, 27, 51-76. Universidad Politécnica Salesiana del Ecuador,
- HABERMAS, Jurgen
- 1985 *El discurso filosófico de la modernidad*. Madrid: Editorial Taurus.
- HEGEL, Georg Wilhelm Friedrich
- 1975 *Principios de la filosofía del derecho*. Buenos Aires: Editorial Sudamericana.
- 1980 *Introducción a la historia de la filosofía*. Buenos Aires: Aguilar Ediciones.
- HEIDEGGER, Martín
- 2002 *Aportes a la filosofía*. Acerca del Evento, Buenos Aires: Editorial Biblos.
- MARX, Carlos
- 1973 Tesis sobre Feuerbach. En Marx-Engels, *Obras escogidas*. Buenos Aires: Editorial Ciencias del hombre.
- NIETZSCHE, Friedrich
- 1956 *Así hablaba Zaratustra*. México: Editorial Filosófica.
- 2004 *Fragmentos póstumos*. Madrid: Abada Editores.
- RED DE DIÁSPORA CHINA EN ESPAÑA Y OTROS
- 2020 *Sobre la portada 'Sopa de Wuhan'*: Comunicado para ASPO (editorial) y Pablo Amadeo (editor): 1 de abril de 2020.
- SICERONE, Daniel
- 2020 La filosofía como el búho de minerva: Covid-19 o el agotamiento de la teoría crítica de la sociedad capitalista. *Reflexiones marginales*, 8(5), 1-15. Universidad Nacional Autónoma de México. Facultad de Filosofía y Letras. Recuperado de: <https://bit.ly/37TlxV7>
- VARGAS, Carlos
- 2020 *Meditaciones sobre la situación pandémica*. Recuperado de: <https://bit.ly/3aOeNK5>
- VARIOS
- 2020 *Sopa de Wuhan*. Libro editado en internet por ASPO (Aislamiento Social Preventivo y Obligatorio), bajo la labor editorial de Pablo Amadeo: marzo de 2020.
- ZARRIA, Santiago
- 2020 Mensajeros del alba. *La Jornada, Baja California*. Recuperado de: <https://bit.ly/2WTtyU2>
- ZIZEK, Slavoj
- 2020 *Pandemia. La covid-19 sacude el mundo*. E-book 978-1-68219-246-7.

Document reception date: July 15, 2020
 Document review date: September 15, 2020
 Document approval date: October 15, 2020
 Document publication date: January 15, 2021

THE COVID-19 PANDEMIC AS A LIMIT EXPERIENCE
OF THE SENSE OF EXISTENCE
OF THE POST-MODERN HUMAN BEING

La pandemia del Covid-19 como experiencia
límite del sentido de la existencia
del ser humano posmoderno

REMBERTO ORTEGA GUIZADO*

Independent researcher, Panama, Republic of Panama
remberto04@gmail.com

Orcid code: <https://orcid.org/0000-0003-1259-1808>

Abstract

After the Director General of the World Health Organization (WHO), Tedros Adhanom Ghebreyesus, declared the pandemic situation on March 11, 2020, the world changed because, Covid-19 caused postmodern society to wonder about existence, on its meaning, on its end. However, once again, what is disturbing again is not the search for a conceptual answer, but one as a human existential experience. This article, based on a bibliographic research, presents a philosophical approach to the Covid-19 pandemic as a limit experience of the meaning of existence of the postmodern human being, which reveals the great ethical and human crisis that characterizes postmodernity, and therefore Through the hegemony of conceptual frameworks, it has placed thousands of human beings in existential destitution. For this reason, this work is limited to human experience in this context; which is done from the existential ontological, without necessarily implying intrinsic structures to being, as a categorical search but rather that the ontological is rooted in existence; in such a way that, allusion is made to the work of Butler (2006a) to try to avoid that the philosophical elucubration remains in the nominal conceptual, distorting the existential approach.

Keywords

Pandemic, vulnerability, hegemonic frameworks, nakedness of being, existential philosophy, face.

Suggested citation: Ortega, Remberto (2021). The Covid-19 pandemic as a limit experience of the sense of existence of the post-modern human being. *Sophía, colección de Filosofía de la Educación*, 30, pp. 265-287.

* Industrial Engineer, Philosopher and specialist in Social Development Projects.

Resumen

Después que el Director General de la Organización Mundial de la Salud (OMS), Tedros Adhanom Ghebreyesus, declarara la situación de pandemia el 11 de marzo de 2020, el mundo cambió pues, el Covid-19 provocó que, la sociedad posmoderna se pregunte sobre la existencia, sobre su sentido, sobre su fin. Sin embargo, una vez más, lo que vuelve a inquietar no es la búsqueda de una respuesta conceptual, sino una en cuanto experiencia existencial humana. Este artículo, basado en una investigación bibliográfica, presenta una aproximación filosófica de la pandemia del Covid-19 como experiencia límite del sentido de la existencia del ser humano posmoderno, que desvela la gran crisis ética y humana que caracteriza a la posmodernidad, y que por medio de la hegemonía de marcos conceptuales ha colocado a miles de seres humanos en la indigencia existencial. Por ello, dicho trabajo se delimita a la experiencia humana en este contexto; lo cual se hace desde lo ontológico existencial, sin que ello implique necesariamente estructuras intrínsecas al ser, como una búsqueda categorial sino más bien que lo ontológico se enraiza en la existencia; de tal manera que, se hace alusión a la obra de Butler (2006b) para tratar de evitar que la elucubración filosófica se quede en lo conceptual nominal, desvirtuando el enfoque existencial.

Palabras clave

Pandemia, vulnerabilidad, marcos hegemónicos, desnudez del ser, filosofía existencial, rostro.

266



Introduction

When it comes to philosophizing about existence, there are many paths that can be traveled, however, one of the most interesting approaches is found in the work of Arendt (1968) and that serves as a starting point for reflection on what this article is about and what it says:

Descartes had already posed the problem of reality in a completely modern sense — to solve it in an entirely traditional sense. The question: if Being as such is modern: the answer, *cogito ergo sum* falls into a void; for, as Nietzsche rightly noted, it does not prove the existence of the *ego cogitans* but at most that of the *cogitare*. In other words, the I think never produces the truly living I, but only a thought I. This is what we know from Kant (p. 52).

Based on what Arendt expresses, the disturbing questioning about being arises thought from the categorial and what the experience of the living being entails, that is, the question about existence again worries, not as a question but as a human existential experience and after the Director General of the World Health Organization (WHO), Tedros Adhanom Ghebreyesus, declared the pandemic situation on March 11, 2020, things have changed because Covid-19 seems to exceed any of the many theories that are born of spirits that, attached to nominal categories that are based and satisfied in schemes of analysis, controlled experimentation, planning, and forecasting, especially that of the positive sciences, have been surpassed.

In this order of ideas, it is inevitable not to infer that humanity has had to recognize that rancid nature, unconquerable, changing, ungraspable, has been confronted with the fragility and vulnerability that human existence entails; which has not only threatened the complex and worn out traditional economic-political systems, but has gone further by breaking with categorical assumptions that have led to a state of hysteria and paranoia of human thought. Then, paraphrasing Arendt (1968), it is possible to notice how the thinking human being is not necessarily it and exhausts the truly living human being.

This article, based on a bibliographic research, presents a philosophical approach to the Covid-19 pandemic as a limit experience of the meaning of existence of the postmodern human being. To do this, a structured reflection will be followed that deals with three great moments: in the first, it will reflect on the categorical and the existential in human experience; the second section presents the study on vulnerability and the encounter with the other; the third part deals with the exercise of power and categorical invisibility; to later finish with some conclusions.

It is necessary to note that this work is limited to the human experience in the Latin American context; which is done from the existential ontological, without necessarily implying intrinsic structures to being, as a categorical search but rather that the ontological is rooted in existence; therefore we allude the work of Butler (2006a) to try to avoid that the philosophical elucubration that remains in the nominal conceptual, distorting the existential approach, and that in this way it is avoided the to appeal to the responsibility, either of the human being as an individual or in his/her social component from the political and economic apparatus. In other words, the ontology referred to is not conceptual univocal from the traditionally acceptable, but rather from the equivocal.

A deliberation is proposed from the existential ontology, from the limit situations and human conditions such as the fragility, the neediness and the vulnerability that every human being experiences. To do this, having the thought of Butler (2010) as a common thread, it is intended to reflect on the pandemic: as a limit experience of the meaning of existence of the postmodern human being.

The ontological vision that is presented as the common thread of this philosophical abstraction, follows some of the ideas of Butler (2010) when expressing that:

To speak of 'ontology' in this regard is not to claim a description of fundamental structures of being different from any other social or political



organization. Rather, on the contrary, none of these terms exist outside of their political organization and interpretation (p. 15).

This crisis that is not only a health one, but is ethical and deeply human, demands a reflection because, after the deadlines are met and the contagion curve is flattened, humanity will inevitably have to reflect and decide on whether the virus will evolve to transform it in the excuse that increases and validates human misery, the forgetfulness of the other, the supremacy of the economic over existence, the banality of evil.

Based on the aforementioned, there is no shortage of experts who continue to focus on tangential elements such as the reinvention of the cold war, changes in the financial and stock market system, which translate into radical changes in the geopolitical scenario, with new points of friction between superpowers or rethinking of supranational figures, among others that continue to be speeches and conjectures, all of which show a crisis of the human. And it is that despite the pain and grief experienced worldwide, a reconstruction process has not yet been proposed to reduce the gap between the powerful and the forgotten, between validated subjects and those lacking dignity, because we insist on returning to normality where empathy with honesty, commitment, and responsibility, with respect for life projects derived from one's own personal history and much less with the safeguarding of the promotion of relationships between peers, between equals, as worthy persons do not coexist.

268



From the categorical to the existential of ontology

It is necessary to take into account that, as Vélez (2015) warns, in recent years humanity has witnessed, what has been called in some academic circles, as the flexibility of the notion of ontology, a product of a multiplicity and diversity of theories and ontological conceptions that are not limited to the philosophical field exclusively but are observed in the most dissimilar disciplines, for example in the field of psychological, managerial, biomedical, computer science, systems engineering among many others, which it gives the impression of living an ontological renaissance.

This proliferation has brought with it an interminable battle in which it is sought to delimit in the most certain way the different domains of study or fields of action, advocating specificity, autonomy, and independence of the ontology itself that threatens an exact ignorance of what, for what and how of the sustenance of each of these derivations. For this reason, it is imperative to clearly establish the type of ontology that will be guiding this reflection.

In an article in the Journal Sophia N °17 entitled The Ontology of Education as a reference for understanding Ortega and Fernández (2014) it was stated that:

The certainty that education should be understood not as something abstract but as something concrete that it is, forces us to recognize that it is only possible in the human being. Then, it is a human act because only man starts with the question, in an effort to apprehend the world (p. 41).

The main idea about the ontology that both authors express can be used as a basis to refer to the fact of approaching this reflection as a limit existential situation with a handle on an existential ontology; Because just as the authors suggest that education is not something abstract because it occurs in the concrete of the human being, also the limit situation of fear and vulnerability occur in an existing and concrete being that also asks about the meaning of this suffering, this vulnerability, this pandemic and all this in their desire to apprehend the world.

However, a deeper conception of this term requires thinking about it from the etymological point of view. And, according to Gutiérrez Sáenz (1999), ontology can be defined as:

The logos or knowledge of the entity. And technically it is usually defined as the science of entity as entity. entity is everything that has to be; In the same way that we call every person who studies, or lover someone who loves, entity is the term that we can use to refer to things to the extent that they have being (pp. 56-57).

However, in this article, beyond the categorical and etymological concept, reference is made to an ontology from experience, from not only nominal existence, that is why it is important to take up valuable elements of existential philosophy and ethics of the encounter, as proposed by Judith Butler (2010), who has generated a new philosophical proposal that is framed in the central thesis that one is human as beings in relation but not only a relationship with an equal but with the other, even with what is outside the conventional categories of the human, that is, with the non-human.

This is how the ontology of vulnerability presented by Butler (2006a), becomes an adequate conceptual-existential element to speculate on the pandemic as a limit situation, which forces us to think not only about the virus, but also causes us to interpret the entire local, regional and global social fabric. In this order of ideas and paraphrasing Santamaría (2020), the reflection on vulnerability personifies a reference to cate-

gorical structures in many of the human fields that requires asking the question about the approach applied to the ontological, since for some the hegemony of systems and ways of thinking rooted in a categorical ontology, is undoubtedly one of the elements causing this state of collective paranoia where social, cultural, moral and economic systems have not been able to ensure the well-being of the human being, to the point of plunging into a limit situation.

How to understand the limit in human experience?

All human beings, sooner or later, experience situations that, paraphrasing Jasper (1950), constitute the frameworks of man's inner spiritual life and of his practical activity. These frames form the limits of existence, beyond which nothingness extends. The frames of one's existence become existentially palpable when we experience fear, suffering, vulnerability, struggle, dissatisfaction, and death. However, perhaps the most relevant thing in these situations is their character of fatality and universality, the human being cannot avoid them; their overcoming means the loss of existence.

So, following what was expressed in the previous paragraph, it is possible to deduce why it is necessary to understand that the Covid-19 pandemic constitutes a limit situation and that it has generated that thousands of people around the world to experience fear, anguish, and vulnerability.

Proof of this can be found in the article in *La Gaceta de Salamanca* (2020) in which the psychological impact of Covid-19 and the confinement situation derived from the state of alarm decreed by the Spanish Government to combat the spread of the virus was evidenced. This study revealed that people between 18 and 39 years old are those who present more anxiety, depression, and somatic symptoms, as well as a greater feeling of loneliness and lack of company.

Beyond the statistical and percentage figures, the experience of the Covid-19 pandemic, in its multiple conceptions, constitutes an ample, flexible, and strong platform to serve as a turning point and the perfect setting for the review of the solipsistic reason of the great hegemonic systems of thought, to meet with what had condemned to eccentricities such as: feelings, volitions, desires, fears, passions, necessity, as members of the human race. It is then possible to admit, as Butler (2006a) affirms, the need to get out of the strictly categorial-nominal becomes imperative in order to provoke an ontological irruption from the vulnerability that serves as a transversal axis in the reflection of the experience.



Reflection from experience makes it possible for all those subjective elements of the existence of and in each human being to converge that gives that degree of objectivity to the human person, since he/she is also soul, conscience, mind, and thanks to this, has the ability to enter the process of understanding the real.

The need for a reflection rooted in the experience of one's own existence

Understanding the real, from what is experienced and shared with the other does not occur from the academic, numerical, or nominal but from concrete existence, from the body, from mortality that cannot be simply categorized. This idea of the impossibility of categorizing mortality is observed throughout the work of Butler (2006a), who somehow suggests that it is necessary to experience one's own mortality, vulnerability, destitution, fragility, heteronomy, ambiguity. This can be better understood in the following phrase by Butler (2006a): "from the skin, the flesh, the senses, the memory, the desire, all this exposes us, takes us out of ourselves and puts us in front of the other" (p. 36).

The aforementioned allows us to understand that existence is not lived only from the private and the incommunicable, but has a component of responsibility and communication that arises in the encounter with another in a common place that is shared, which is called the body. In terms of Butler (2006a):

The body is not entirely ours; it is not something private but public. My life is involved in other lives. My life is not completely mine. We come into the world in need of hospitality and this vulnerable condition cannot be avoided, it cannot be overcome (p. 44).

If the experience of vulnerability is intrinsic to every human being, as an essential component of existence itself, then it is necessary to ask the following question: how could vulnerability be defined within this reflection? It will be answered in the next section.

Vulnerability as constitutive of humanity

On the official site of the International Federation of Red Cross and Red Crescent Societies (2020), the following definition of vulnerability can be found:

271



Vulnerability in this context can be defined as the diminished capacity of an individual or group to anticipate, cope with, resist and recover from the impact of a natural or man-made hazard. The concept is relative and dynamic. Vulnerability is most often associated with poverty, but it can also arise when people are isolated, insecure and defenceless in the face of risk, shock or stress. (p.1)

From the previous definition, attention can be focused on the idea of diminished capacity, because this decrease is rooted in the fact that every human being is exposed to different situations such as disasters, diseases, or others that violently disrupt their existence.

Violence, paraphrasing Butler (2006b), can be considered a legitimizing experience that calls for an ontology of vulnerability because, given the fact that all human beings have a mortal body that can be injured, all are exposed to violence that it translates into vulnerability. In other words, violence can be understood as the cause of vulnerability and when that vulnerability is exacerbated, it causes, according to medical literature, an irruption in the life of a human being so devastating that it becomes existential suffering, since it refers to the perception of meaninglessness, anxiety and fear of death.

In this regard, it is important to take into account the etymological definition of this word, because if vulnerability is the genesis of that existential suffering insofar as it means fragility, susceptibility to damage or injury. However, going a little further, it is necessary to resort to the etymology, as mentioned by Pacheco (2017): “the term - vulnerability - comes from the Latin *vulnus* which can be understood as “wound” or “damage”, *abilis* that can be equivalent to “that can”, and the suffix given that indicates quality” (p. 7).

The etymological definition can still be understood in a better way, as stated by Pacheco himself (2017): “vulnerability can then be defined as the quality that someone has to be able to be hurt or damaged” (p. 7). However, it is also important to note that vulnerability does not necessarily imply a position of passivity, and that some theoretical approaches establish that vulnerable people are those who, for different reasons, do not have the capacity to prevent, resist and overcome an impact and, therefore, are at risk. With which it could be understood that being vulnerable is a matter of ability.

The final idea of the previous paragraph has been accepted in many of the hegemonic academic circles that, ignoring a sense of responsibility for the other, confines itself to enclosing it in its own capacities, even relegating it to the plane of the volitional. Then it is possible that popular affirmations are heard such as: you are poor because you want to! You suffer because you want to! or you are vulnerable because you want to!



It is worth noting that the hegemonic social discourse is what is creating reality, insofar as, even, the intrinsically human experience of vulnerability is questioned from the spaces of that power that Butler (2006b) denounces as the cause of a person, up to a certain point, moves in a certain reality, and at the same time legitimizes exclusions based on social norms and produces abject bodies, which are inadmissible, unintelligible and illegitimate.

In this order of ideas, it is legal to review the following definition proposed by Villa (2001):

Vulnerability is the risk or probability that an individual, a home or a community may be injured or damaged as a result of changes in the conditions of the context in which it is located or by virtue of its own limitations (pp. 3-4).

However, this risk can only be recognized by others as legitimate if it occurs within a legitimate hegemonic regulatory framework where, paraphrasing Butler (2010), illegitimate bodies cannot exist, since these, if the system admits that they exist, they will only do it outside the norm since they are intelligible just as abject. This is where their lack of recognition lies.

Categorized vulnerability cannot be the one that governs this encounter with the other, rather existential vulnerability, because all human beings have the capacity to experience vulnerability and vulnerability is not conceptual but existential.

Only an experienced, admitted, and recognized vulnerability is the concatenated axis of human existence as the possibility of experiencing this pain, which becomes an interruption in the order of being. That is to say, every human being who has existed, exists, or will exist, will experience to a greater or lesser degree that vulnerability that violence generates and it is in that vulnerability that the way in which the relationship with the other constitutes is revealed, since “the wound helps me understand that there are others outside on whom my life depends” (Butler, 2006b, p. 14). Then, the human emerges in the nakedness of being. However, it is necessary to pause to understand this of the nakedness of being.

The encounter with the other as a naked experience of being

Throughout Levinas’s work, he introduced one of the most representative elements of philosophical action and that is the concept of the ‘face’.



This Levinasian concept does not necessarily refer to an aesthetic or plastic idea, but strictly makes it an equivalent of nudity. For example, nudity that translates into vulnerability, perhaps the extreme experience of this being death. But, death is not my death but the death of the other and it is that for Levinas (1994) “we meet death on the faces of others” (p.126).

When the human being encounters death in the face of the other, this fact existentially challenges him and questions him about the responsibility he has for it and that is, for Levinas, ethics arises there, when the human being recognizes that the life of the another is more important than his own, this is what sublimely makes him human, because he is not assumed to be unique from an existential egoism, but rather understood in relationship, in permanent encounter, in a codependency where his own being necessarily exists because it is recognized on the other that also validates it.

The Covid-19 experience has allowed all human beings to experience their vulnerability within a period of time that suffocates them personally, but they have also seen it reflected in the others with whom they inhabit this world; it inevitably confronts them to question themselves about time, about the duration of this evil that afflicts them. However, this question of duration, for time, becomes an ethical and existential question as it relates to another, as expressed by Levinas (1993):

...think of time not as a degradation of eternity, but as a relationship with that which, being itself inassimilable, absolutely other, would not allow itself to be assimilated by experience, or with that which, being itself infinite, would not allow itself to be understood (p. 69).

Non-understanding refers to the limit of the categorial-nominal; However, from the existential, the ethical assimilation causes the human being to ask himself: have I experienced my humanity? or, rather: have human beings experienced that humanity of which Levinas speaks when encountering the pain that is reflected on the face of that other?

From the multitude of faces to the invisibility of the face

On the website of the Pan American Health Organization (PAHO)¹ you can find a large amount of information about the Covid-19 pandemic at the level of figures and it is curious to observe how the main statistics refer to three main metrics to know:

274



- The number of days elapsed since the detection of the first infected in America.
- The confirmed cases of infected.
- Cases of confirmed deaths.

All these figures and statistics are important for those who, in terms of quantifying, make projections, prepare predictive and deductive mathematical models, using these inputs. However, it is not about accounting for the suffering through the victims, but about finding a face, that is, with the concrete human being, who is beyond numbers, because from the ethics that Levinas has proposed, the ethics of the encounter with the face, each human being in this historical moment is asked a question about his responsibility towards that other who suffers. This ethical question demands a singular and personal answer.

The answer to the ethical question goes beyond a deontological theory that establishes norms that govern conduct and performance in the professional sphere, and this going further occurs because it is an existential question that exceeds the prerogative of the professional circle where responsibilities are determined in relationship with acts related to the labor field; because as Levinas (1994) outlines: “we find death on the faces of others” (p.126).

This encounter with the death of the other, paraphrasing Levinas (2006), becomes an ethical question that, starting from the face of the other in its precariousness, in its vulnerability, in its need, is for each human being the temptation to kill and the call to peace. Kill him in terms of getting rid of that other, relegate him to oblivion; or of peace, as soon as he goes out to meet him, assists him, helps him, recognizes himself being interpellated. This demand for a response is what the heads of state, the great world organizations have felt, and each one of them is struggling between the temptation to kill (disengage) or fill with peace (go out to meet).

The idea of peace and slaughter in the ethics of Levinas (2006), goes beyond the fight that health professionals wage against Covid-19 in hospitals, clinics, among others; but the one that is fought in parliaments, assemblies, houses of deputies, boards of directors of international organizations, non-governmental organizations, where some seek to ignore the other (kill) while others seek peace (go out to meet them). The decision to go out to meet or look away is intertwined with ethics, but not only with it, but with the theory of the subject of law that is based on the legal conceptualization of human life. This point is the one that, in the



view of Butler (2012), allows us to understand that power organizes life and disposes of it, also operating on precariousness, and deciding on the lives that are or are not worthy of mourning, saving, or let perish. In this sense, it is important to refer to Varsi (2017):

Life is one, but —whether biological or social— it adopts different stages that deserve regulation according to its status. It is this essence and way in which life is presented in society that allows it to be legally categorized and this is the subject of law theory. In this way human life is regulated in its true essence and dimension; However, procreative and genomic biotechnology has been altering its classic taxonomy, varying it, by presenting new actors in a world of relationship (p.1).

The idea of the subject of law is what has been defining many of the actions undertaken in such a way that, throughout all of America, it has allowed us to observe that, although in the collective imagination it is thought of equal rights or that all are subjects of law, nothing is further from reality. Fernández (2009) expresses this social construct through the following statement:

In legal experience - in the existential dimension - this body or normative reference center is none other than the human being before birth or after this event has occurred, whether it is considered individually or as an organization of people (p. 3).

This expressed by Fernández, is not necessarily true because, although all human beings run the risk of being infected with Covid-19, sharing the experience of vulnerability, not all are necessarily considered subjects of law, as they continue to be judged from the frameworks conceptual hegemonics, where the important thing may be the figure (faces in the plural) and not the face (the human being in his dignity as a person).

From the politically correct to an exercise of power

This dilemma between looking at faces and not seeing faces, this game of speeches where political correctness is appealed to, makes us understand that every society establishes a system of meanings that, ultimately, is a system of recognition, a kind of brotherhood of the equals, of those who share the mask, worse still the club of those who, responding to the check-list of the official ideological frameworks to which they are subjected by the hegemonic social ontology, or as Butler (2010) could somehow express, a society where the faces of those who must be answered and cared for are imposed.



The idea of responsibility with a few who are legitimized within the canons of the hegemonic referential framework, once again demands that one of the main discourses of power be taken into account, which has been duly accepted, and which raises the need for protection of the species rather than the individual. And it is that, power as an exercise tends to lead the possible behaviors and frame the correct place where individuals can act through a series of constituted categories, as denounced by Foucault (2000) when saying that by means of “methods that they allow meticulous control of the body’s operations, which guarantee the constant subjection of its forces and imposes on them a docility-utility relationship” (p. 141).

This docility-utility relationship is developed within those moral social frameworks, which in the midst of the Covid-19 pandemic, make it clear that for those who hold hegemonic power, suffering is the least important thing, but rather the important thing is in what place of classification we place them instead, because the frames make visible, humanize, give voice, but also dehumanize and condemn them to oblivion, indifference, and extermination. In others, as Butler (2010) states: “moral frameworks distinguish the lives that we can apprehend from those that we cannot” (p.17). All this discrimination then legitimized in a discourse of power where we no longer think only of the individual but of the community, not in the homo but in the habitat. Moreover, this scheme of categorization of humanity as a subject of law strengthens the theory of the *concepturus*. This term, according to Varsi (2017), refers to:

... an institution proper to inheritance law and, at present, it has come to settle doctrinally and jurisprudentially in comparative law that it has inheritance vocation, i.e., right to be heir or legatee. Such is the case contemplated by the codes of Germany, Bolivia, Colombia, Italy, and Venezuela (p. 220).

The *concepturus* shows once again how the individual loses his face and is diluted in the species, even worse in such a hegemonic discourse where humanity is an ideal legal being where the human genome is the patrimony of humanity and, as such, deserves the broadest protection, a proposal endorsed by the Universal Declaration of Human Rights for future generations and the Universal Declaration on the Human Genome and Human Rights. It is curious that the whole world is facing a palpable example of the exercise of power that Foucault (2000) had denounced at the time.

From economic losses to the misfortune of morality that makes people invisible

Having established the existence of categories that humanize or dehumanize within the frameworks defined by the hegemonic groups, then it can be realized that the true misfortune of Covid-19 is that these frameworks have played with the vulnerability of that other, serving as a barrier that has stolen the right to even be worthy of recognition.

And the thing is, Covid-19 has generated all kinds of concerns that, within the hegemonic frameworks, have sought to question political action in some countries and regions, as can be read in the following extract from an article entitled: "Covid-19 in Latin America: political challenges, challenges for health systems and economic uncertainty".

278



... The Latin American presidential tradition, the different presidents have assumed a high public exposure and a great role, as well as the direct direction of the coming crisis... in many cases they do not have a protective network as these countries do not have effective and efficient administrative and health systems. This extreme personalization in the direction of the crisis is a risky bet: on the one hand, it has the virtue of building easy leadership (...) on the other hand, it exposes the president to a clear risk: that, in case the situation worsens, all the wear and tear falls on them (Malamud and Núñez, 2020, p. 1).

This article shows where hegemonic morality invites us to look and that, at the same time, makes others invisible or denies them in this region, because in Latin America there are human groups that, displaced, eternally destitute, continue to seek new places and new opportunities, new frameworks. where they can exist, be recognized; however, it is curious how they have been denied and when some of these human groups dare to raise their voices, they have been violently silenced, vetoing their dignity as a person.

Those others are still the outcasts of a society that closes its eyes to the face of the peasant, indigenous, migrant, black, among others who today are outside the health, education, and social security systems, since they are not legitimate children of the dominant framework, although they are vulnerable, in fact, perhaps more vulnerable among the vulnerable. This is undeniably noted in the article that was published on the official page of UNICEF (2020) Costa Rica and where it is stated that:

In Latin America and the Caribbean, around 154 million boys and girls, more than 95 percent of those enrolled, are temporarily out of schools closed due to Covid-19, UNICEF reported today based on UNESCO² data (p.1).

Those brief lines of the UNICEF article clearly expose how the vulnerability of that other can only be noted if it is said or presented from the canons of discourse that the dominant frameworks have pre-established, this discourse does not necessarily restore dignity to that other, since it is still a figure and not a face.

The drama of the excluded is such that, although brilliant exits from the different power groups aimed, for example, to close schools and make children and young people take advantage of virtual learning platforms, the truth is that this measure only evidenced the very poor and worn out of the public education systems of the Latin American and Caribbean regions that continue to lag behind for several decades, because as expressed in the UNICEF publication (2020):

Approximately 90 percent of early childhood, primary and secondary schools in Latin America and the Caribbean will be closed for the next few days or weeks, and the percentage is growing rapidly. This situation, which could extend beyond what was initially proposed, will increase the risk of permanent school dropout, especially for the most vulnerable boys and girls (p.1).

279


It is necessary to emphasize what is expressed in the last line of the paragraph of the cited article; ‘Most vulnerable boys and girls’. However, the question that hegemonic morality asks is not whether there is a vulnerable or suffering someone, but rather what is the one who suffers, is he or she is not a person, is or is not a citizen, is or is not similar to me. Depending on the answer, Butler (2010) states, “morality will decide whether that life should be mourned, because from a moral point of view life and death always exist in relation to a certain framework” (p. 22). Worse still, it’s not just about how they catalog you, but it even limits the person’s existence.

From categorical invisibility to exist with meaning

The existence validated by hegemonic frameworks is limited to categorically and conceptually defined limits, that is, and paraphrasing Butler (2010), the frameworks are those that decide on the lives that are worthy of mourning, those that are livable or normal. This experience of visibility, during this pandemic, is what makes it legitimate for some subjects to be considered citizens of law, and it is that within the frameworks in which they have been circumscribed, their existence, their personhood, their category of being have been validated. But a great majority remain

invisible even when the discourse of the public sphere speaks of them permanently, although without them.

The hegemonic public sphere is constituted by what appears, by what is represented, by what is considered, at a given moment, real. But, at the same time, as Butler (2014) warns, there is also in this same sphere of representation a concealment, a disinterest, a forgetfulness, an indifference, a denial, a prohibition to receive the benefits of the different social systems or the safeguards that states and agencies have provided for legitimate citizens.

In this way, the discourse of the public sphere becomes a key piece for the conception of the human being and it is that, plagued by categorical frameworks that validate the structures of power, the philosophical language becomes half stale, funereal, and therefore an accomplice. It is distracted in nominal discussions, limiting its actions to academic or discursive spaces, making the human experience a simple narrative where what is really worrisome is in the correct use of categorical language and where concrete existence becomes narrative, news or at worst of the cases a 'meme'. And it is that, consequently with the above, it is inevitable to recognize, as expressed by Wojtyła (2005), the philosophical and scientific tradition, have made the reflection on the human being a nominal situation extrinsic to himself, where they have placed him as one more object in the world to which he belongs.

The ideas of Wojtyła (2005) allow us to deduce that objectivity understood in this way leads to a reduction or fractionation of the person, so that everything that can be valued for the sake of autonomy and uniqueness is vexed, thereby denying all possibility of a real assessment of subjectivity that is synonymous with the unrepeatable of the human person, as expressed by Ortega (2009): "the human person is subjective, but at the same time the affirmation of his subjectivity is the objective, inasmuch as each person is objectively a unique and unrepeatable existence that lives its concrete existence from its subjectivity" (p. 170).

Then, it is mandatory to break with these ontologies that exalt the categorial-nominal as the only way to apprehend the humanity of the person and enter into an ontology of existence that challenges to value singularity, that is, to stop looking at faces and looking at that face that demands a response from us, a proper name, an encounter with the vulnerability of the other. And it is that in the experience of vulnerability and suffering, as expressed by Cavarero (2009):

The victim always has a name, although horror has wanted to erase it.
The victim is not something but someone. It is certainly not a matter



of inventing a new language, but of showing that it is the vulnerability of the defenseless as a specific epochal paradigm that must come to the fore in current scenes (p.12).

This position of recognizing the other, of feeling challenged, goes beyond a mere act of talking about something, but rather it is about talking to a someone who happens, who breaks the identity of the self, the solipsism of reason, the egocentricity of the self, self-sufficiency. This encounter goes beyond what is categorical, because as noted in Levinas's (1994) proposal, it occurs as the unraveling of the self and the world, it is the impossibility of understanding, it is the vertigo of meaning, it is the appropriate response that it never really is.

This encounter can only occur in existence. But if the limit experience of the Covid-19 pandemic has taught something, it is that the isolation that we live today is not only corporeal but ethical, since it has revealed the magnitude of the marginality in which the other lives, condemned to a rejected existence or, rather, meaningless from the hegemonic frameworks.



From the meaning of existence to postmodern egocentric existence

In general, it has been accepted —almost unanimously— that existence occurs with a meaning; indeed, it has come to identify two major positions in this regard, which are not discussed in depth in this document, but which should not therefore be left out. The first, which is the most common, is the one that refers to all the work of Frankl (1993) and where it establishes that the way of facing each specific situation is subject to factors external to the subject. The second position, on the contrary, which is presented by Sartre (1993), refers to the fact that it is oneself who invents the meaning of his own existence.

Although both positions seem very different, the truth is that the meeting point is that the experience of the personal situation is non-transferable. In the words of Sartre (1993): “the situation of each subject is presented as unique, without the possibility of being compared with that of another, each person only realizes one situation: his own” (p. 573).

This idea of living or experiencing one's life cannot be understood from the exclusionary, the solipsistic, but must be understood in responsibility always in response and encounter. However, as Mejía (2010) states: “Postmodern man (...) it is enough for him to enjoy the reality of the

limited present; what is important is what each one thinks, feels, needs, believes, seeks, experiences, even if this is provisional, momentary, partial” (p. 70).

But, going a little further, it is possible to realize that this postmodern subject is a constant seeker of his own individual satisfaction that is born from his exacerbated love of himself and, paradoxically, it can be verified, at the level of experience, that what this subject lacks most is self-love. Worse still, this postmodern subject has not understood that every question about the meaning of his life is also a question about the relationship with another and, on the contrary, has been plunged into confusion and that, in turn, has left him in the hands of the insecurity of not knowing oneself and of not knowing oneself as unique. Bauman (2006) will say about the postmodern subject:

(...) The ability to “go shopping” at the identity supermarket and the degree of freedom –genuine or putative- of the consumer to choose an identity and keep it for as long as they wish, becomes the royal road towards the realization of fantasies of identity.

(...) In a consumer society, sharing the dependence on consumption - the universal dependence on shopping - is the condition *sine qua non* of all individual freedom; above all, of the freedom to be different, to have an identity (p. 90).

If something has also made the Covid-19 pandemic very clear, it is this hedonistic state of self-preservation that is rooted in a poor, famished, and traditional ethic. The postmodern human being experiences his vulnerability not as a mostly humanizing encounter experience, but rather that he locks himself in such a state of hysteria that he does not recognize the other but as an enemy, like that other who can take away the last roll of toilet paper on the supermarket shelf.

On the last lines of the previous paragraph, and although it may sound ridiculous and absurd, in an investigative report by Bryan Lufkin and which appeared on March 10 on the BBC website, the following was narrated:

In Auckland, New Zealand, supermarket spending soared 40% last Saturday compared to the same day in 2019. Shoppers in Malaysia have caused an 800% increase in weekly antibacterial gel sales. All of these countries have confirmed cases of Covid-19 (Lufkin, 2020).

While it is true that it is about explaining this behavior from the psychological field, it is also true that selfish reactions have evidenced an ethical crisis in postmodern human beings. This ethical crisis by ignoring



the central value of the human being has eaten away the foundations of a society that, accustomed to corruption scandals and embezzlement at local, state, governmental, and regional levels, is distracted on stages, programs, and shows, that, paraphrasing Butler (2014), have been created to continue to maintain the concealment and disinterest of other lives, of other bodies, of other stories and in return to concentrating on the satisfaction of our own needs.

From the health struggle to the recognition of a humanizing existential ontological encounter

Following the order of ideas up to this point developed, it becomes preponderant to analyze what happens in the public sphere and how a politically correct, but inhumanly exclusive discourse continues to be handled. In this sense, it is not surprising to hear that governments have made an effort to permanently present figures on their actions as a result of the Covid-19 crisis. For example, some speeches show how more than 90% of state or national organizations and private companies have taken prevention measures for Covid-19 and that, of these, perhaps more than 50% gave their authorization for their collaborators to carry out teleworking from their homes.

What's more, you may have also heard that some of these companies have tried to provide gel, alcohol and raise awareness about continuous hand washing. Also, as a series of surveys and studies carried out with experts, has yielded results like that. For example, 60% of experts surveyed about the economic repercussions of Covid-19 believe that the pandemic will affect companies very deeply. Meanwhile, 36% assure that it will only be moderate, while for 5% it will not affect economically.

On the other side, the sensationalist and destabilizing discourse is also used, such as those that in the mass media denounce the incompetence of pseudo leaders who, in the face of the pandemic, have been unable to enforce the correct measures internationally prescribed, in this sense articles like the one published on April 17 on the official page of the Panama America newspaper (2020), will help to demonstrate this point:

The effects on the economy continue to be one of the main focuses of the pandemic, which could generate “another lost decade (...) between 2015 and 2025” in Latin America, as the director of the Western Hemisphere of the International Monetary Fund (IMF) warned on Thursday, Alejandro Werner (...) the economy of Latin America and the Caribbean



will decline by 5.2% this year due to the impact of the current health crisis, a decline deeper than that of the world economy, which will fall by 3%, according to the forecasts presented this week by the IMF (p. 1).

Speeches and news like these continue to make many people invisible because while the reader is distracted by numbers and percentages, it becomes impossible to ask about those who, throughout Latin America, try to earn a living from their home despite not having social security that shields them, even worse a regular job, a union that supports them, or in some cases, simple space to take shelter. But the masses are still being distracted with speeches such as the one offered by the Fitch rating agency and published in the Panama America newspaper (2020) that: “put seven countries in the region in a negative perspective for the first time as a result of the impact from Covid-19: Chile, Colombia, Uruguay, Panama, Aruba, Costa Rica, and Bolivia” (p. 1).

Discourse that is constructed and validated within a hegemonic framework of power, which makes it impossible for human beings to wonder about the children and young people who, trapped in an outdated educational system, have not been able to continue studying because, although they were sent to their homes, many of them live in places lacking electricity, internet or computers, and like these, many other examples remind more than again that preventive and protective measures were designed to help those who, within the hegemonic frameworks, hold the dignity of people, of citizens and that, unfortunately, backed by a liquid, self-centered and self-absorbed existence, only validate this system.

If this pandemic has shown something, it is, as Santamaría (2020) affirms:

...like any extreme situation, it forces us to think not only about the virus, it also pushes us to interpret the entire surrounding context (this global case), establishes non-obvious relationships (not only with medical science), and question the values about we who have raised the fragile human civilization. In fact, due to the situation itself, various ideals that have sustained our economy, our political institutions, our global relations, etc., seem to be shaking (p.1).

In conclusion

Throughout all this reflection, it has been tried to support the need to recognize that, although it is true, everyone in this pandemic situation has experienced, to a greater or lesser degree, a situation of vulnerability, this



experience should be a first moment that invites each person to rethink their own life. Beyond that, a turning point that, by destabilizing outdated models, makes it possible to ask the question about the meaning of life and the place that the other occupies in that answer.

And it is that when demonstrating that vulnerability can be considered as a dialogic experience that interpellates the encounter and that demands humanization, it is also true that within the different categorical frameworks in which the hegemonic system places each human being, an ontological irruption from this experience of vulnerability must be provoked.

This ontology of vulnerability that, also endowed with epistemological possibility, fosters and learns the life that, although it is true, is lived related to the norms of subject production and recognition, must be a sufficient dialogical space that challenges hegemonic frameworks. Well, as Butler (2010) states: “the normative production of ontology produces the epistemological problem of apprehending a life” (p. 16), which cannot be limited only to the order of perception or knowledge, without including the reciprocity of the recognition of the other, not as a reward but as a knowing again, as a sharing from the depth of existence. And it is that as Butler (2010) states in her work *Frames of war*:

If life is produced according to the norms by which life is recognized, this does not imply either that everything around life is produced according to those norms, nor that we should reject the idea that there is a rest of life —suspended and spectral— that describes and inhabits each case of normative life (p. 22).

Finally, and being clear that there is a possibility in an apex of suspended and spectral life, it is necessary to hold on to provoke an ontological irruption that challenges and rethinks life, ethics, and the meaning of existence in relation to another.

Overcoming the Covid-19 pandemic is not about returning to the ‘normality’ of life but, about learning it in such a way that it is possible to take advantage of the spectral spaces that are given or that are caused, to give voice to those who continue to remain outside the hegemonic frameworks; for if this brief moment in time is not taken advantage of, humanity will be left alone as a spectator; like those who, captivated by how nature has claimed spaces in the canals of Venice, begin to make plans to make a tourist visit and post the best photo in search of the most *likes*, but that will once again be the cause of the destruction of the ecosystems, there and in the rest of the common home, which has been called Earth.

Notes

- 1 <https://who.maps.acgis.com/>
- 2 Unesco Institute of Statistics: <http://data.uis.unesco.org/>

Bibliography

- ARENDDT, Hannah
1968 La filosofía de la existencia. *Memoria Académica*, 48-68. Recuperado de: <https://bit.ly/38YDi4L>
- BAUMAN, Zygmunt
2006 *Modernidad líquida*. Buenos Aires: Fondo de Cultura Económica.
- BUTLER, Judith
2006a *Deshacer el género*. Barcelona: Paidós.
2006b *Vida precaria: El poder del duelo y la violencia*. Buenos Aires: Paidós.
2010 *Marcos de guerra*. México: Paidós.
2012 Llevarnos a la pena: Judith Butler y la política del duelo. *Political Theory*, 409-436.
2014 *¿Qué es una buena vida?* Paris: Payot.
- CAVARERO, Adriana
2009 *Horrorismo*. Barcelona: Anthropos.
- FERNÁNDEZ, Carlos
2009 *Derecho de las personas*. Lima: Grijley.
- FOUCAULT, Michel
2000 *Vigilar y castigar*. España: Siglo XXI.
- FRANKL, Viktor
1993 *El hombre en busca de sentido*. Barcelona: Herder.
- GUTIÉRREZ SÁENZ, Raúl
1999 *Historia de las doctrinas filosóficas*. México: Esfinge.
- INTERNATIONAL FEDERATION OF RED CROSS AND RED CRESCENT SOCIETIES
2020 Recuperado de: <https://www.ifrc.org/>
- JASPER, Karl
1950 *Introducción a la Filosofía*. Madrid: Cátedra
- LA GACETA DE SALAMANCA
2020 La Gaceta de Salamanca. Recuperado de: <https://bit.ly/2X5RFip>
- LEVINAS, Emmanuel
1993 *El tiempo y el otro*. Barcelona: Paidós.
1994 *Dios, la muerte y el tiempo*. Madrid: Cátedra.
2006 Paz y proximidad. *Laguna: Revista de Filosofía*, 18, 143-154. Recuperado de: <https://bit.ly/393QRjH>
- LUFKIN, Berik
2020 Coronavirus: la psicología detrás de las compras nerviosas por el brote de Covid-19. *BBC News*. Recuperado de: <https://bbc.in/353O35n>
- MALAMUD, Carlos & NÚÑEZ, Rogelio
2020 El Covid-19 en América Latina: desafíos políticos, retos para los sistemas sanitarios e incertidumbre económica. *Real Instituto El Cano*. Recuperado de: <https://bit.ly/3pORXqc>



- MEJÍA, Álvaro
2010 *Un paradigma eclesiológico para la postmodernidad*. Medellín: Fundación Universitaria Luis Amigó.
- ORTEGA, Remberto & FERNÁNDEZ, Johny
2014 La Ontología de la Educación como un referente para la comprensión de sí misma y del mundo. *Sophia: Colección de Filosofía de la Educación* 17(2), 37-57. <https://doi.org/10.17163.soph.n17.2014.15>
- ORTEGA, Remberto
2009 La objetividad de la subjetividad de la persona: El reto de educar en valores en un mundo relativista. *Sophia: Colección de Filosofía de la Educación*, 165-186. Recuperado de: <https://bit.ly/2KXNIItq>
- PACHECO, Vicente
2017 Poblaciones vulnerables y en situación de vulnerabilidad. *Comisión Nacional de Bioética en Salud Redbioética UNESCO para América Latina y el Caribe*. Quito, Ecuador.
- PANAMÁ AMÉRICA
2020 Diario Panamá América. <https://bit.ly/2XbgPw6>
- SANTAMARÍA, Jaime
2020 Filosofía & Co. Obtenido de Revista de Filosofía & Co. <https://www.filco.es/>
- SARTRE, Jean Paul
1993 *El ser y la nada*. Barcelona: Altaya.
- UNESCO
1994 Declaración Universal de los Derechos Humanos de las Generaciones Futuras. UNESCO.
- UNICEF
2020 UNICEF. Recuperado de: <https://uni.cf/3ndVbSv>
- VARSÍ, Enrique
2017 Clasificación del sujeto de derecho frente al avance de la genómica y la procreática. *Originales: Acta de Bioethica* (pp. 213-225). Lima: Universidad de Lima.
- VÉLEZ, Paul
2015 ¿Ontología u ontologías? *Disputatio. Philosophical Research Bulletin*, 4(5), 299-339. Recuperado de: <https://bit.ly/355cgrd>
- VILLA, Miguel
2001 *Vulnerabilidad social*. Seminario Internacional: Las diferentes expresiones de la vulnerabilidad en América Latina y el Caribe. Santiago, Chile.
- WOJTYLA, Karol
2005 *El hombre y su destino*. Madrid: Palabra.

Document reception date: May 3, 2020
 Document review date: June 15, 2020
 Document approval date: August 20, 2020
 Document publication date: January 15, 2021

Editorial guidelines / Normas editoriales

Publication guidelines in «Sophia»



ISSN: 1390-3861 / e-ISSN: 1390-8626

1. General Information

«Sophia» is a scientific publication of the *Salesian Polytechnic University of Ecuador*, published since January 2006 in an uninterrupted manner, with a fixed biannual periodicity, specialized in Philosophy of Education and its interdisciplinary lines such as Epistemology, Deontology, Aesthetics, Critical Studies, Hermeneutics, Axiology, Ontology, Philosophical Anthropology, Sociology, Philosophical Analytics, among others, all linked to the field of Education.

It is a scientific journal, which uses the peer-review system, under double-blind review methodology, according to the publication standards of the American Psychological Association (APA). Compliance with this system allows authors to guarantee an objective, impartial and transparent review process, which facilitates the publication of their inclusion in reference databases, repositories and international indexing.

«Sophia» is indexed in the Emerging Sources Citation Index (ESCI) from Web of Science; in Scientific Electronic Library Online (SciELO); in the Scientific Information System (REDALYC); in the directory and selective catalog of the Regional Online Information System for Scientific Journals of Latin America, the Caribbean, Spain and Portugal (LATINDEX), in the Matrix of Information for the Analysis of Journals (MIAR), in Integrated Classification of Scientific Journals (C.I.R.C), in the Academic Resource Index (Research Bible), in the Ibero-American Network of Innovation and Scientific Knowledge (REDIB), in the Portal for the dissemination of scientific production (Dialnet); in Latin American Bibliography in Journals of Scientific and Social Research (BIBLAT); in the Directory of Open Access Journals DOAJ and in repositories, libraries and specialized catalogs of Latin America.

The journal is published in a double version: printed (ISSN: 1390-3861) and digital (e-ISSN: 1390-8626), Spanish and English, each work being identified with a DOI (Digital Object Identifier System).

291



2. Scope and policy

2.1. Theme

Original contributions in Philosophy of Education, as well as related areas: Epistemology, Deontology, Aesthetics, Critical Studies, Hermeneutics, Axiology, Ontology, Philosophical Anthropology, Sociology, Philosophical Analytics,... and all interdisciplinary related disciplines with a philosophical reflection on education

2.2. Contributions

«Sophia» publishes critical studies, reports and proposals, as well as selected state-of-the-art literature reviews related to Philosophy of education. Accepting also results of empirical research on Education, written in Spanish and/or English.

The contributions can be:

- **Reviews:** 10,000 to 11,000 words of text, including charts and references. Justified references would be specially valued. (current and selected from among 70 works)
- **Research:** 8,000 to 9,500 words of text, including title, abstracts, descriptors, charts and references.
- **Reports, studies and proposals:** 8,000 to 9,500 words of text, including title, abstracts, charts and references.

2.3. Characteristics of the content

All works presented for publication in «Sophia» must comply with the characteristics of scientific research:

- Be original, unpublished and relevantAddress issues that respond to current problems and needs
- Address issues that respond to current problems and needs
- Contribute to the development of scientific knowledge in the field of Philosophy of Education and its related areas
- Use adequate, clear, precise and comprehensible language
- Not have been published in any medium or in the process of arbitration or publication.

Depending on the relevance of the article, it will be considered as special contributions and will occasionally be published:

- Works that exceed the stated extent
- Works that do not correspond to the subject of the reflection foreseen for the respective issue

292



2.4. Periodicity

«Sophia» has a biannual periodicity (20 articles per year), published in January and July and counts by number with two sections of five articles each, the first referring to a **Monographic** topic prepared in advance and with thematic editors and the second, a section of **Miscellaneous**, composed of varied contributions within the theme of the publication.

3. Presentation, Structure and Submission of the Manuscripts

Texts will be presented in Arial 12 font, single line spacing, complete justification and no tabs or blank spaces between paragraphs. Only large blocks (title, authors, summaries, keywords, credits and headings) will be separated with a blank space. The page should be 2 centimeters in all its margins.

Papers must be submitted in a Microsoft Word document (.doc or .docx), requiring that the file be anonymized in File Properties, so that the author/s identification does not appear.

Manuscripts must be submitted only and exclusively through the OJS (Open Journal System), in which all authors must previously register. Originals sent via email or other interfaces are not accepted.

3.1. Structure of the manuscript

For those works that are empirical investigations, the manuscripts will follow the IMRDC structure, being optional the Notes and Supports. Those papers that, on the contrary, deal with reports, studies, proposals and reviews may be more flexible in their epigraphs, particularly in material and methods, analysis, results, discussion and conclusions. In all typologies of works, references are mandatory.

A. EMPIRICAL RESEARCH

Its purpose is to contribute to the progress of knowledge through original information, following the IMRDC structure: Introduction (objectives, previous literature). Materials and methods, Analysis and Results, Discussion, integration and conclusions. Following the criteria set by UNESCO, it is these types of scientific texts are also called as: “original memories”

The recommended structure, especially in works that include empirical research, is the following:

1) **Title (Spanish) /Title (English):** Concise but informative, in Spanish on the first line and in English on the second. A maximum of 85 characters with spaces are accepted. The title is not only the responsibility of the authors, changes being able to be proposed by the Editorial Board.

2) **Identification data:** Of each of the authors, organized by priority. A maximum of 3 authors will be accepted per original, although there may be excep-

tions justified by the topic, its complexity and extent. Next to the names must follow the professional category, work center, email of each author and complete ORCID number. Aspects that must be included in the Cover Letter, must also be uploaded to the OJS system of the journal, in the Metadata section and /or in a word document attached to the file containing the work proposed for the evaluation.

3) Abstract (Spanish) / Abstract (English): It will have a minimum length of 210 and a maximum of 220 words in Spanish; and 200 and maximum 210 words in English. The abstract will describe concisely and in this order: 1) Justification of the topic; 2) Objectives; 3) Methodology; 4) Main results; 5) Main conclusions. It must be impersonally written "This paper analyzes...". In the case of the abstract, the use of automatic translators will not be accepted due to their poor quality.

4) Keywords (Spanish) / Keywords (English): A maximum of 6 keywords must be presented for each language version directly related to the subject of the work. The use of the key words set out in UNESCO's Thesaurus and of the journal itself, located in the following link: https://sophia.ups.edu.ec/tesauro_sophia.php, will be positively valued.

5) Introduction and state of the issue: It should include the problem statement, context of the problem, justification, rationale and purpose of the study, using bibliographical citations, as well as the most significant and current literature on the topic at national and international level..

6) Material and methods: It must be written so that the reader can easily understand the development of the research. If applicable, it will describe the methodology, the sample and the form of sampling, as well as the type of statistical analysis used. If it is an original methodology, it is necessary to explain the reasons that led to its use and to describe its possible limitations.

7) Analysis and results: It will try to highlight the most important observations, describing them, without making value judgments, the material and methods used. They will appear in a logical sequence in the text and the essential charts and figures avoiding the duplication of data.

8) Discussion and conclusions: Summarize the most important findings, relating the observations themselves with relevant studies, indicating contributions and limitations, without adding data already mentioned in other sections. Also, the discussion and conclusions section should include the deductions and lines for future research.

9) Supports and acknowledgments (optional): The Council Science Editors recommends the author (s) to specify the source of funding for the research. Priority will be given to projects supported by national and international competitive projects. In any case, for the scientific evaluation of the manuscript, it should be only anonymized with XXXX for its initial evaluation, in order not to identify authors and research teams, which should be explained in the Cover Letter and later in the final manuscript.

10) The notes (optional) will go, only if necessary, at the end of the article (before the references). They must be manually annotated, since the system of footnotes or the end of Word is not recognized by the layout systems. The



numbers of notes are placed in superscript, both in the text and in the final note. The numbers of notes are placed in superscript, both in the text and in the final note. No notes are allowed that collect simple bibliographic citations (without comments), as these should go in the references.

11) References: Bibliographical citations should be reviewed in the form of references to the text. Under no circumstances should references not mentioned in the text be included. Their number should be sufficient to contextualize the theoretical framework with current and important criteria. They will be presented alphabetically by the first last name of the author.

B. REVIEWS

Literature reviews are based on the analysis of major publications on a given topic; Its objective is to define the current state of the problem and to evaluate the investigations carried out. Its structure responds to the phases of the theme/problem, contributions of researchers or teams, changes in theory or main theoretical currents; unsolved problems; current and future trends (Giordanino, 2011). According to UNESCO, this type of work is also known as “recapitulative studies”

1) Title (Spanish) /Title (English): Concise but informative, in Spanish on the first line and in English on the second. A maximum of 85 characters with spaces are accepted. The title is not only the responsibility of the authors, changes being able to be proposed by the Editorial Board.

2) Identification data: Of each of the authors, organized by priority. A maximum of 3 authors will be accepted per original, although there may be exceptions justified by the topic, its complexity and extent. Next to the names must follow the professional category, work center, email of each author and complete ORCID number. Aspects that must be included in the Cover Letter, must also be uploaded to the OJS system of the journal, in the Metadata section and /or in a word document attached to the file containing the work proposed for the evaluation.

3) Abstract (Spanish) / Abstract (English): It will have a minimum length of 210 and a maximum of 220 words in Spanish; and 200 and maximum 210 words in English. The abstract will describe concisely and in this order: 1) Justification of the topic; 2) Objectives; 3) Methodology; 4) Main results; 5) Main conclusions. It must be impersonally written “This paper analyzes...” In the case of the abstract, the use of automatic translators will not be accepted due to their poor quality.

4) Keywords (Spanish) / Keywords (English): A maximum of 6 keywords must be presented for each language version directly related to the subject of the work. The use of the key words set out in UNESCO’s Thesaurus and of the Journal itself will be positively valued.

5) Introduction: It should include a brief presentation of the topic, the formulation of the purpose or objective of the study, the context of the problem and the formulation of the problem that is proposed, the presentation

of the idea to be defended, the justification explaining the importance, the relevance of the study; the methodological framework used, and finally, a brief description of the structure of the document. In the justification it is necessary to use bibliographical citations as well as the most significant and current literature on the subject at national and international level.

6) Body or development of the document: It implies putting into practice throughout the text, a critical attitude that should tend towards the interpellation, in order to attract the attention of the topic and the problem treated. The writer must generate in the reader the capacity to identify the dialogical intention of the proposal and to promote an open discussion.

7) Conclusions: Objectively state the results and findings. Offer a vision of the implications of the work, the limitations, the tentative response to the problem, the relations with the objective of the research and the possible lines of continuity (to fulfill this objective it is suggested not to include all the results obtained in the research). The conclusions should be duly justified according to the research carried out. The conclusions may be associated with the recommendations, evaluations, applications, suggestions, new relations and accepted or rejected hypotheses.

8) Bibliography: It is the set of works used in the structuring of the scientific text. It should include only the reference of the works used in the research. Bibliographical references should be ordered alphabetically and conform to the international APA standards, in their sixth edition.

296



3.2. Guidelines for references

PERIODIC PUBLICATIONS

Journal article (author): Valdés-Pérez, D. (2016). Valdés-Pérez, D. (2016). Incidencia de las técnicas de gestión en la mejora de decisiones administrativas [Impact of Management Techniques on the Improvement of Administrative Decisions]. *Retos*, 12(6), 199-2013. <https://doi.org/10.17163/ret.n12.2016.05>

Journal Article (Up to six authors): Ospina, M.C., Alvarado, S.V., Fefferman, M., & Llanos, D. (2016). Introducción del dossier temático “Infancias y juventudes: violencias, conflictos, memorias y procesos de construcción de paz” [Introduction of the thematic dossier “Infancy and Youth: Violence, Conflicts, Memories and Peace Construction Processes”]. *Universitas*, 25(14), 91-95. <https://doi.org/10.17163/uni.n25.%25x>

Journal article (more than six authors): Smith, S.W., Smith, S.L. Pieper, K.M., Yoo, J.H., Ferrys, A.L., Downs, E.,... Bowden, B. (2006). Altruism on American Television: Examining the Amount of, and Context Surrounding. *Acts of Helping and Sharing. Journal of Communication*, 56(4), 707-727. <https://doi.org/10.1111/j.1460-2466.2006.00316.x>

Journal article (without DOI): Rodríguez, A. (2007). Desde la promoción de salud mental hacia la promoción de salud: La concepción de lo comunitario en la implementación de proyectos sociales. *Alteridad*, 2(1), 28-40. (<https://goo.gl/zDb3Me>) (2017-01-29).

BOOKS AND BOOK CHAPTERS

Full books: Cuéllar, J.C., & Moncada-Paredes, M.C. (2014). *El peso de la deuda externa ecuatoriana*. Quito: Abya-Yala.

Chapter of book: Zambrano-Quiñones, D. (2015). El ecoturismo comunitario en Manglaralto y Colonche. En V.H. Torres (Ed.), *Alternativas de Vida: Trece experiencias de desarrollo endógeno en Ecuador* (pp. 175-198). Quito: Abya-Yala.

DIGITAL MEDIA

Pérez-Rodríguez, M.A., Ramírez, A., & García-Ruíz, R. (2015). La competencia mediática en educación infantil. Análisis del nivel de desarrollo en España. *Universitas Psychologica*, 14(2), 619-630. <https://doi.org.10.11144/Javeriana.upsy14-2.cmei>

It is prescriptive that all quotations that have DOI (Digital Object Identifier System) are reflected in the References (can be obtained at <http://goo.gl/gfruh1>). All journals and books that do not have DOI should appear with their respective link (in their online version, if they have it, shortened by Bitly: <https://bitly.com/>) and date of consultation in the indicated format.

Journal articles should be presented in English, except for those in Spanish and English, in which case it will be displayed in both languages using brackets. All web addresses submitted must be shortened in the manuscript, except for the DOI that must be in the indicated format (<https://doi.org/XXX>).

3.3. Epigraphs, Figures and Charts

The epigraphs of the body of the article will be numbered in Arabic. They should go without a full box of capital letters, neither underlined nor bold. The numbering must be a maximum of three levels: 1. / 1.1. / 1.1.1. A carriage return will be established at the end of each numbered epigraph.

The charts must be included in the text in Word format according to order of appearance, numbered in Arabic and subtitled with the description of the content.

The graphics or figures will be adjusted to the minimum number required and will be presented incorporated in the text, according to their order of appearance, numbered in Arabic and subtitled with the abbreviated description. Their quality should not be less than 300 dpi, and it may be necessary to have the graph in TIFF, PNG or JPEG format.

4. Submission Process

The receipt of articles is permanent, however, considering that the publication of the Sophia Journal is bi-annual, the manuscripts must be sent at least one period before the date stipulated in the corresponding Call.

The manuscripts must be sent through the OJS (Open Journal System) system of the journal, for which it is necessary that the author previously registers in



the respective space (enter in the following link: <http://sophia.ups.edu.ec/index.php/sophia/user/register>, complete the form and follow each of the suggested steps).

The two documents that must be sent are:

1) Presentation and cover (Use official model), which will appear:

Title. In Spanish in the first line, in letter Arial 14, with bold and centered, with a maximum of 85 characters with space. In English in the second line, in letter Arial 14, in italics and bold.

Full names and surnames of the authors. Organized in order of priority, a maximum of 3 authors are accepted per original, although there may be exceptions justified by the topic, its complexity and extent. Each name must include the name of the institution in which he/she works as well as the city, country, email and ORCID number.

Abstract (Spanish) It will have a minimum length of 210 and a maximum of 220 words. It must include 1) Justification of the topic; 2) Objectives; 3) Methodology; 4) Main results; 5) Main conclusions. It must be impersonally written "The present paper analyzes..."

Abstract. Summary with all its components, translated into English and in cursive. Do not use automatic translation systems.

Keywords (Spanish): 6 standardized terms preferably of a single word and of the UNESCO and the Journal's Thesaurus separated by commas (,).

Keywords. The 6 terms above translated into English and separated by comma (,). Do not use automatic translation systems.

In addition, a statement must be included (using a template called: Presentation) in which it is explained that the submitted manuscript is an original contribution, not sent or being evaluated in another journal, confirmation of the signatory authors, acceptance (if applicable) of formal changes in the manuscript according to the norms and partial transfer of rights to the publisher. This document must be signed and recorded through the OJS system, in the section: "Complementary files".

2) Manuscript totally anonymized, according to the guidelines referred in precedence.

All authors must register with their credits on the OJS platform, although only one of them will be responsible for correspondence. No author can submit or have in review two manuscripts simultaneously, estimating an absence of four consecutive numbers (2 years).

5. Publication interval

The interval between receipt and publication of an article is 7 months (210 days).



Normas de Publicación en «Sophia»



ISSN: 1390-3861 / e-ISSN: 1390-8626

1. Información general

«Sophia» es una publicación científica de la Universidad Politécnica Salesiana de Ecuador, editada desde junio de 2006 de forma ininterrumpida, con periodicidad fija semestral, especializada en Filosofía de la Educación y sus líneas interdisciplinarias como Epistemología, Deontología, Estética, Estudios Críticos, Hermenéutica, Axiología, Ontología, Antropología Filosófica, Sociología, Analítica Filosófica... vinculadas al ámbito de la educación.

Es una revista científica arbitrada, que utiliza el sistema de evaluación externa por expertos (*peer-review*), bajo metodología de pares ciegos (*double-blind review*), conforme a las normas de publicación de la American Psychological Association (APA). El cumplimiento de este sistema permite garantizar a los autores un proceso de revisión objetivo, imparcial y transparente, lo que facilita a la publicación su inclusión en bases de datos, repositorios e indexaciones internacionales de referencia.

«Sophia» se encuentra indexada en Emerging Sources Citation Index (ESCI) de Web of Science; en Scientific Electronic Library Online (SciELO); en el Sistema de Información Científica (REDALYC); en el directorio y catálogo selectivo del Sistema Regional de Información en Línea para Revistas Científicas de América Latina, el Caribe, España y Portugal (LATINDEX), en la Matriz de Información para el Análisis de Revistas (MIAR), en Clasificación Integrada de Revistas Científicas (C.I.R.C), en Academic Resource Index (Research Bible), en la Red Iberoamericana de Innovación y Conocimiento Científico (REDIB), en el Portal de difusión de la producción científica (Dialnet); en Bibliografía Latinoamericana en Revistas de Investigación Científica y Social (BIBLAT); en el Directorio de Revistas de Acceso Abierto DOAJ y en repositorios, bibliotecas y catálogos especializados de Iberoamérica.

La revista se edita en doble versión: impresa (ISSN: 1390-3861) y electrónica (e-ISSN: 1390-8626), en español y en inglés, siendo identificado además cada trabajo con un DOI (Digital Object Identifier System).

299



2. Alcance y política

2.1. Temática

Contribuciones originales en materia de Filosofía de la Educación, así como áreas afines: Epistemología, Deontología, Estética, Estudios Críticos, Hermenéutica, Axiología, Ontología, Antropología Filosófica, Sociología, Analítica Filosófica,... y todas aquellas disciplinas conexas interdisciplinariamente con una reflexión filosófica sobre la educación.

2.2. Aportaciones

«Sophia» edita estudios críticos, informes, propuestas, así como selectas revisiones de la literatura (*state-of-the-art*) en relación con la Filosofía de la Educación, aceptando asimismo trabajos de investigación empírica, redactados en español y en inglés.

Las aportaciones en la revista pueden ser:

- **Revisiones:** 10.000 a 11.000 palabras de texto, incluidas tablas y referencias. Se valorará especialmente las referencias justificadas, actuales y selectivas de alrededor de unas 70 obras.
- **Investigaciones:** 8.000 a 9.500 palabras de texto, incluyendo título, resúmenes, descriptores, tablas y referencias.
- **Informes, estudios y propuestas:** 8.000 a 9.500 palabras de texto, incluyendo título, resúmenes, tablas y referencias.

2.3. Características del contenido

Todos los trabajos presentados para la publicación en «Sophia» deberán cumplir con las características propias de una investigación científica:

- Ser originales, inéditos y relevantes
- Abordar temáticas que respondan a problemáticas y necesidades actuales
- Aportar para el desarrollo del conocimiento científico en el campo de la Filosofía de la Educación y sus áreas afines
- Utilizar un lenguaje adecuado, claro, preciso y comprensible
- No haber sido publicados en ningún medio ni estar en proceso de arbitraje o publicación.

Dependiendo de la relevancia y pertinencia del artículo, se considerarán como contribuciones especiales y ocasionalmente se publicarán:

- Trabajos que superen la extensión manifestada
- Trabajos que no se correspondan con el tema objeto de la reflexión prevista para el número respectivo

2.4 Periodicidad



«Sophia» tiene periodicidad semestral (20 artículos por año), publicada en los meses de enero y julio; y cuenta por número con dos secciones de cinco artículos cada una, la primera referida a un tema **Monográfico** preparado con antelación y con editores temáticos; la segunda, una sección de **Misceláneas**, compuesta por aportaciones variadas dentro de la temática de la publicación.

3. Presentación, estructura y envío de los manuscritos

Los trabajos se presentarán en tipo de letra Arial 12, interlineado simple, justificado completo y sin tabuladores ni espacios en blanco entre párrafos. Se separarán con un espacio en blanco los grandes bloques (título, autores, resúmenes, descriptores, créditos y epígrafes). La página debe tener 2 centímetros en todos sus márgenes.

Los trabajos deben presentarse en documento de Microsoft Word (.doc o .docx), siendo necesario que el archivo esté anonimizado en Propiedades de Archivo, de forma que no aparezca la identificación de autor/es.

Los manuscritos deben ser enviados única y exclusivamente a través del OJS (Open Journal System), en el cual todos los autores deben darse de alta previamente. No se aceptan originales enviados a través de correo electrónico u otra interfaz.

301



3.1. Estructura del manuscrito

Para aquellos trabajos que se traten de investigaciones de carácter empírico, los manuscritos seguirán la estructura IMRDC, siendo opcionales los epígrafes de Notas y Apoyos. Aquellos trabajos que por el contrario se traten de informes, estudios, propuestas y revisiones sistemáticas podrán ser más flexibles en sus epígrafes, especialmente en Material y métodos; Análisis y resultados; Discusión y conclusiones. En todas las tipologías de trabajos son obligatorias las Referencias.

A. INVESTIGACIONES EMPÍRICAS

Su objetivo es contribuir al progreso del conocimiento mediante información original, sigue la estructura IMRDC: Introducción (objetivos, literatura previa), Materiales y métodos; Análisis y Resultados; Discusión, integración y conclusiones. Siguiendo los criterios planteados por la Unesco, es este tipo de textos científicos se llaman también como: “memorias originales”

La estructura recomendada, especialmente en trabajos que incluyen investigaciones empíricas, es la siguiente:

1) **Título (español) / Title (inglés):** Conciso pero informativo, en castellano en primera línea y en inglés en segunda. Se aceptan como máximo 85 caracteres con espacio. El título no solo es responsabilidad de los autores, pudiéndose proponer cambios por parte del Consejo Editorial.

2) **Datos de Identificación:** Nombres y apellidos completos de cada uno de los autores, organizados por orden de prelación. Se aceptarán como máxi-

mo 3 autores por original, aunque pudieren existir excepciones justificadas por el tema, su complejidad y extensión. Junto a los nombres deberá incluirse, el nombre de la institución en la que trabaja así como la ciudad, el país, el correo electrónico y número completo de ORCID de cada autor aspectos que deberán constar de modo obligatorio en la Carta de Presentación, además deberán ser cargados en el sistema OJS de la revista, en la sección Metadatos y/o en un documento word adjunto al archivo que contiene el trabajo que se propone para la evaluación.

3) Resumen (español) / Abstract (inglés): Tendrá como extensión mínima de 210 y máxima de 220 palabras en español; y de 200 y máximo de 210 palabras en inglés. El resumen describirá de forma concisa y en este orden: 1) Justificación del tema; 2) Objetivos; 3) Metodología y muestra; 4) Principales resultados; 5) Principales conclusiones. Ha de estar escrito de manera impersonal “El presente trabajo analiza...”. En el caso del abstract no se admitirá el empleo de traductores automáticos por su pésima calidad.

4) Descriptores (español) / Keywords (inglés): Se deben exponer máximo 6 términos por cada versión idiomática relacionados directamente con el tema del trabajo. Será valorado positivamente el uso de las palabras claves expuestas en el Thesaurus de la UNESCO y en el de la propia revista localizado en el siguiente enlace: https://sophia.ups.edu.ec/tesauro_sophia.php

5) Introducción y estado de la cuestión: Debe incluir el planteamiento del problema, el contexto de la problemática, la justificación, fundamentos y propósito del estudio, utilizando citas bibliográficas, así como la literatura más significativa y actual del tema a escala nacional e internacional.

6) Material y métodos: Debe ser redactado de forma que el lector pueda comprender con facilidad el desarrollo de la investigación. En su caso, describirá la metodología, la muestra y la forma de muestreo, así como se hará referencia al tipo de análisis estadístico empleado. Si se trata de una metodología original, es necesario exponer las razones que han conducido a su empleo y describir sus posibles limitaciones.

7) Análisis y resultados: Se procurará resaltar las observaciones más importantes, describiéndose, sin hacer juicios de valor, el material y métodos empleados. Aparecerán en una secuencia lógica en el texto y las tablas y figuras imprescindibles evitando la duplicidad de datos.

8) Discusión y conclusiones: Resumirá los hallazgos más importantes, relacionando las propias observaciones con estudios de interés, señalando aportaciones y limitaciones, sin redundar datos ya comentados en otros apartados. Asimismo, el apartado de discusión y conclusiones debe incluir las deducciones y líneas para futuras investigaciones.

9) Apoyos y agradecimientos (opcionales): El Council Science Editors recomienda a los autor/es especificar la fuente de financiación de la investigación. Se considerarán prioritarios los trabajos con aval de proyectos competitivos nacionales e internacionales. En todo caso, para la valoración científica del manuscrito, este debe ir anonimizado con XXXX solo para su evaluación ini-



cial, a fin de no identificar autores y equipos de investigación, que deben ser explicitados en la Carta de Presentación y posteriormente en el manuscrito final.

10) Las notas (opcionales) irán, solo en caso necesario, al final del artículo (antes de las referencias). Deben anotarse manualmente, ya que el sistema de notas al pie o al final de Word no es reconocido por los sistemas de maquetación. Los números de notas se colocan en superíndice, tanto en el texto como en la nota final. No se permiten notas que recojan citas bibliográficas simples (sin comentarios), pues éstas deben ir en las referencias.

11) Referencias: Las citas bibliográficas deben reseñarse en forma de referencias al texto. Bajo ningún caso deben incluirse referencias no citadas en el texto. Su número debe ser suficiente para contextualizar el marco teórico con criterios de actualidad e importancia. Se presentarán alfabéticamente por el primer apellido del autor.

B. REVISIONES

Las revisiones de literatura se basan en el análisis de las principales publicaciones sobre un tema determinado; su objetivo es definir el estado actual del problema y evaluar las investigaciones realizadas. Su estructura responde a las fases del tema/problema, aportes de investigadores o equipos, cambios en la teoría o las corrientes teóricas principales; problemas sin resolver; tendencias actuales y futuras (Giordanino, 2011). De acuerdo con la UNESCO, este tipo de trabajos se conocen también como: “estudios recapitulativos”

1) Título (español) / Title (inglés): El título del artículo deberá ser breve, interesante, claro, preciso y atractivo para despertar el interés del lector. Conciso pero informativo, en castellano en la primera línea y en inglés en la segunda línea. Se aceptan como máximo 85 caracteres con espacio. El título no solo es responsabilidad de los autores, también los Miembros del Consejo Editorial puede proponer cambios al título del documento.

2) Datos de Identificación: Nombres y apellidos completos de cada uno de los autores, organizados por orden de prelación. Se aceptarán como máximo 3 autores por original, aunque pudieren existir excepciones justificadas por el tema, su complejidad y extensión. Junto a los nombres deberá incluirse, el nombre de la institución en la que trabaja así como la ciudad, el país, el correo electrónico y número completo de ORCID de cada autor aspectos que deberán constar de modo obligatorio en la Carta de Presentación, además deberán ser cargados en el sistema OJS de la revista, en la sección Metadatos y/o en un documento word adjunto al archivo que contiene el trabajo que se propone para la evaluación.

3) Resumen (español) / Abstract (inglés): Tendrá como extensión mínima de 210 y máxima de 220 palabras en español; y de 200 y máximo de 210 palabras en inglés. El resumen describirá de forma concisa y en este orden: 1) Justificación del tema; 2) Objetivos; 3) Metodología; 4) Principales resultados; 5) Principales conclusiones. Ha de estar escrito de manera impersonal “El presente trabajo ana-



liza...”. En el caso del abstract no se admitirá el empleo de traductores automáticos por su pésima calidad.

4) Descriptores (español) / Keywords (inglés): Se deben exponer máximo 6 términos por cada versión idiomática relacionados directamente con el tema del trabajo. Será valorado positivamente el uso de las palabras claves expuestas en el Thesaurus de la UNESCO y en el de la propia revista.

5) Introducción: Deberá incluir una presentación breve del tema, la formulación del propósito u objetivo del estudio, el contexto de la problemática y la formulación del problema que se propone enfrentar, la presentación de la idea a defender, la justificación que explica la importancia, la actualidad y la pertinencia del estudio; el marco metodológico utilizado, y finalmente, una breve descripción de la estructura del documento. En la justificación es necesario utilizar citas bibliográficas así como la literatura más significativa y actual del tema a escala nacional e internacional.

6) Cuerpo o desarrollo del documento: Implica poner en práctica a lo largo de toda la exposición, una actitud crítica que deberá tender hacia la interpelación, a efectos de concitar la atención del tema y el problema tratados. El escritor deberá generar en el lector la capacidad de identificar la intención dialógica de la propuesta y propiciar en él una discusión abierta.

7) Conclusiones: Expone de manera objetiva los resultados y hallazgos; ofrece una visión de las implicaciones del trabajo, las limitaciones, la respuesta tentativa al problema, las relaciones con el objetivo de la investigación y las posibles líneas de continuidad (para cumplir con este objetivo se sugiere no incluir todos los resultados obtenidos en la investigación). Las conclusiones deberán ser debidamente justificadas de acuerdo con la investigación realizada. Las conclusiones podrán estar asociadas con las recomendaciones, evaluaciones, aplicaciones, sugerencias, nuevas relaciones e hipótesis aceptadas o rechazadas.

8) Bibliografía: Es el conjunto de obras utilizadas en la estructuración del texto científico. Deberá incluir únicamente la referencia de los trabajos utilizados en la investigación. Las referencias bibliográficas deberán ordenarse alfabéticamente y ajustarse a las normas internacionales APA, en su sexta edición.

3.2. Normas para las referencias

PUBLICACIONES PERIÓDICAS

Artículo de revista (un autor): Valdés-Pérez, D. (2016). Incidencia de las técnicas de gestión en la mejora de decisiones administrativas [Impact of Management Techniques on the Improvement of Administrative Decisions]. *Retos*, 12(6), 199-203. <https://doi.org/10.17163/ret.n12.2016.05>

Artículo de revista (hasta seis autores): Ospina, M.C., Alvarado, S.V., Fefferman, M., & Llanos, D. (2016). Introducción del dossier temático “Infancias y juventudes: violencias, conflictos, memorias y procesos de construcción de paz” [Introduction of the thematic dossier “Infancy and Youth: Violence, Con-



flicts, Memories and Peace Construction Processes”]. *Universitas*, 25(14), 91-95. <https://doi.org/10.17163/uni.n25.%25x>

Artículo de revista (más de seis autores): Smith, S.W., Smith, S.L. Pieper, K.M., Yoo, J.H., Ferrys, A.L., Downs, E.,... Bowden, B. (2006). Altruism on American Television: Examining the Amount of, and Context Surrounding, Acts of Helping and Sharing. *Journal of Communication*, 56(4), 707-727. <https://doi.org/10.1111/j.1460-2466.2006.00316.x>

Artículo de revista (sin DOI): Rodríguez, A. (2007). Desde la promoción de salud mental hacia la promoción de salud: La concepción de lo comunitario en la implementación de proyectos sociales. *Alteridad*, 2(1), 28-40. (<https://goo.gl/zDb3Me>) (2017-01-29).

LIBROS Y CAPÍTULOS DE LIBRO

Libros completos: Cuéllar, J.C., & Moncada-Paredes, M.C. (2014). *El peso de la deuda externa ecuatoriana*. Quito: Abya-Yala.

Capítulos de libro: Zambrano-Quiñones, D. (2015). *El ecoturismo comunitario en Manglaralto y Colonche*. En V.H. Torres (Ed.), *Alternativas de Vida: Trece experiencias de desarrollo endógeno en Ecuador* (pp. 175-198). Quito: Abya-Yala.



MEDIOS ELECTRÓNICOS

Pérez-Rodríguez, M.A., Ramírez, A., & García-Ruiz, R. (2015). La competencia mediática en educación infantil. Análisis del nivel de desarrollo en España. *Universitas Psychologica*, 14(2), 619-630. <https://doi.org/10.11144/Javeriana.upsy14-2.cmei>

Es prescriptivo que todas las citas que cuenten con DOI (Digital Object Identifier System) estén reflejadas en las Referencias (pueden obtenerse en <http://goo.gl/gfruh1>). Todas las revistas y libros que no tengan DOI deben aparecer con su link (en su versión on-line, en caso de que la tengan, acortada, mediante Bitly: <https://bitly.com/> y fecha de consulta en el formato indicado.

Los artículos de revistas deben ser expuestos en idioma inglés, a excepción de aquellos que se encuentren en español e inglés, caso en el que se pondrá en ambos idiomas utilizando corchetes. Todas las direcciones web que se presenten tienen que ser acortadas en el manuscrito, a excepción de los DOI que deben ir en el formato indicado (<https://doi.org/XXX>).

3.3. Epígrafes, tablas y gráficos

Los epígrafes del cuerpo del artículo se numerarán en arábigo. Irán sin caja completa de mayúsculas, ni subrayados, ni negritas. La numeración ha de ser como máximo de tres niveles: 1. / 1.1. / 1.1.1. Al final de cada epígrafe numerado se establecerá un retorno de carro.

Las tablas deben presentarse incluidas en el texto en formato Word según orden de aparición, numeradas en arábigo y subtituladas con la descripción del contenido.

Los gráficos o figuras se ajustarán al número mínimo necesario y se presentarán incorporadas al texto, según su orden de aparición, numeradas en arábigo y subtituladas con la descripción abreviada. Su calidad no debe ser inferior a 300 ppp, pudiendo ser necesario contar con el gráfico en formato TIFF, PNG o JPEG.

4. Proceso de envío

La recepción de artículos es permanente, sin embargo, considerando que la publicación de la Revista Sophia es semestral, el envío de los manuscritos deberá efectuarse al menos un período antes de la fecha estipulada en la Convocatoria correspondiente.

Los manuscritos deberán remitirse a través del sistema OJS (Open Journal System) de la revista, para lo cual es necesario que el autor se registre previamente en el espacio respectivo (ingrese en el siguiente link: <http://sophia.ups.edu.ec/index.php/sophia/user/register>, complemente el formulario y siga cada uno de los pasos que se sugieren).

Los dos documentos que deben ser enviados son:

1) **Carta de presentación o Cover letter** (usar modelo oficial), en la que aparecerán:

Título. En castellano en la primera línea, en letra Arial 14, con negrita y centrado, con un máximo de 85 caracteres con espacio. En inglés en la segunda línea, en letra Arial 14, en cursiva y con negrita.

Nombres y apellidos completos de los autores. Organizados por orden de prelación, se aceptan como máximo 3 autores por original, aunque pudieren existir excepciones justificadas por el tema, su complejidad y extensión. Junto a cada uno de los nombres deberá incluirse, el nombre de la institución en la que trabaja así como la ciudad, el país, el correo electrónico y número de ORCID.

Resumen. Tendrá como extensión mínima 210 y máxima 220 palabras. El resumen describirá de forma concisa y en este orden: 1) Justificación del tema; 2) Objetivos; 3) Metodología; 4) Principales resultados; 5) Principales conclusiones. Ha de estar escrito de manera impersonal “El presente trabajo analiza...”.

Abstract. Resumen con todos sus componentes, traducido al inglés y en letra cursiva. No utilizar sistemas de traducción automáticos.

Descriptor. Máximo 6 términos estandarizados preferiblemente de una sola palabra y del Thesaurus de la UNESCO y de la propia revista, separados por coma (,).

Keywords. Los 6 términos antes referidos traducidos al inglés y separados por coma (,). No utilizar sistemas de traducción automáticos.



Además, se deberá incluir una: **Declaración** (usar modelo denominado: Presentación) en la que se explica que el manuscrito enviado es una aportación original, no enviado ni en proceso de evaluación en otra revista, confirmación de las autorías firmantes, aceptación (si procede) de cambios formales en el manuscrito conforme a las normas y cesión parcial de derechos a la editorial. Este documento deberá ser firmado y consignado a través del sistema OJS, en la sección: “**Ficheros complementarios**”.

2) **Manuscrito** totalmente anonimizado, conforme a las normas referidas en precedencia.

Todos los autores han de darse de alta, con sus créditos, en la plataforma OJS, si bien uno solo de ellos será el responsable de correspondencia. Ningún autor podrá enviar o tener en revisión dos manuscritos de forma simultánea, estimándose una carencia de cuatro números consecutivos (2 años).

5. Intervalo de publicación

(El tamaño y estilo de la letra tal como se encuentra el numeral 4 (Proceso de envío)

El intervalo comprendido entre la recepción y la publicación de un artículo es de 7 meses (210 días).



Indications for External Reviewers of «Sophia»

The **Board of External Reviewers of «Sophia»** is an independent collegiate body whose purpose is to guarantee the excellence of this scientific publication, because the blind evaluation - based exclusively on the quality of the contents of the manuscripts and carried out by experts of recognized International prestige in the field - is, without a doubt, the best guarantee for the advancement of science and to preserve in this header an original and valuable scientific production.

To this end, the **Board of External Reviewers** is made up of several scholars and international scientists specialized in **Education**, essential to select the articles of the greatest impact and interest for the international scientific community. This in turn allows that all the articles selected to publish in «**Sophia**» have an academic endorsement and objectifiable reports on the originals.

Of course, all reviews in «**Sophia**» use the internationally standardized system of double-blind peer evaluation that guarantees the anonymity of manuscripts and reviewers. As a measure of transparency, the complete lists of reviewers are published on the official website of the journal <http://Sophia.ups.edu.ec/>)

1. Criteria for acceptance/rejection of manuscript evaluation

The editorial team of «**Sophia**» selects those that are considered more qualified in the subject of the manuscript from the list of reviewers of the Board of Reviewers. While the publication requires the maximum collaboration of reviewers to expedite the evaluations and reports on each original, acceptance of the review must be linked to:

- a. **Expertise.** Acceptance necessarily entails the possession of competences in the specific theme of the article to be evaluated.
- b. **Availability.** Reviewing an original takes time and involves careful reflection on many aspects.
- c. **Conflict of interests.** In case of identification of the authorship of the manuscript (despite their anonymity), excessive academic or family closeness to their authors, membership in the same University, Department, Research Group, Thematic Network, Research Projects, joint publications with authors... or any other type of connection or conflict / professional proximity; The reviewer must reject the publisher's invitation for review.
- d. **Commitment of confidentiality.** Reception of a manuscript for evaluation requires the Reviewer to express a commitment of confidentiality, so that it cannot be divulged to a third party throughout the process.



In the event that the reviewer cannot carry out the activity for some of these reasons or other justifiable reasons, he/she must notify the publisher by the same route that he/she has received the invitation, specifying the reasons for rejection.

2. General criteria for the evaluation of manuscripts

a) Topic

In addition to being valuable and relevant to the scientific community, the topic that is presented in the original must be limited and specialized in time and space, without excessive localism.

b) Redaction

The critical assessment in the review report must be objectively written, providing content, quotes or references of interest to support its judgment.

c) Originality

As a fundamental criterion of quality, an article must be original, unpublished and suitable. In this sense, reviewers should answer these three questions in the evaluation:

- Is the article sufficiently novel and interesting to justify publication?
- Does it contribute anything to the knowledge canon?
- Is the research question relevant?

A quick literature search using repositories such as Web of Knowledge, Scopus and Google Scholar to see if the research has been previously covered, may be helpful.

d) Structure

Manuscripts that refer to «Sophia» must follow the IMRDC structure, except those that are literature reviews or specific studies. In this sense, the originals must contain summary, introduction, methodology, results, discussion and conclusion.

- The **title, abstract, and keywords** should accurately describe the content of the article.
- The **review of the literature** should summarize the state of the question of the most recent and adequate research for the presented work. It will be especially evaluated with criteria of suitability and that the references are to works of high impact - especially in



WoS, Scopus, Scielo, etc. It should also include the general explanation of the study, its central objective and the followed methodological design.

- In case of research, in the **materials and methods**, the author must specify how the data, the process and the instruments used to respond to the hypothesis, the validation system, and all the information necessary to replicate the study are collected.
- **Results** must be clearly specified in logical sequence. It is important to check if the figures or charts presented are necessary or, if not, redundant with the content of the text.
- In the **discussion**, the data obtained should be interpreted in the light of the literature review. Authors should include here if their article supports or contradicts previous theories. The conclusions will summarize the advances that the research presents in the area of scientific knowledge, the future lines of research and the main difficulties or limitations for carrying out the research.
- **Language:** It will be positively assessed if the language used facilitates reading and is in favor of the clarity, simplicity, precision and transparency of the scientific language. The Reviewer should not proceed to correction, either in Spanish or English, but will inform the Editors of these grammatical or orthographical and typographical errors.
- Finally, a thorough **review of the references** is required in case any relevant work has been omitted. The references must be precise, citing within the logic of the subject at study, its main works as well as the documents that most resemble the work itself, as well as the latest research in the area.

3. Relevant valuation dimensions

For the case of empirical research articles, «**Sophia**» uses an evaluation matrix of each original that responds to the editorial criteria and to compliance with the publication guidelines. In this sense, the reviewers must attend to the qualitative-quantitative assessment of each of the aspects proposed in this matrix with criteria of objectivity, reasoning, logic and expertise.

If the original is a review of the literature (status of the matter) or other type of study (reports, proposals, experiences, among others), the Editorial Board will send to the reviewers a different matrix, including the characteristics of Structure of this type of originals:

| STUDIES, REPORTS, PROPOSALS AND REVIEW | |
|--|-----------|
| Valuable items | Score |
| 01. Relevancy of the title (clarity, precision and with a maximum of 85 characters). | 0/5 |
| 02. They summarize (In an alone paragraph and without epigraphs, minimum / minimal: 210-220 words). | 0/5 |
| 03. Introduction (brief presentation of the topic; formulation of the problem; it designs to defending or hypothesis to demonstrating; I target; importance of the topic; current importance; methodology; structure of the document). | 0/5 |
| 04. Review of the bibliographical foundation (Beside using current bibliography to consider the incorporation of Sophia's documents). | 0/10 |
| 05. Structure and organization of the article (argumentative capabilities, coherence and scientific redaction). | 0/10 |
| 06. Original contributions and contextualized analyses. | 0/5 |
| 07. Conclusions that answer to the topic, to the problem and to the raised aim. | 0/5 |
| 08. Citations and references of agreement to the regulation and to the format requested by the magazine (Any document and author who consists in the section of bibliography must consist in the body of story and vice versa). | 0/5 |
| Maximun total | 50 points |

| RESEARCHES | |
|---|-------|
| Valuable items | Score |
| 01. Relevancy of the title (clarity, precision and with a maximum of 85 characters). | 0/5 |
| 02. They summarize (In an alone paragraph and without epigraphs, minimum / minimal: 210-220 words). | 0/5 |
| 03. Introduction (brief presentation of the topic; formulation of the problem; it designs to defending or hypothesis to demonstrating; I target; importance of the topic; current importance; methodology; structure of the document). | 0/5 |
| 04. Review of the bibliographical foundation (Beside using current bibliography to consider the incorporation of Sophia's documents). Methodological rigorous and presentation of instruments of investigation. | 0/10 |
| 05. Structure and organization of the article (argumentative capabilities, coherence and scientific redaction). Analysis and results of investigation with logical sequence in the text. Presentation of tables and figures without duplicity of information. | 0/10 |

| | |
|---|-----------|
| 06. Original contributions and contextualized analyses of the information. | 0/5 |
| 07. Discussion, conclusions and advances that answer to the topic, to the problem and to the raised aim. | 0/5 |
| 08. Citations and references of agreement to the regulation and to the format requested by the magazine (Any document and author who consists in the section of bibliography must consist in the body of story and vice versa). | 0/5 |
| Total | 50 points |

4. Ethical issues

312



- a. **Plagiarism:** Although the journal uses plagiarism detection systems, if the reviewer suspects that an original is a substantial copy of another work, he must immediately inform the Editors citing the previous work in as much detail as possible.
- b. **Fraud:** If there is real or remote suspicion that the results in an article are false or fraudulent, it is necessary to inform them to the Editors.

5. Evaluation of the originals

After the quantitative-qualitative evaluation of the manuscript under review, the reviewer may make recommendations to improve the quality of the manuscript. However, the manuscript will be graded in three ways:

- a. **Rejection** due to detected deficiencies justified and reasoned with quantitative and qualitative assessment. The report should be longer if a score of less than 40 of the 50 possible points is obtained.
- b. **Acceptance without review**
- c. **Conditional acceptance** and therefore review (greater or lesser). In the latter case, it is necessary to clearly identify which review is necessary, listing the comments and even specifying paragraphs and pages suggesting modifications.

Indicaciones para revisores externos de «Sophia»

El **Consejo de Revisores Externos de «Sophia»** es un órgano colegiado independiente cuyo fin es garantizar la excelencia de esta publicación científica, debido a que la evaluación ciega —basada exclusivamente en la calidad de los contenidos de los manuscritos y realizada por expertos de reconocido prestigio internacional en la materia— es la mejor garantía y, sin duda, el mejor aval para el avance de la ciencia y para preservar en esta cabecera una producción científica original y valiosa.

Para ello, el **Consejo de Revisores Externos** está conformado por diversos académicos y científicos internacionales especialistas en **Filosofía de la Educación**, esenciales para seleccionar los artículos de mayor impacto e interés para la comunidad científica internacional. Esto permite a su vez que todos los artículos seleccionados para publicar en «Sophia» cuenten con un aval académico e informes objetivables sobre los originales.

Por supuesto, todas las revisiones en «Sophia» emplean el sistema estandarizado internacionalmente de evaluación por pares con «doble ciego» (*double-blind*) que garantiza el anonimato de los manuscritos y de los revisores de los mismos. Como medida de transparencia, anualmente se hacen públicos en la web oficial de la revista ([www. http://Sophia.ups.edu.ec/](http://Sophia.ups.edu.ec/)) los listados completos de los revisores.



1. Criterios de aceptación/rechazo de evaluación manuscritos

El equipo editorial de «Sophia» selecciona del listado de evaluadores del Consejo de Revisores a aquellos que se estiman más cualificado en la temática del manuscrito. Si bien por parte de la publicación se pide la máxima colaboración de los revisores para agilizar las evaluaciones y los informes sobre cada original, la aceptación de la revisión ha de estar vinculada a:

- a. **Experticia.** La aceptación conlleva necesariamente la posesión de competencias en la temática concreta del artículo a evaluar.
- b. **Disponibilidad.** Revisar un original exige tiempo y conlleva reflexión concienzuda de muchos aspectos.
- c. **Conflicto de intereses.** En caso de identificación de la autoría del manuscrito (a pesar de su anonimato), excesiva cercanía académica o familiar a sus autores, pertenencia a la misma Universidad, Departamento, Grupo de Investigación, Red Temática, Proyectos de Investigación, publicaciones conjuntas con los autores... o cualquier otro tipo de conexión o conflicto/cercanía profesional; el revisor debe rechazar la invitación del editor para su revisión.
- d. **Compromiso de confidencialidad.** La recepción de un manuscrito para su evaluación exige del Revisor un compromiso expreso de

confidencialidad, de manera que éste no puede, durante todo el proceso, ser divulgado a un tercero.

En caso que el revisor no pueda llevar a cabo la actividad por algunos de estos motivos u otros justificables, debe notificarlo al editor por la misma vía que ha recibido la invitación, especificando los motivos de rechazo.

2. Criterios generales de evaluación de manuscritos

a) Tema

La temática que se plantea en el original, además de ser valiosa y relevante para la comunidad científica, ha de ser limitada y especializada en tiempo y espacio, sin llegar al excesivo localismo.

b) Redacción

La valoración crítica en el informe de revisión ha de estar redactada de forma objetiva, aportando contenido, citas o referencias de interés para argumentar su juicio.

c) Originalidad

Como criterio de calidad fundamental, un artículo debe ser original, inédito e idóneo. En este sentido, los revisores deben responder a estas tres preguntas en la evaluación:

- ¿Es el artículo suficientemente novedoso e interesante para justificar su publicación?
- ¿Aporta algo al canon del conocimiento?
- ¿Es relevante la pregunta de investigación?

Una búsqueda rápida de literatura utilizando repositorios tales como Web of Knowledge, Scopus y Google Scholar para ver si la investigación ha sido cubierta previamente puede ser de utilidad.

d) Estructura

Los manuscritos que se remiten a «**Sophia**» deben seguir la estructura señalada en las normas de publicación tanto para las investigaciones empíricas como para revisiones de la literatura o estudios específicos. En este sentido, los originales han de contener resumen, introducción, metodología, resultados, discusión y conclusión.

- El título, el resumen y las palabras clave han de describir exactamente el contenido del artículo.



- La revisión de la literatura debe resumir el estado de la cuestión de las investigaciones más recientes y adecuadas para el trabajo presentado. Se valorará especialmente con criterios de idoneidad y que las referencias sean a trabajos de alto impacto —especialmente en WoS, Scopus, Scielo, etc. Debe incluir además la explicación general del estudio, su objetivo central y el diseño metodológico seguido.
- En caso de investigaciones, en los materiales y métodos, el autor debe precisar cómo se recopilan los datos, el proceso y los instrumentos usados para responder a las hipótesis, el sistema de validación, y toda la información necesaria para replicar el estudio.
- En los resultados se deben especificar claramente los hallazgos en secuencia lógica. Es importante revisar si las tablas o cuadros presentados son necesarios o, caso contrario, redundantes con el contenido del texto.
- En la discusión se deben interpretar los datos obtenidos a la luz de la revisión de la literatura. Los autores deberán incluir aquí si su artículo apoya o contradice las teorías previas. Las conclusiones resumirán los avances que la investigación plantea en el área del conocimiento científico, las futuras líneas de investigación y las principales dificultades o limitaciones para la realización de la investigación.
- Idioma: Se valorará positivamente si el idioma utilizado facilita la lectura y va en favor de la claridad, sencillez, precisión y transparencia del lenguaje científico. El Revisor no debe proceder a corrección, ya sea en español o inglés, sino que informará a los Editores de estos errores gramaticales u ortotipográficos.
- Finalmente, se requiere una profunda revisión de las referencias por si se hubiera omitido alguna obra relevante. Las referencias han de ser precisas, citando en la lógica de la temática a estudiar, sus principales obras así como los documentos que más se asemejen al propio trabajo, así como las últimas investigaciones en el área.

3. Dimensiones relevantes de valoración

Para el caso de artículos de investigaciones empíricas, «**Sophia**» utiliza una matriz de evaluación de cada original que responde a los criterios editoriales y al cumplimiento de la normativa de la publicación. En este sentido los revisores deberán atender a la valoración cuali-cuantitativa de cada uno de los aspectos propuestos en esta matriz con criterios de objetividad, razonamiento, lógica y experticia.

Para el caso de artículos reflexivos, estudios, revisiones de literatura (estado de la cuestión) u otro tipo de estudio (informes, propuestas, experiencias, entre otras), el Consejo Editorial remitirá a los revisores una matriz distinta, comprendiendo las características propias de estructura de este tipo de originales:

| ESTUDIOS, PROPUESTAS, INFORMES Y EXPERIENCIAS | |
|---|-----------|
| Ítems valorables | Puntaje |
| 01. Pertinencia del título (claridad, precisión y con un máximo de 85 caracteres). | 0/5 |
| 02. Resumen (En un solo párrafo y sin epígrafes, mínimo/máximo: 210-220 palabras). | 0/5 |
| 03. Introducción (breve presentación del tema; formulación del problema; idea a defender o hipótesis a demostrar; objetivo; importancia del tema; actualidad; metodología; estructura del documento). | 0/5 |
| 04. Revisión de la fundamentación bibliográfica (Además de usar bibliografía actual considerar la inclusión de documentos de Sophia). | 0/10 |
| 05. Estructura y organización del artículo (capacidad argumentativa, coherencia y redacción científica). | 0/10 |
| 06. Aportaciones originales y análisis contextualizados. | 0/5 |
| 07. Conclusiones que respondan al tema, al problema y al objetivo planteado. | 0/5 |
| 08. Citaciones y referencias de acuerdo a la normativa y al formato solicitado por la revista (Todo documento y autor que conste en la sección de bibliografía debe constar en el cuerpo del artículo y viceversa). | 0/5 |
| Total máximo | 50 puntos |

| INVESTIGACIONES | |
|---|---------|
| Ítems valorables | Puntaje |
| 01. Pertinencia del título (claridad, precisión y con un máximo de 85 caracteres) | 0/5 |
| 02. Resumen (En un solo párrafo y sin epígrafes, mínimo/máximo: 210-220 palabras). | 0/5 |
| 03. Introducción (breve presentación del tema; formulación del problema; idea a defender o hipótesis a demostrar; objetivo; importancia del tema; actualidad; metodología; estructura del documento). | 0/5 |
| 04. Revisión de la fundamentación bibliográfica (Además de usar bibliografía actual considerar la inclusión de documentos de Sophia). Rigor metodológico y presentación de instrumentos de investigación. | 0/10 |



| | |
|---|-----------|
| 05. Estructura y organización del artículo (capacidad argumentativa, coherencia y redacción científica). Análisis y resultados de investigación con secuencia lógica en el texto. Presentación de tablas y figuras sin duplicidad de datos. | 0/10 |
| 0.6. Aportaciones originales y análisis contextualizados de los datos. | 0/5 |
| 0.7. Discusión, conclusiones y avances que respondan al tema, al problema y al objetivo planteado. | 0/5 |
| 0.8. Citaciones y referencias de acuerdo a la normativa y al formato solicitado por la revista (Todo documento y autor que conste en la sección de bibliografía debe constar en el cuerpo del artículo y viceversa). | 0/5 |
| Total máximo | 50 puntos |

4. Cuestiones éticas

- a. Plagio: Aunque la revista utiliza sistemas de detección de plagio, si el revisor sospechare que un original es una copia sustancial de otra obra, ha de informar de inmediato a los Editores citando la obra anterior con tanto detalle cómo le sea posible.
- b. Fraude: Si hay sospecha real o remota de que los resultados en un artículo son falsos o fraudulentos, es necesario informar de ellos a los Editores.



5. Evaluación de los originales

Una vez realizada la evaluación cuanti-cualitativa del manuscrito en revisión, el revisor podrá realizar recomendaciones para mejorar la calidad del original. Sin embargo, se atenderá a la calificación del manuscrito de tres maneras:

- a. **Rechazo** debido a las deficiencias detectadas, justificadas y razonadas con valoración cualitativa y cuantitativa. El informe ha de ser más extenso si obtiene menos de los 30 de los 50 puntos posibles.
- b. **Aceptación sin revisión.**
- c. **Aceptación condicionada** y por ende con revisión (mayor o menor). En este último caso, se ha de identificar claramente qué revisión es necesaria, enumerando los comentarios e incluso especificando párrafos y páginas en las que sugieren modificaciones.

Protocol of Manuscript Evaluation for External Reviewers

Instructions

- The fulfillment of each one of the articles will be valued in agreement to the following protocol.
- The total sum of the articles will determine the approval or rejection of the article.
- The minimal puntaje in order that the article is approved will be of 44/50.

318



| Article Details | |
|--|---|
| Date of submission for evaluation: | Date of return of evaluation: Article code: |
| Title of the article to be evaluated: | |
| SECTION: REPORTS, STUDIES, PROPOSALS AND REVIEWS | |
| 01.- Relevancy of the title (clarity, precision and with a maximum of 85 characters) | Mandatory comments: |
| | Value from 0 to 5 |
| | |
| 02.- They summarize (In an alone paragraph and without epigraphs, minimum / minimal: 210-220 words). | Mandatory comments: |
| | Value from 0 to 5 |
| | |
| 03.- Introduction (brief presentation of the topic; formulation of the problem; it designs to defending or hypothesis to demonstrating; I target; importance of the topic; current importance; methodology; structure of the document) | Mandatory comments: |
| | Value from 0 to 5 |
| | |
| 04.- Review of the bibliographical foundation (Beside using current bibliography to consider the incorporation of Sophia's documents). | Mandatory comments: |
| | Value from 0 to 10 |
| | |

| | | |
|---|--|--|
| 05.- Structure and organization of the article (argumentative capabilities, coherence and scientific redaction) | Mandatory comments: | |
| | Value from 0 to 10 | |
| | | |
| 06.- Original contributions and contextualized analyses | Mandatory comments: | |
| | Value from 0 to 5 | |
| | | |
| 07.- Conclusions that answer to the topic, to the problem and to the raised aim | Mandatory comments: | |
| | Value from 0 to 5 | |
| | | |
| 08.- Citations and references of agreement to the regulation and to the format requested by the magazine (Any document and author who consists in the section of bibliography must consist in the body of story and vice versa) | Mandatory comments: | |
| | Value from 0 to 5 | |
| | | |
| OBTAINED PUNCTUATION | Of the total of 50 predictable points, this assessor grants: | |

| | | | |
|--|---------------|-----------------------------|-----------|
| REDACTED OPINION More detailed if the work does not get 44 points, to inform the autor (s). This text is sent verbatim to the autor (s) anonymously | | | |
| RECOMMENDATION ON HIS PUBLICATION IN SOPHIA | | | |
| Validation criteria | Result | | |
| | Yes | Yes, with conditions | No |
| 01. Widely recommended | | | |
| 02. Recommended only if his quality is improved attending to the totality of the suggestions realized by the revisers | | | |
| 03. His publication is not recommended | | | |
| PROPOSED CHANGES (In case of “Yes, with conditions”) | | | |

Protocolo de evaluación de manuscritos para revisores externos

Instrucciones

- El cumplimiento de cada uno de los ítems será valorado de acuerdo al siguiente protocolo.
- La suma total de los ítems determinará la aprobación o rechazo del artículo. El puntaje mínimo para que el artículo sea aprobado será de 44/50.

320



| Datos del artículo | | |
|---|------------------------------|------------------|
| Fecha envío evaluación: | Fecha devolución evaluación: | Código artículo: |
| Título del artículo a evaluar: | | |
| SECCIÓN: ESTUDIOS, PROPUESTAS, INFORMES Y REVISIONES | | |
| 01.- Pertinencia del título (claridad, precisión y con un máximo de 85 caracteres) | Comentarios obligatorios: | |
| | Valore de 0 a 5 | |
| | | |
| 02.- Resumen (En un solo párrafo y sin epígrafes, mínimo/máximo: 210-220 palabras). | Comentarios obligatorios: | |
| | Valore de 0 a 5 | |
| | | |
| 03.- Introducción (breve presentación del tema; formulación del problema; idea a defender o hipótesis a demostrar; objetivo; importancia del tema; actualidad; metodología; estructura del documento) | Comentarios obligatorios: | |
| | Valore de 0 a 5 | |
| | | |
| 04.- Revisión de la fundamentación bibliográfica (Además de usar bibliografía actual considerar la inclusión de documentos de Sophia) | Comentarios obligatorios: | |
| | Valore de 0 a 10 | |
| | | |
| 05.- Estructura y organización del artículo (capacidad argumentativa, coherencia y redacción científica) | Comentarios obligatorios | |
| | Valore de 0 a 10 | |
| | | |

| | | |
|---|--|--|
| 06.- Aportaciones originales y análisis contextualizados | Comentarios obligatorios: | |
| | Valore de 0 a 5 | |
| | | |
| 07.- Conclusiones que respondan al tema, al problema y al objetivo planteado | Comentarios obligatorios: | |
| | Valore de 0 a 5 | |
| | | |
| 08.- Citaciones y referencias de acuerdo a la normativa y al formato solicitado por la revista (Todo documento y autor que conste en la sección de bibliografía debe constar en el cuerpo del artículo y viceversa) | Comentarios obligatorios: | |
| | Valore de 0 a 5 | |
| | | |
| PUNTUACIÓN OBTENIDA | Del total de 50 puntos previsibles, este evaluador otorga: | |

321



| | | | |
|--|------------------|----------------------------|-----------|
| OPINIÓN REDACTADA (Más detallada si el trabajo no tiene 44 puntos, para informar al autor/es) | | | |
| Este texto se remite textualmente al/ los autor/es de forma anónima | | | |
| RECOMENDACIÓN SOBRE SU PUBLICACIÓN EN SOPHIA | | | |
| PUBLICABLE | Resultado | | |
| | SI | Sí, con condiciones | NO |
| 01. Ampliamente recomendado | | | |
| 02. Recomendado sólo si se mejora su calidad atendiendo a la totalidad de las sugerencias realizadas por los revisores | | | |
| 03. No se recomienda su publicación | | | |
| MODIFICACIONES PROPUESTAS (En caso de «Sí, con condiciones») | | | |

Checklist prior to sending the manuscript

| 1. CHECK OF THE MANUSCRIPT, PRIOR TO SENDING | |
|---|--|
| To facilitate the process of evaluation of the manuscript and to accelerate the report of its possible publication, a final self-review of the manuscript is advised, checking the following questions. | |
| COVER LETTER | |
| Title of the manuscript in spanish (maximum 85 characters). | |
| Title of the manuscript in english (maximum 85 characters). | |
| The two versions of the title of the manuscript are concise, informative and collect as many identifiable terms as possible. | |
| The abstract in spanish is included, in a single paragraph and without epigraphs (minimum / maximum: 210/220 words). | |
| The abstract in english is included, in a single paragraph and without epigraphs (minimum / maximum: 210-220 words). | |
| Abstracts in spanish and english respond in order to the following issues: justification of the subject, objectives, study methodology, results and conclusions. | |
| It includes 6 descriptors (in english and spanish) (only simple words, not phrases or combinations of words), with the most significant terms, and if possible standardized. | |
| The texts in english (title, abstract and descriptors) have been written or verified by an official translator or expert in this language (The use of automatic translators is prohibited). | |
| All the identification data of the authors are included in the order stipulated in the norms: identification and correspondence data, professional filiations, last academic degree... | |
| The first and last name of the authors has been normalized. | |
| Each author is identified with their ORCID code. | |
| The maximum number of authors is three, with the exception of those works that justify a higher but limited number of authors | |
| The author(s) have duly signed the letter of presentation of the article, which includes the partial transfer of rights and the declaration of conflict of interest. | |
| MANUSCRIPT | |
| It includes title of the manuscript, abstract, and keywords. All in spanish and english. | |

322



| | |
|---|--|
| An introduction is included that in order contains: brief presentation of the subject; problem formulation; Idea to defend or hypothesis to prove; objective; Importance of the theme; relevance; methodology; structure of the document. | |
| The text is within the minimum and maximum extension: In the Review sections: 10,000/11,000 words of text (including references). In the research section: 8,000/9,500 words of text (including references). Reports, Studies: 8,000/9,500 words of text (including references). | |
| In case of research, the manuscript responds to the structure required in the guidelines (IMRDC). | |
| In the case of a report, study or review, the manuscript respects the minimum structure required by the guidelines. | |
| The review work includes three citations from three previous issues of Sophia Journal. | |
| The manuscript explicitly cites and cites the used sources and materials. | |
| The methodology described for the research work is clear and concise, allowing its replication, if necessary, by other experts. | |
| The conclusions follow on objective and problem raised are supported by the results obtained and presented in the form of a synthesis. | |
| If statistical analyzes have been used, they have been reviewed/contrasted by an expert. | |
| The citations in the text are strictly in accordance with the APA 6 regulations, reflected in the instructions. | |
| In case of use of final notes, it has been verified that these are descriptive and cannot be integrated into the general citation system. Footnotes are not acceptable. | |
| The final references have been rigorously reviewed and only those that have been cited in the text are included. | |
| The final references conform in style and format to the international standards used in Sophia. | |
| The number of references is according to the theoretical basis of the study carried out | |
| DOIs have been included in all References that carry it in the following format: doi: https://doi.org/XXXXXX | |
| All web addresses of references have been shortened with Google Url Shortner | |
| If figures and charts are included, they should provide additional and not repeated information in the text. Their graphic quality has been verified. | |
| The number of charts and / or figures does not exceed 6 | |
| If the case, financial support is declared. | |

| ASPECTOS FORMALES | |
|--|--|
| The rules have been strictly observed in the use of bold, capital letters, italics and underlines. | |
| Arial font, size 12 has been used. | |
| A single line spacing (1) has been used without tab. | |
| The epigraphs have been properly and hierarchically numbered in Arabic. | |
| Double spaces have been deleted. | |
| The typographic quotes « » (with alt + 174 and alt + 175 for opening and closing) have been used. | |
| Word dictionary for surface spelling has been used. | |
| The text has been supervised by external staff to ensure grammar and style. | |
| PRESENTATION | |
| Attached is a cover letter indicating originality, novelty of the work and section of the journal to which it is addressed, and if appropriate, informed consent of experimentation. | |
| The cover letter includes an attachment signed by all authors, being responsible for the authorship and giving the copyright to the publisher. | |
| The manuscript is uploaded to the platform in Word format and without authors identification | |
| ANNEXED DOCUMENTS | |
| Attached are the two attached documents: the cover letter and the manuscript. | |
| The accompanying documents and annexes have been published with Figshare. | |



Chequeo previo al envío del manuscrito

| 1. CHEQUEO DEL MANUSCRITO, PREVIO AL ENVÍO | |
|--|--|
| Para facilitar el proceso de evaluación del manuscrito y acelerar el informe de su posible publicación, se aconseja una autorevisión final del manuscrito, comprobando las siguientes cuestiones. | |
| DOCUMENTO PORTADA (Cover Letter) | |
| Se incluye título del manuscrito en español (máximo 85 caracteres). | |
| Se incluye título del manuscrito en inglés (máximo 85 caracteres). | |
| Las dos versiones del título del manuscrito son concisas, informativas y recogen el mayor número de términos identificativos posibles. | |
| Se incluye resumen en español, en un solo párrafo y sin epígrafes (mínimo/máximo: 210/220 palabras). | |
| Se incluye abstract en inglés, en un solo párrafo y sin epígrafes (mínimo/máximo 210-220 palabras). | |
| Los resúmenes en español e inglés responden ordenadamente a las siguientes cuestiones: justificación del tema, objetivos, metodología del estudio, resultados y conclusiones. | |
| Se incluyen 6 descriptores (en español e inglés) (sólo palabras simples, no sintagmas o combinaciones de palabras), con los términos más significativos, y a ser posibles estandarizados. | |
| Los textos en inglés (título, resumen y descriptores) han sido redactados o verificados por un traductor oficial o persona experta en este idioma (Se prohíbe el uso de traductores automáticos). | |
| Se incluyen todos los datos de identificación de los autores en el orden estipulado en la normativa: datos de identificación y correspondencia, filiaciones profesionales, último grado académico. | |
| Se ha normalizado el nombre y apellido de los autores. | |
| Cada autor está identificado con su código ORCID. | |
| El número máximo de autores es tres, a excepción de aquellos trabajos que justifiquen un número mayor limitado. | |
| El autor/es ha firmado debidamente la carta de presentación del artículo, en la que consta la cesión parcial de derechos y la declaración de conflicto de intereses. | |
| MANUSCRITO | |
| Se incluye título del manuscrito en español, inglés, resumen, abstract, descriptores y keywords | |



| | |
|---|--|
| Se incluye una introducción que en orden contiene: breve presentación del tema; formulación del problema; idea a defender o hipótesis a demostrar; objetivo; importancia del tema; actualidad; metodología; estructura del documento. | |
| El trabajo respeta la extensión mínima y máxima permitidas: Sección de Revisiones: 10.000/11.000 palabras de texto (incluidas las referencias). Investigaciones: 8.000/9.500 palabras de texto (incluidas referencias). Informes, Estudios: 8.000/9.500 palabras de texto (incluidas referencias). | |
| En caso de investigación, el manuscrito responde a la estructura exigida en las normas (IMRDC). | |
| Si se trata de un informe, estudio o revisión, el manuscrito respeta la estructura mínima exigida en las normas. | |
| En los trabajos de revisión se incluyen tres citas de tres números anteriores de la Revista Sophia. | |
| El manuscrito explicita y cita correctamente las fuentes y materiales empleados. | |
| La metodología descrita, para los trabajos de investigación, es clara y concisa, permitiendo su replicación, en caso necesario, por otros expertos. | |
| Las conclusiones responden al objetivo y al problema planteados, se apoyan en los resultados obtenidos y se presentan en forma de síntesis. | |
| Si se han utilizado análisis estadísticos, éstos han sido revisados/contrastados por algún experto. | |
| Las citas en el texto se ajustan estrictamente a la normativa APA 6, reflejadas en las instrucciones. | |
| En caso de uso de notas finales, se ha comprobado que éstas son descriptivas y no pueden integrarse en el sistema de citación general. No se aceptan notas a pie de página. | |
| Se han revisado rigurosamente las referencias finales y se incluyen solo aquéllas que han sido citadas en el texto. | |
| Las referencias finales se ajustan en estilo y formato a las normas internacionales utilizadas en Sophia. | |
| El número de referencias está de acuerdo a la fundamentación teórica del estudio realizado | |
| Se han incluido los DOI en todas las Referencias que lo lleven con el siguiente formato: doi: https://doi.org/XXXXXX | |

| | |
|---|--|
| Todas las direcciones web de las referencias han sido acortadas con Google Url Shortner | |
| Si se incluyen figuras y tablas éstas deben aportar información adicional y no repetida en el texto. Su calidad gráfica se ha verificado. | |
| El número de tablas y/o figuras no sobrepasa las 6. | |
| En su caso, se declaran los apoyos y/o soportes financieros. | |
| ASPECTOS FORMALES | |
| Se ha respetado rigurosamente la normativa en el uso de negritas, mayúsculas, cursivas y subrayados. | |
| Se ha utilizado letra Arial, tamaño 12. | |
| Se ha usado un interlineado sencillo (1) y sin tabulaciones. | |
| Se han numerado los epígrafes en arábigo de forma adecuada y jerárquicamente. | |
| Se han suprimido los dobles espacios. | |
| Se han empleado las comillas tipográficas « » (con alt+174 y alt+175 para apertura y cierre). | |
| Se ha utilizado el diccionario de Word para corrección ortográfica superficial. | |
| Se ha supervisado el trabajo por personal externo para garantizar la gramática y el estilo. | |
| PRESENTACIÓN | |
| Se adjunta carta de presentación indicando originalidad, novedad del trabajo y sección de la revista a la que se dirige, así como, en su caso, consentimiento informado de experimentación. | |
| La carta de presentación incluye un anexo firmado por todos los autor/es, responsabilizándose de la autoría y cediendo los derechos de autor al editor. | |
| El manuscrito se sube a la plataforma en formato Word y sin identificación de autores. | |
| DOCUMENTOS ANEXOS | |
| Se adjuntan los dos documentos anexos: la carta de presentación y el manuscrito. | |
| Los documentos complementarios y anexos han sido publicados con Figshare. | |

Cover Letter

Section (Mark)

Monographic Dossier ____

Miscellaneous ____

Title in Spanish: Arial 14 bold and centered.

Maximum 85 characters with spaces

Title in English: Arial 14 cursive. Maximum 805 characters with spaces

Name author 1 (standardized)

Professional category, Institution, Country

Institutional email

ORCID

Name author 2 (standardized)

Professional category, Institution, Country

Institutional email

ORCID

Name author 3 (standardized)

Professional category, Institution, Country

Institutional email

ORCID

328



Abstract (Spanish)

Minimum 210 and maximum 220 words. It must include 1) Justification of the topic; 2) Objectives; 3) Methodology; 4) Main results; 5) Main conclusions. It must be impersonally written “The present paper analyzes...”

Abstract (English)

Minimum 200 and maximum 210 words. It must include 1) Justification of the topic; 2) Objectives; 3) Methodology; 4) Main results; 5) Main conclusions. It must be impersonally written “The present paper analyzes...” Do not use automatic translation systems.

Keywords (Spanish)

6 standardized terms preferably of a single word and of the UNESCO Thesaurus separated by commas (,).

Keywords

The 6 terms referred to in English separated by commas (.). Do not use automatic translation systems.

Financial Support of Research (optional)

Entity:

Country:

City:

Subsidized project:

Code of the project:



Cover Letter

Sección (Marcar)

Dossier Monográfico ___

Miscelánea ___

Título en español: Arial 14 negrita y centrado.

Máximo 85 caracteres con espacios

Title in English: Arial 14 cursiva. Máximo 85 caracteres con espacios

Nombre autor 1 (estandarizado)

Categoría profesional, Institución, País

Correo electrónico institucional

ORCID

Nombre autor 2 (estandarizado)

Categoría profesional, Institución, País

Correo electrónico institucional

ORCID

Nombre autor 3 (estandarizado)

Categoría profesional, Institución, País

Correo electrónico institucional

ORCID

330



Resumen

Mínimo 210 y máximo 220 palabras. Debe incluir 1) Justificación del tema; 2) Objetivos; 3) Metodología; 4) Principales resultados; 5) Principales conclusiones. Ha de estar escrito de manera impersonal “El presente trabajo analiza...”

Abstract

Mínimo 200 y máximo 210 palabras cursiva. Debe incluir 1) Justificación del tema; 2) Objetivos; 3) Metodología; 4) Principales resultados; 5) Principales conclusiones. Ha de estar escrito de manera impersonal “El presente trabajo analiza...” No utilizar sistemas de traducción automáticos.

Descriptor

6 términos estandarizados preferiblemente de una sola palabra y del Thesaurus de la UNESCO separados por coma (,).

Keywords

Los 6 términos referidos en inglés separados por coma (,). No utilizar sistemas de traducción automáticos.

Apoyos y soporte financiero de la investigación (opcional)

Entidad:

País:

Ciudad:

Proyecto subvencionado:

Código de proyecto:

PRESENTATION Cover Letter

Mr. Editor of «Sophia»

Having read the regulations of the journal «Sophia» and analyzed its coverage, thematic area and approach, I consider that this journal is the ideal one for the dissemination of the work that I hereby attach, for which I beg you to be submitted for consideration for publication. The original has the following title “_____”, whose authorship corresponds to _____.

The authors (s) certify that this work has not been published, nor is it under consideration for publication in any other journal or editorial work.

The author (s) are responsible for their content and have contributed to the conception, design and completion of the work, analysis and interpretation of data, and to have participated in the writing of the text and its revisions, as well as in the approval of the version which is finally referred to as an attachment.

Changes to the content are accepted if they occur after the review process, and also changes in the style of the manuscript by the editorial process of «Sophia».

Transfer of Copyright and Declaration of Conflict of Interest

The Abya-Yala Publishing House (publishing house of the works of the *Universidad Politécnica Salesiana* of Ecuador) preserves the copyrights of the published works and will favor the reuse of the same. The works are published in the electronic edition of the journal under a Creative Commons Attribution / Noncommercial-No Derivative Works 3.0 Ecuador license: they can be copied, used, disseminated, transmitted and publicly displayed.

The undersigned author partially transfers the copyrights of this work to the *Abya-Yala Publishing House* (Ecuador) (RUC: 1790747123001), for the printed editions.

It is also declared that they have respected the ethical principles of research and are free from any conflict of interest.

In ____ (city), by the ____ days of the month of ____ of 201__

Signed. (By the author or in the case, all the authors)

332



Author first and last name
Identification document

Signature

Author first and last name
Identification document

Signature

Author first and last name
Identification document

Signature

Note: Once saved the completed and signed document, it must be registered through the OJS system in the section “Complementary Files”.



PRESENTACIÓN Cover Letter

Sr. Editor de «Sophia»

Leída la normativa de la revista «Sophia» y analizada su cobertura, área temática y enfoque, considero que esta revista es la idónea para la difusión del trabajo que le adjunto, por lo que le ruego sea sometida a la consideración para su publicación. El original lleva por título “_____”, cuya autoría corresponde a _____.

El/los autor/es certifica(n) que este trabajo no ha sido publicado, ni está en vías de consideración para su publicación en ninguna otra revista u obra editorial.

El/los autor/es se responsabilizan de su contenido y de haber contribuido a la concepción, diseño y realización del trabajo, análisis e interpretación de datos, y de haber participado en la redacción del texto y sus revisiones, así como en la aprobación de la versión que finalmente se remite en adjunto.

Se aceptan la introducción de cambios en el contenido si hubiere lugar tras la revisión, y de cambios en el estilo del manuscrito por parte de la redacción de «Sophia».

Cesión de derechos y declaración de conflicto de intereses

La Editorial Abya-Yala (editorial matriz de las obras de la Universidad Politécnica Salesiana de Ecuador) conserva los derechos patrimoniales (**copyright**) de las obras publicadas y favorecerá la reutilización de las mismas. Las obras se publican en la edición electrónica de la revista bajo una licencia Creative Commons Reconocimiento / No Comercial-Sin Obra Derivada 3.0 Ecuador: se pueden copiar, usar, difundir, transmitir y exponer públicamente.

El/los autor/es abajo firmante/s transfiere(n) parcialmente los derechos de propiedad (**copyright**) del presente trabajo a la editorial Abya-Yala (Ecuador) (RUC: 1790747123001), para las ediciones impresas.

Se declara además haber respetado los principios éticos de investigación y estar libre de cualquier conflicto de intereses.

En ____ (ciudad), a los ____ días del mes de ____ de 201__

Firmado. (Por el autor o en su caso, todos los autores)

334



Nombre y apellido del autor
Documento de Identidad

Firma

Nombre y apellido del autor
Documento de Identidad

Firma

Nombre y apellido del autor
Documento de Identidad

Firma

Nota: Una vez haya guardado el documento cumplimentado y firmado, deberá consignarlo a través del sistema OJS en la sección “Ficheros Complementarios”.

Announcements 2021-2025 / Convocatorias 2021-2025

ANNOUNCEMENTS 2020 - 2025

338



Sophia 31

The problem of truth in the sciences and in the pedagogical practice

Descriptors: Conceptions of truth in the history of philosophy and its implications in educational processes; Philosophical, psychological and pedagogical foundations of truth; Truth, fact and science; Truth in the social sciences; Truth in the natural sciences; Truth in the exact sciences; Truth in the human sciences; Truth in the sciences of information and communication; New trends, approaches and perspectives on truth; The truth in education.

Generation of articles from representatives of philosophy prominent in the central theme and its implications in psychology, pedagogy or other disciplines.

Deadline for receipt of manuscripts: December 15, 2020

Publication date of this issue: July 15, 2021

Sophia 32

Philosophical reflection on the quality on education

Descriptors: Analysis of the concept of “quality” in education; Philosophical, psychological and pedagogical fundamentals of quality in education; Quality and comprehensive and inclusive educational models; Philosophical basis of complex competences in education; Quality and skills in education; Approach of the capacities and educational quality.

Generation of articles from representatives of philosophy prominent in the central theme and its implications in psychology, pedagogy or other disciplines.

Deadline for receipt of manuscripts: July 15, 2021

Publication date of this issue: January 15, 2022

Sophia 33

Philosophy of the mind and education

Descriptors: Effects and causes of mental states; The nature of mental states and their importance in education; Monistic responses to the mind-body problem; Theories about the philosophy of mind; The philosophy of mind at the present; Philosophy of mind and its relationship with other sciences; Foundation of mental activity and behavior; Relationship of the philosophy of mind with psychology; Philosophy of mind and education; The power of the mind

in education; Pedagogical strategies for the development of the mind; Concept of disability or mental dysfunction: implications and proposals in education.

Generation of articles from representatives of philosophy prominent in the central theme and its implications in psychology, pedagogy or other disciplines.

Deadline for receipt of manuscripts: December 15, 2021

Publication date of this issue: July 15, 2022

Sophia 34

Philosophy, anthropology and education

Descriptors: Philosophical foundations of ethnography; Philosophical basis of cultural theories; Contributions of cultural and social anthropology to education; Philosophical foundation of dialogue between cultures; Interculturality, multiculturalism and education; The task of philosophy in intercultural dialogue; The thought of diversity and its educational importance; Global citizenship, cosmopolitanism and education; Ecosophy, culture and transdisciplinarity.

Generation of articles from representatives of philosophy prominent in the central theme and its implications in psychology, pedagogy or other disciplines.

Deadline for receipt of manuscripts: July 15, 2022

Publication date of this issue: January 15, 2023

Sophia 35

Philosophical currents and their impact on pedagogical orientations

Descriptors: Philosophy as the fundamental basis of pedagogical orientations. Idealism as the basis for the generation of pedagogical orientations; Rationalism as the foundation of pedagogical orientations; Empiricism as the basis of educational realism; Illustration as support of educational enlightenment; Other philosophical currents as the basis of theories or pedagogical orientations throughout history; Philosophical foundations of the new pedagogies; Philosophy of technology in the educational field; Philosophical basis of constructivism and other pedagogical theories; Ethical thinking and pedagogy; Philosophical critique of current educational models; Philosophy of dialogue and education; Hermeneutics and their contributions to the current pedagogy.

Generation of articles from representatives of philosophy prominent in the central theme and its implications in psychology, pedagogy or other disciplines.

Deadline for receipt of manuscripts: December 15, 2022

Publication date of this issue: July 15, 2023



Sophia 36

Philosophical approach to learning as a cognitive process

Descriptors: Philosophical basis of learning; Learning as a cognitive process; Learning as a product and as a process of knowledge; Philosophical foundation of learning theories; Psychological and pedagogical foundations of learning; Philosophical foundations of multiple intelligences and education; Emotional intelligence and its impact on educational processes; Science and philosophy of human emotions: educational repercussions; Sense and meaning of cognitive processes; Memory, thought and language as the main cognitive processes of the human being; Cognitive processes and meaningful learning.

Generation of articles from representatives of philosophy prominent in the central theme and its implications in psychology, pedagogy or other disciplines.

Deadline for receipt of manuscripts: July 15, 2023

Publication date of this issue: January 15, 2024

340



Sophia 37

Physics, metaphysics and education

Descriptors: Philosophical reflections on the interpretation of physics; Metaphysics in the twenty-first century; History of physics and its educational approach; Relations between conceptions of physics in the history of philosophy; Problem of sense and truth in the philosophy of physics; Nature and implications of thermodynamics; Epistemology and guiding principles of current physical theories; Philosophical foundations of quantum mechanics; Philosophical implications of quantum theory; Philosophical implications of Newtonian physics; Philosophical implications of the theory of relativity; Pedagogical strategies in the teaching-learning of physics; Educational proposals to boost the understanding of physics; Philosophical implications of current theoretical physics.

Generation of articles from representatives of philosophy prominent in the central theme and its implications in psychology, pedagogy or other disciplines.

Deadline for receipt of manuscripts: December 15, 2023

Publication date of this issue: July 15, 2024

Sophia 38

The inductive method in the humanities and pedagogy

Descriptors: Scientific activity and reflection on the method of knowledge; The inductive method in the social sciences; Induction, experience and action as the foundation of pedagogy; The methods of knowledge and learning in the humanities; Value and limits of the experimental method in the human sciences; Value and limits of pedagogical positivism; Reflections on the scientific method and implications in the learning processes; Applications of the inductive method in education; Usefulness of the inductive method for psychology; Pedagogical proposals of an inductive character in the human sciences.

Generation of articles from representatives of philosophy prominent in the central theme and its implications in psychology, pedagogy or other disciplines.

Deadline for receipt of manuscripts: July 15, 2024

Publication date of this issue: January 15, 2025



CONVOCATORIAS 2020 - 2025

Sophia 31

El problema de la verdad en las ciencias y en la práctica pedagógica

Descriptores: Concepciones de verdad en la historia de la filosofía y sus implicaciones en los procesos educativos; fundamentos filosóficos, psicológicos y pedagógicos de la verdad; verdad, hecho y ciencia; la verdad en las ciencias sociales; la verdad en las ciencias naturales; la verdad en las ciencias exactas; la verdad en las ciencias humanas; la verdad en las ciencias de la información y de la comunicación; nuevas tendencias, enfoques y perspectivas sobre la verdad; la verdad en la educación.

Generación de artículos desde representantes de la filosofía destacados en el tema central y sus implicaciones en la psicología, en la pedagogía o en otras disciplinas.

Fecha límite para la recepción de manuscritos: 15 de diciembre de 2020

Fecha de publicación de esta edición: 15 de julio de 2021

Sophia 32

Reflexión filosófica sobre la calidad en la educación

Descriptores: Análisis del concepto de “calidad” en la educación; fundamentos filosóficos, psicológicos y pedagógicos de la calidad en educación; calidad y modelos educativos integrales e inclusivos; bases filosóficas de las competencias complejas en la educación; la calidad y las competencias en la educación; enfoque de las capacidades y calidad educativa.

Generación de artículos desde representantes de la filosofía destacados en el tema central y sus implicaciones en la psicología, en la pedagogía o en otras disciplinas.

Fecha límite para la recepción de manuscritos: 15 de julio de 2021

Fecha de publicación de esta edición: 15 de enero de 2022

Sophia 33

Filosofía de la mente y educación

Descriptores: Efectos y causas de los estados mentales; la naturaleza de los estados mentales y su importancia en educación; respuestas monistas al problema mente-cuerpo; teorías sobre la filosofía de la mente; la filosofía de la mente en la actualidad; filosofía de la mente y la relación con otras ciencias; fundamento de la actividad mental y de la conducta; relación filosofía de la mente con la psi-

342



cología; filosofía de la mente y educación; el poder de la mente en la educación; estrategias pedagógicas para el desarrollo de la mente; concepto de discapacidad o disfunción mental: implicaciones y propuestas en educación.

Generación de artículos desde representantes de la filosofía destacados en el tema central y sus implicaciones en la psicología, en la pedagogía o en otras disciplinas.

Fecha límite para la recepción de manuscritos: 15 de diciembre de 2021

Fecha de publicación de esta edición: 15 de julio de 2022

Sophia 34

Filosofía, antropología y educación

Descriptores: Fundamentos filosóficos de la etnografía; bases filosóficas de las teorías culturales; aportaciones de la antropología cultural y social a la educación; fundamentación filosófica del diálogo entre culturas; interculturalidad, multiculturalidad y educación; el quehacer de la filosofía en el diálogo intercultural; el pensamiento de la diversidad y su importancia educativa; ciudadanía global, cosmopolitismo y educación; ecosofía, cultura y transdisciplinariedad.

Generación de artículos desde representantes de la filosofía destacados en el tema central y sus implicaciones en la psicología, en la pedagogía o en otras disciplinas.

Fecha límite para la recepción de manuscritos: 15 de julio de 2022

Fecha de publicación de esta edición: 15 de enero de 2023

Sophia 35

Corrientes filosóficas y su incidencia en las orientaciones pedagógicas

Descriptores: La filosofía como base fundamental de las orientaciones pedagógicas. El idealismo como base para la generación de orientaciones pedagógicas; el racionalismo como fundamento de orientaciones pedagógicas; el empirismo como sustento del realismo educativo; la ilustración como apoyo del iluminismo educativo; otras corrientes filosóficas como base de teorías u orientaciones pedagógicas a través de la historia; fundamentos filosóficos de las nuevas pedagogías; filosofía de la tecnología en el ámbito educativo; bases filosóficas del constructivismo y de otras teorías pedagógicas; pensamiento ético y pedagogía; crítica filosófica a los modelos educativos actuales; filosofía del diálogo y educación; la hermenéutica y sus aportaciones a la pedagogía actual.

Generación de artículos desde representantes de la filosofía destacados en el tema central y sus implicaciones en la psicología, en la pedagogía o en otras disciplinas.

Fecha límite para la recepción de manuscritos: 15 de diciembre de 2022

Fecha de publicación de esta edición: 15 de julio de 2023



Sophia 36

Enfoque filosófico del aprendizaje como proceso cognitivo

Descriptores: Bases filosóficas del aprendizaje; el aprendizaje como proceso cognitivo; el aprendizaje como producto y como proceso del conocimiento; fundamento filosófico de las teorías del aprendizaje; fundamentos psicológicos y pedagógicos del aprendizaje; fundamentos filosóficos de las inteligencias múltiples y educación; la inteligencia emocional y su incidencia en los procesos educativos; ciencia y filosofía de las emociones humanas: repercusiones educativas; sentido y significado de los procesos cognitivos; memoria, pensamiento y lenguaje como principales procesos cognitivos del ser humano; procesos cognitivos y aprendizajes significativos.

Generación de artículos desde representantes de la filosofía destacados en el tema central y sus implicaciones en la psicología, en la pedagogía o en otras disciplinas.

Fecha límite para la recepción de manuscritos: 15 de julio de 2023

Fecha de publicación de esta edición: 15 de enero de 2024

344



Sophia 37

Física, metafísica y educación

Descriptores: Reflexiones filosóficas acerca de la interpretación de la física; la metafísica en el siglo XXI; historia de la física y su planteamiento educativo; relaciones entre concepciones de la física en la historia de la filosofía; problema del sentido y de la verdad en la filosofía de la física; naturaleza e implicaciones de la termodinámica; epistemología y principios rectores de las teorías físicas actuales; fundamentos filosóficos de la mecánica cuántica; implicaciones filosóficas de la teoría cuántica; implicaciones filosóficas de la física newtoniana; implicaciones filosóficas de la teoría de la relatividad; estrategias pedagógicas en la enseñanza-aprendizaje de la física; propuestas educativas para dinamizar la comprensión de la física; implicaciones filosóficas de la física teórica actual.

Generación de artículos desde representantes de la filosofía destacados en el tema central y sus implicaciones en la psicología, en la pedagogía o en otras disciplinas.

Fecha límite para la recepción de manuscritos: 15 de diciembre de 2023

Fecha de publicación de esta edición: 15 de julio de 2024

Sophia 38

El método inductivo en las humanidades y en la pedagogía

Descriptores: La actividad científica y reflexión sobre el método de conocimiento; el método inductivo en las ciencias sociales; inducción, experiencia y acción como fundamento de la pedagogía; los métodos de conocimiento y aprendizaje en las humanidades; valor y límites del método experimental en las ciencias humanas; valor y límites del positivismo pedagógico; reflexiones sobre el método científico e implicaciones en los procesos de aprendizaje; aplicaciones del método inductivo en la educación; utilidad del método inductivo para la psicología; propuestas pedagógicas de carácter inductivo en las ciencias humanas.

Generación de artículos desde representantes de la filosofía destacados en el tema central y sus implicaciones en la psicología, en la pedagogía o en otras disciplinas.

Fecha límite para la recepción de manuscritos: 15 de julio de 2024

Fecha de publicación de esta edición: 15 de enero de 2025

