

# Argyris Arnellos

## PERSONAL DATA

Date of Birth: 3<sup>rd</sup> of August 1974, Athens, Greece

Nationality: Greek

Professional address: Department of Product and Systems Design Engineering, University of the Aegean, Konstantinoupoleos 2, Ermoupolis, Syros, P.O. 84100

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Google scholar ID: [I2MMU1wAAAAI](https://scholar.google.com/citations?user=I2MMU1wAAAAI)

## ACADEMIC EMPLOYMENT

### *Current academic position*

#### **(July 2019) Associate Professor (tenure)**

Department of Product and Systems Design Engineering, School of Engineering, University of the Aegean, Syros, Greece

- Director of the Complex Systems & Service Design Lab
- Vice-Head of the Department

### *Previous Research Positions*

#### **(January 2017 - 2020) Ramon y Cajal Research Fellow (tenure track)**

IAS-Research Centre for Life, Mind, and Society, Department of Logic and Philosophy of Science, University of the Basque Country, Donostia/San Sebastián, Spain

Project Title: An Organizational View of Organisms: Understanding and Explaining Organismal Identity, Agency, and Cognition

#### **(November 2013 – September 2016) KLI Research Fellow**

Konrad Lorenz Institute for Evolution and Cognition Research (KLI), Klosterneuburg, Austria

Project Title: Organizational Requirements and Regulation for Organismal Development and Maintenance.

#### **(April 2011 – March 2013) Marie Curie IEF Fellow**

IAS-Research Centre for Life, Mind, and Society - Department of Logic and Philosophy of Science, University of the Basque Country, (UPV/EHU), Donostia/San Sebastián, Spain.

Project Contract: PIEF-273635

Project Title: From Minimally Autonomous Biological Individuals to Collectively Associated Autonomous Adaptive Agents.

### *Teaching*

**(October 2019 – today)** Department of Product and Systems Design Engineering (DPSD), University of the Aegean, Syros, Greece

#### **Undergraduate:**

- Design Theory & Methodology

- Systems Theory
- Complex Organizations Theory
- Philosophy, Theory and Epistemology of Design

### ***Previous Teaching Positions***

**(February 2018 – August 2018)** Department of Logic and Philosophy of Science, University of the Basque Country, UPV/EHU, Spain.

#### **Postgraduate:**

- Philosophy of Biology & Cognition

### **(March 2008 – Feb 2011) Adjunct Lecturer**

Department of Product and Systems Design Engineering (DPSD), University of the Aegean, Syros, Greece, with 6-months periods of appointment (repeatedly renewed since 2002)

i. Before 2008 courses were taught under the condition of teaching assistantship: ii. Sem1 is from 1<sup>st</sup> of September to end of February, Sem2 is from 1<sup>st</sup> of March to 31<sup>st</sup> of August)

#### **Postgraduate:**

- Theory and Methodology of Design [2003 to 2011 in Sem1 - 3 hours / week]
- Systems Theory/Systems Thinking [2007 to 2011 in Sem1 - 3 hours / week]
- Complex systems theory/Autonomous Systems/Biosemiotics [2007 to 2011 in Sem2 - 3 hours / week]

#### **Undergraduate:**

- Introduction in Systems Theory [2002 to 2011 in Sem2 - 4 hours / week]
- Complex Design and Interactive Processes [2008 to 2011 in Sem1 – 3 hours / week]
- Application of Systemic/holistic theories in the design of interactive systems [2010 in Sem2, 3 hours / week]
- Decision Support Systems [2008 to 2011 in Sem1 – 4 hours / week]
- Informatics I [2002 to 2008 in Sem1 – 4 hours / week]
- Design Theory & Methodology II [2002 in Sem1 – 4 hours / week]

## **EDUCATION & DEGREES**

### ***Postgraduate Education***

#### **2001 - 2007**

- PhD in Systems Design Engineering (Autonomous and Interactive Systems Design / Complex Systems) - Department of Product and Systems Design Engineering - DPSD, University of the Aegean, Greece.
  - *PhD degree awarded in March 2008, 'άριστα' (cum laude), the highest mark.*
  - *Dissertation Title:* Investigating the Role of the Emergence of Meaning for the Design Processes in Living Systems and in Artificial Environments.
  - *Supervisor:* Professor John Darzentas (Head of the Department of Product and Systems Design Engineering, University of the Aegean, Greece).

#### **1999 - 2000**

- MSc in Data Communication Systems, Brunel University, Department of Electronics & Computer Engineering, UK (December 2000).

- *Master Dissertation:* Video Traffic Modelling and Performance Issues Related to ATM Networks Carrying Multiplexed Video Streams.
- *Supervisors:* Prof John Cosmas (Brunel University), Prof Ioannis Stavrakakis (University of Athens – Department of Informatics).

### **Undergraduate Education**

#### **1992 – 1998**

- BSc degree in Electronic Engineering, Department of Electronics, Technological Educational University of Athens, Greece (June 1998).
  - *Degree Dissertation:* A modification of the HTTP1.0 protocol with application in web services.
  - *Supervisor:* Prof Evangelos Valamontes (Technological Educational University of Athens).

### **SPECIALIZED TRAINING**

1. **[2015]:** *4<sup>th</sup> International summer school in Evolutionary Developmental Biology Conceptual and Methodological Foundations: The Evolution of Developmental Processes*, Venezia, Istituto Veneto di Scienze, Lettere ed Arti, Venice, Italy, 28/09 – 01/10.
2. **[2014]:** *3<sup>rd</sup> European Advanced Seminar in the Philosophy of the Life Sciences*, The KLI Institute, Klosterneuburg, Austria, 1-5 September.
3. **[2011]:** *1<sup>st</sup> Summer School on The Future of the Embodied Mind*, University of the Basque Country, Donostia/San Sebastián, Spain, 5-9 September.
4. **[2011]:** *6<sup>th</sup> Interactivist Summer Institute*, University of the Aegean, Syros (Greece) July 29 – August 1<sup>st</sup>.
5. **[2010]:** *1<sup>st</sup> Summer School on Life and Cognition*, University of the Basque Country, Donostia/San Sebastián (Spain), June 22 - 26.
6. **[2007]:** *4<sup>th</sup> Interactivism Summer Institute*, University of Paris, Paris (France) May 26-29.

### **RESEARCH GRANTS**

1. **01/2017–12/2021:** *Ramon Y Cajal Research Fellowship*, Ministerio de Economía y Competitividad, Madrid, Spain [€308600,00].
2. **11/2013–10/2016:** *KLI Research Fellowship*, Konrad Lorenz Institute for Evolution and Cognition Research, Austria. [€118800,00]
3. **04/2011–03/2013:** *Marie Curie IEF Fellowship*, European Research Council (ERC), EU. [€160865,60]
4. **09/1995–03/1996:** *BSc thesis writing up fellowship*, Institute of Informatics and Telecommunication – Ariad-net, National Centre for Scientific Research – DEMOKRITOS, Athens, Greece.

## AWARDS & DISTINCTIONS

1. **[2013]:** *Top 5 of the best journal papers of the year:* Journal of *Design Studies* - Design Studies Award 2013 for the paper Xenakis I, Arnellos A (2013) The relation between interaction aesthetics and affordances. *Design Studies*, 34(1): 57-73, doi:10.1016/j.destud.2012.05.004.
2. **[2004]:** *Best paper award* in the Systemics and Information session of *the 8<sup>th</sup> World Multi-Conference in Systemics, Cybernetics and Informatics*, Orlando, Florida, 2004 - Arnellos A, Spyrou T, Darzentas J (2004). Dynamic Interactions in Artificial Environments: Causal and Non-Causal Aspects for the Emergence of Meaning.

## VISITING APPOINTMENTS / FELLOWSHIPS

1. **[July 2012]:** Department of General Biology, University of Bahia, Salvador de Bahia, Brazil. (*one month*)
2. **[November 2012]:** All Souls College, Oxford, UK. (*two weeks*)
3. **[February 2013]:** Konrad Lorenz Institute for Evolution and Cognition Research, Altenberg, Austria. (*one month*)
4. **[May 2015]:** Department of Theoretical Philosophy, University of Groningen, Groningen, Holland. (*one month*)
5. **[November 2015]:** Department of Philosophy, Leibniz Universität, Hannover, Germany (*one week*)
6. **[October 2017]** Department of History and Philosophy of Science, University of Sydney, Australia. (*one month*)
7. **[January 2018]** Department of Systems Biology and Bioinformatics, University of Rostock, Germany. (*one week*)
8. **[October 2018]** Department of Systems Biology and Bioinformatics, University of Rostock, Germany. (*one week*)

## PARTICIPATION IN COMPETITIVELY FUNDED RESEARCH PROJECTS (indicative list)

1. **2015-2019** *as a researcher:* Interidentity: Identity in interaction – Ontological and normative aspects of biological, cognitive and social individuality" MINECO (FFI2014-52173-P).
2. **2009-2013** *as external evaluator:* INOMEP/PRONEX - Integrating Levels of Organization in Predictive Ecological Models: Contributions from Epistemology, Modeling and Empirical Research, Federal University of Bahia, Ministry of Education and Research, Brazil.
3. **2005-2007** *as a researcher:* e-University: Design and development of prototype infrastructures and advances services for the manifestation of e-University. - Research, design implementation and operation of U-PORTAL & WAI, K.T.II. AE. [total budget 0.1M euros]
4. **2004-2007** *as a researcher:* Ben2Web: Benchmarking to Web Sites, IST-2-004275, European Research Council (ERC), EU

5. **2001-2004** *as researcher and coordinator*: “IRIS: Incorporating Requirements of People with Special Needs or Impairments to Internet-based Systems and Services”, IST, IST-1999-20758, European Research Council (ERC), EU.
6. **2001-2004** *as a researcher*: EQUAL: European Network to Support Employment and Adaptability in Shipbuilding Industry, ERC, EU.
7. **2001-2003** *as a researcher*: “GUARDIANS: Gateway for User Access to Remote Distributed Information and Network Services”, IST, IST-1999-20758, European Research Council (ERC), EU.

## **PARTICIPATION IN NON-COMPETITIVE RESEARCH PROJECTS FUNDED BY PUBLIC OR PRIVATE ENTITIES (indicative list)**

1. **2007-2009** *as managing coordinator*: “E-FOLKART: Electronic services for the support of folk art, ELKEDE S.A - Centre for Technology and Design
2. **2006-2008**: *as managing coordinator*: F-JEWEL: Functional Jewellery That Adds Aesthetics And Durability To Quality-Of-Life Enhancing Medical Appliances, ELKEDE S.A - Centre for Technology and Design
3. **2005-2006**: *as managing coordinator*: RIGHTFIT - Making Garments That Fit Consumers' Needs And Wants. ELKEDE S.A - Centre for Technology and Design & Eureka EU
4. **1996-2000**: *as a researcher and specialized software developer*: AEGEAN-NET: The design and development of the Aegean wide area data network

## **THESIS SUPERVISION**

### ***Supervision of PhD thesis in development:***

- **(June 2020 - )** Supervision of the PhD thesis entitled “An Organizational Framework for the Complex Functionality of Human Organism with a Focus on its Self-Regulatory Capacities”, of Sotirios Papachilleos, Complex Systems & Service Design Lab, Department of Product and Systems Design Engineering, University of the Aegean, Syros, Greece
- **(November 2020 - )** Supervision of the PhD thesis entitled “A Framework for Normative Design Ethics based on an Organizational Account of Moral Agency”, of Adrianos Pappas, Complex Systems & Service Design Lab, Department of Product and Systems Design Engineering, University of the Aegean, Syros, Greece
- **(November 2020 - )** Supervision of the PhD thesis entitled “Exploring the Role of Embodiment in Design”, of Kyproula Maina Bartzoka, Complex Systems & Service Design Lab, Department of Product and Systems Design Engineering, University of the Aegean, Syros, Greece

### ***Supervision of completed PhD thesis:***

1. **March 2020**: Supervision (together with Prof. Alvaro Moreno) of the thesis entitled “*Biological altruism, eusociality and the superorganism: A critical analysis of the role of biological altruism within eusociality research*”, defended successfully (cum laude) by Marc Canciani.

### ***BSc and MSc Thesis***

- More than 15 theses completed, and currently supervising 4 BSc thesis.

## PUBLICATIONS

### **ARTICLES UNDER REVIEW**

1. Arnellos A, Moreno A. “Visual perception and the emergence of minimal representation”. Submitted to *Frontiers in Psychology*.
2. Xenakis I, Arnellos A. “Ontological and conceptual challenges in the study of aesthetic experience”. Submitted to *Philosophical Psychology*.
3. Xenakis I, Arnellos A. “Aesthetic development enables creativity and functional ideation”. Submitted to *New Ideas in Psychology*.
4. Arnellos A, Moreno A. “Are cognitive functions biological functions? The case of minimal visual perception”. Submitted to *Biology & Philosophy*.

### **ARTICLES IN PEER-REVIEWED INTERNATIONAL JOURNALS**

1. Arnellos A and Keijzer F (2019) Bodily complexity: integrated multicellular organizations for contraction-based motility. *Front. Physiol.* 10:1268. doi: 10.3389/fphys.2019.01268
2. Canciani M, Arnellos A and Moreno A (2019) Revising the Superorganism: An Organizational Approach to Complex Eusociality. *Front. Psychol.* 10:2653. doi: 10.3389/fpsyg.2019.02653
3. Keijzer F, Arnellos A (2017) The animal sensorimotor organization: A challenge for the environmental complexity thesis. *Biology and Philosophy* 32(3): 421–441.
4. Xenakis I, Arnellos A. (2017) Aesthetics as evaluative forms of agency to perceive and design reality: a reply to aesthetic realism *New Ideas In Psychology* (47):77-79 (doi:10.1016/j.newideapsych.2017.06.002).
5. Arnellos A, Moreno A (2015) Multicellular agency: and organizational view. *Biology and Philosophy* 30(3): 333-357.
6. Arnellos A, Moreno A, Ruiz-Mirazo K (2014) Organizational requirements for multicellular autonomy: insights from a comparative case study. *Biology and Philosophy* 29(6): 851-884.
7. Xenakis I, Arnellos A (2014) Aesthetic perception and its minimal content: a naturalistic perspective. *Front. Psychol.* 5:1038. doi: 10.3389/fpsyg.2014.01038.
8. Arnellos A, Ruiz-Mirazo K, Moreno A (2013) Autonomy as a property that characterises organisms among other multicellular systems. *Contrastes* 18:357-372.
9. Xenakis I, and Arnellos A (2013) The relation between interaction aesthetics and affordances. *Design Studies* 34(1): 57-73, doi:10.1016/j.destud.2012.05.004.
10. Arnellos A, Bruni E L, El-Hani C, Collier J (2012). Anticipatory Functions, Digital-Analog forms and Biosemiotics: Integrating the tools to model Information and Normativity in Autonomous Biological Agents. *Biosemiotics* 5(3): 331-367.
11. Bich L, Arnellos A (2012) Autopoiesis, Autonomy and Organizational Biology: Critical Remarks on “Life After Ashby”. *Cybernetics and Human Knowing* 19(4), 75-103.
12. Arnellos A, Moreno A (2012) How Functional Differentiation Originated in Prebiotic Evolution. *Ludus Vitalis*, XX, num 37, 1-23.

13. Xenakis I, Arnellos A, Darzentas J (2012) The Functional Role of Emotions in Aesthetic Judgment. *New Ideas in Psychology* 30(2):212-226 [dx.doi.org/10.1016/j.newideapsych.2011.09.003](https://doi.org/10.1016/j.newideapsych.2011.09.003).
14. Xenakis I, Arnellos A, Spyrou T, Darzentas J (2012) Modelling the Aesthetic Judgement: an Interactive-semiotic Perspective. *Cybernetics and Human Knowing*. 19(3): 25–51.
15. Arnellos A, Lekkas D, Zissis D, Spyrou T, Darzentas J (2011) Fair Digital Signing: The Structural Reliability of Signed Documents. *Computers & Security*. (30): 580-596, [dx.doi.org/10.1016/j.cose.2011.09.001](https://doi.org/10.1016/j.cose.2011.09.001)
16. Arnellos A, Spyrou T, Darzentas J (2010). Towards the Naturalization of Agency based on an Interactivist Account of Autonomy. *New Ideas in Psychology* 28(3): 296-311, [doi:10.1016/j.newideapsych.2009.09.005](https://doi.org/10.1016/j.newideapsych.2009.09.005).
17. Arnellos A, Spyrou T, Darzentas J (2008) Emergence and Downward Causation in Contemporary Artificial Agents: Implications for their Autonomy and Some Design Guidelines. *Cybernetics and Human Knowing* 15(3-4):15-41.
18. Arnellos A, Spyrou T, Darzentas J (2008) Meaning needs functional emergence: Shedding novel light into difficult problems. *Cybernetics and Human Knowing* 15(3-4): 50-56.
19. Neuman Y, Arnellos A, Nave O (2008) Sign-Mediated Concept Formation. *American Journal of Semiotics* 24(1-3): 107-133.
20. Arnellos A, Spyrou T, Darzentas J (2007) Cybernetic Embodiment and the Role of Autonomy in the Design Process *Kybernetes* 36(9-10):1207–1224, [doi:10.1108/03684920710827247](https://doi.org/10.1108/03684920710827247)
21. Arnellos A, Spyrou T, Darzentas J (2007) Exploring Creativity in the Design Process: A Systems-semiotic Perspective. *Cybernetics and Human Knowing* 14(1):37-64
22. El-Hani C N, Arnellos A, Queiroz J (2007) Modelling a Semiotic Process in the Immune System: Signal Transduction in B-Cell Activation. *Triple-C: Cognition, Communication, Cooperation* 5(2): 24-36.
23. Arnellos A, Spyrou T, Darzentas J (2006) Dynamic Interactions in Artificial Environments: Causal and Non-Causal Aspects for the Emergence of Meaning, *Journal of Systemics, Cybernetics and Informatics* 3(1): 82-89. [Best paper in the Systemics and Information session of the 8th World Multi-Conference in Systemics, Cybernetics and Informatics, Orlando, Florida, 2004].
24. Arnellos A, Vosinakis S, Spyrou T, Darzentas J (2006) The Emergence of Autonomous Representations in Artificial Agents. *Journal of Computers, (JCP)* 1(6): 29-36.
25. Arnellos A, Lekkas D, Spyrou T, Darzentas J (2005) A Framework for the Analysis of the Reliability of Digital Signatures for Secure E-commerce. *The electronic Journal for e-commerce Tools & Applications (eJETA)* 1(4), 2005.
26. Velasco C A, Mohamad Y, Gilman A S, Viorres N, Vlachogiannis E, Arnellos A, Darzentas J S (2004) The Need for User Information and its Relationship to Device Profiles. *Universal Access in the Information Society (UAIS)* (3):88-95, [doi: 10.1007/s10209-003-0075-5](https://doi.org/10.1007/s10209-003-0075-5).

### **ARTICLES IN BOOKS**

1. Arnellos A, (forthcoming). Collaboration and the Evolution of Biological Complexity: an Organizational Perspective. In: Mossio M, (Ed) *Organisation in Biology: Foundational enquiries into a scientific blind spot*. Cambridge University Press, Cambridge MA

2. Arnellos A, El-Hani C (2018) Emergence, Downward Causation, and No Brute Facts in Biological Systems In: E. Vintiadis, C Mekios, (eds) *Brute facts anthology*. Oxford University Press (OUP). pp. 248-270
3. Arnellos A (2018) From organizations of processes to organisms and other biological individuals In: D. Nicholson and J Dupré (eds). *Everything Flows: Towards a Processual Philosophy of Biology*. Oxford University Press (OUP), pp. 199-221.
4. Arnellos A, Moreno A (2016) Integrating constitution and interaction in the transition from unicellular to multicellular organisms. In: Niklas K, Newman S (eds) *Multicellularity: origins and evolution*. MIT Press, Cambridge MA, pp 249-275
5. Xenakis I, Arnellos A (2015) Aesthetics as an Emotional Activity That Facilitates Sense-Making: Towards an Enactive Approach to Aesthetic Experience. In A. Scarinzi (Ed.), *Aesthetics and the Embodied Mind: Beyond Art Theory and the Cartesian Mind-Body Dichotomy, Contributions to Phenomenology*, (pp. 245–259), Springer, Netherlands.
6. Zissis D, Dimitris L, Arnellos A (2012) A systems theory approach to electronic voting complexity. In A Manoharan, M Holzer (Eds.) *E-Governance and Civic Engagement: Factors and Determinants of E-Democracy*. pp. 128-151, doi:10.4018/978-1-4666-0116-1.ch007
7. Arnellos A, Spyrou T, Darzentas J, (2010) Naturalising the Design Process: Autonomy and Interaction as the Core Features. In *Beyond Description: Normativity in Naturalised Philosophy* (Eds.) M Milkowski, K Talmont-Kaminski, Texts in Philosophy, Vol. 13, pp. 265-288, College Publications.
8. Arnellos A, Vosinakis S, Anastasakis G, Darzentas J (2008) Autonomy in Virtual Agents: Integrating Perception and Action on Grounded Representations. In J Darzentas, G A Vouros, S Vosinakis, A Arnellos (Eds.) *Artificial Intelligence: Theories, Models and Applications*, LNAI 5138, pp. 51-63.
9. Brands M, Arnellos A, Spyrou T, Darzentas J (2007) A Biosemiotic Analysis of Serotonin's Complex Functionality. In G. Witzany (ed.) *Biosemiotics in Transdisciplinary Contexts* pp. 125-132, Umweb, Helsinki.
10. Arnellos A, Vosinakis S, Spyrou T, Darzentas J (2006) Towards Representational Autonomy of Agents in Artificial Environments. *Lecture Notes in Artificial Intelligence (LNAI)*, vol. 3955, pp.474-477.
11. Arnellos A, Vosinakis S, (2005) Emergence of Representational Structures in Virtual Agents. *Lecture Notes in Artificial Intelligence (LNAI)*, 504, Springer-Verlag.

### **SPECIAL ISSUES**

1. Arnellos A, Xenakis I (2017). Aesthetic perception: A naturalistic turn. *New Ideas in Psychology* (47):77-79 (doi:10.1016/j.newideapsych.2017.06.002)

### **REVIEW ESSAYS**

1. Arnellos A (2016) Biological Autonomy: Can a Universal and Gradable Conception be Operationalised? *Biological Theory* 11(1): 11-24, doi: 10.1007/s13752-015-0232-0

### **EDITED CONFERENCE PROCEEDINGS**

1. John Darzentas, George A. Vouros, Spyros Vosinakis, Argyris Arnellos (Eds.) (2008). *Artificial Intelligence: Theories, Models and Applications*. Lecture Notes in Artificial Intelligence, *LNAI 5138*, Springer.

#### **PAPERS AND ABSTRACTS IN PEER-REVIEWED CONFERENCE PROCEEDINGS**

1. Arnellos A (2015) Multicellularity and the type of functional integration for organismal interaction. International Society for the History, Philosophy, and Social Studies of Biology, Montreal, Canada, 5-10 July 2015
2. Xenakis I, Arnellos A (2015). Feelings and the construction of perceptual content. *7<sup>th</sup> Interactivist Summer Institute*, (ISI 2015), Bilkent University, Ankara, Turkey, (June 2015)
3. Arnellos A (2014) Multicellular systems and organismal action. *3<sup>rd</sup> Hellenic Conference of the Philosophy of Science, Department of Methodology, History and Theory of Science*, University of Athens, Athens, Greece, November 28, 2014.
4. Arnellos A (2014) Organizational requirements for organismically-integrated wholes. *British Conference for the Philosophy of Science (BSPS 2014)*, Cambridge, UK (10-11 of July 2014).
5. Arnellos A (2013) Autonomy and multicellular organisms. *International Society for the History, Philosophy, and Social Studies of Biology*, Montpellier, France, July 2013
6. Arnellos A, Ruiz-Mirazo K, Moreno A (2013). Autonomy as a property that characterises organisms. *Actas del I Congreso de la Asociación Latinoamericana de filosofía de la biología*, Universidad de Valencia, pp. 325-330.
7. Xenakis I, Arnellos A (2012). Reducing Uncertainty in the Design Process: the Role of Aesthetics. *The 8th International Conference on Design & Emotion*, 11–14 September 2012, London Central Saint Martin, UK
8. Arnellos A, Moreno A (2012). Internalization of functions as a model of minimal semiosis in autonomous systems: Towards a scientific biosemiotics. *Biosemiotics 2012*, Tartu, Estonia, July, 17-22, 2012.
9. Arnellos A, Moreno A (2011). An Organizational Account of Function with a Focus on Functional Differentiation, *ISI 2011*, Syros, Greece, July, 29-31, 2011.
10. Xenakis I, Arnellos A, Darzentas J (2011). Emotions and their Functional Role in Aesthetic Judgment, *ISI 2011*, Syros, Greece, July, 29-31, 2011.
11. Nunes-Neto NF, Arnellos A, El-Hani CN (2011). Etiological and Organizational Perspectives on Function. *International Society for the History, Philosophy and Social Studies of Biology (ISHPSSB 2011)*, Utah, USA
12. Peponi K, Arnellos A, Spyrou T, Darzentas J (2009). A new way of classifying and comparing systemic methodologies. *The 23rd European Conference on Operational Research, EURO XXIII*, Bonn, July 5-8.
13. Peponi K, Arnellos A, Spyrou T, Darzentas J (2009). Analysis and comparison of systemic methodologies for organisational design. *The 5th National & International Conference of the Hellenic Society for Systemic Studies: From Systems Thinking to Systems Design & Systems Practice*, Xanthi, Greece June 24-27.

14. Arnellos A, El-Hani CH, Vosinakis S, Queiroz J, Darzentas J (2008). A Biosemiotic Modeling of Signal Transduction in the B-cells Activation: Implications for Simulation Methods, in *the 8th International Conference in Biosemiotics*, Hermoupolis, Syros, Greece.
15. Arnellos A, Spyrou T, Darzentas J (2005) The Emergence of Interactive Meaning Processes in Autonomous Systems, *Foundations of Information Science* Paris, July 4-7, 2005.
16. Lekkas D, Arnellos A, Spyrou T, Darzentas J (2005). Pervasive Digital Signatures: Syntactic robustness and simplicity of signed documents. In *Proceedings of SecPerU'05, Security, Privacy and Trust in Pervasive and Ubiquitous Computing*, Santorini, Greece, IEEE, (July 2005) pp. 21-28.
17. Arnellos A, Spyrou T, Darzentas J (2005). A Framework Supporting Creativity in the Design Process: A Systems-theoretic Perspective, *The 6th International Conference of the European Academy of Design (EAD06)*, March 29-31 2005, University of the Arts, Bremen, Germany.
18. Vlachogiannis E, Darzentas JS, Arnellos A, Spyrou T, Darzentas J (2005). The accessibility of web applications: the case of portals and portlets, *HCI International 2005*, HCII2005, Las Vegas, 2005.
19. Arnellos A, Spyrou T, Darzentas J (2004). Dynamic Interactions in Artificial Environments: Causal and Non-Causal Aspects for the Emergence of Meaning, *the 8th World Multi-Conference in Systemics, Cybernetics and Informatics*, Orlando, Florida, 2004 – Best paper award.
20. Arnellos A, Spyrou T, Darzentas J (2004). Extending Artificial Agency to Incorporate Ethics-oriented Social Interaction. In Terrell Ward Bynum, Nancy Pouloudi, Simon Rogerson and Thomas Spyrou (Eds.) *The Seventh ETHICOMP International Conference on the Social and Ethical Impacts of Information and Communication Technologies*, Syros, Greece 14-16 April 2004, pp. 51-65.
21. Arnellos A, Spyrou T, Darzentas J. (2003). Towards a Framework that Models the Emergence of Meaning Structures in Purposeful Communication Environments. In Wilby, J. Allen, K.A. (Eds) *The 47th Annual Conf. of the Int. Society for the Systems Sciences (ISSS)* 3 (103).
22. Viorres N, Koutsabasis P, Arnellos A, Darzentas JS, Velasco CA, Mohamad Y, Spyrou, T, Darzentas J (2003). An approach for personalisation and content adaptation for accessible Internet Services based on user and device profiles. In Julie Jacko, Constantine Stephanidis (Eds), *Universal Access in HCI, Inclusive Design in the Information Society* (Volume 4, Proceedings of the 2nd International Conference on Universal Access in Human – Computer Interaction, 22—27 June, Crete, Greece) S. 637—641. New Jersey: Lawrence Erlbaum Associates, 2003.
23. Spyrou T, Vlachogiannis E, Arnellos A, Darzentas J (2003). Towards a framework for creating design support environments for adaptive systems. In Julie Jacko, Constantine Stephanidis (Eds), *Human Computer Interaction: Theory and Practice*, Lawrence Erlbaum Associates, HCII2003, Crete, Greece, 2003.
24. Darzentas J, Arnellos A, Darzentas JS, Koutsabasis P, Spyrou T, Viorres N, Vlachogiannis E, Velasco CA, Mohamad Y, Abascal J, Guerra JT, Myriam MA, Tsopelas N, Floratos N. (2003). IRIS: An Open Environment that Supports Inclusive Design of Internet Applications. In M.

Rauterberg et al (Eds). *International Conference on Human-Computer Interaction, INTERACT*, 749-752, Zurich.

### **TALKS AND CONFERENCES**

1. *Regulation-based Integration in Biological Systems: A Mutli-level Hierarchical Perspective*. In the 1st Think Tank in "Autoregulation in Health and Disease", Ludwig Maximilians University (LMU) Munich, Germany, 8-10 of October 2018.
2. *Individuality and Cognition: an Organizational Story of Co-evolution*. In the 37th Altenberg workshop in Theoretical Biology "Ground floors of Cognition", organized by Pamela Lyon and Fred Keijzer, KLI Institute, Klosterneuburg, Austria. (14-17 June 2018).
3. *Animal Body Complexity and the Evolution of Cognition*, "Systems Biology and Bioinformatics Research Seminar" University of Rostock, Rostock, Germany, January 2018.
4. *Animal Body Complexity and the Evolution of Cognition*, "Third Bordeaux-Basque Country Workshop on Philosophy of Biology", Bidart, France, November 2017.
5. *Animal Body Complexity and the Evolution of Agency*. "Research Seminar Series", School of History & Philosophy of Science, University of Sydney, Sydney, Australia, 31<sup>st</sup> of October 2017.
6. *The Body Complexity Thesis: Organizational Requirements for Multicellular Agency*. In the workshop "Organization as a theoretical principle for the life sciences", IHPST, Paris, September 29, 2017.
7. *From organization of processes to organisms and other biological individuals*. IAS-Research Centre for Life, Mind, and Society, Department of Logic and Philosophy of Science, University of the Basque Country, San Sebastian, Spain, February 2017.
8. Mechanisms and networks of processes for the explanation of biological complexity. *4<sup>th</sup> Hellenic Conference of the Philosophy of Science*, Department of Methodology, History and Theory of Science, University of Athens, Athens, Greece, December 1, 2016.
9. *The body complexity thesis: multicellular hurdles for animal cognition*. IAS-Research Centre for Life, Mind, and Society, Department of Logic and Philosophy of Science, University of the Basque Country, San Sebastian, Spain, June 2016.
10. Multicellular organisms: an organizational view. *KLI Colloquia*, KLI, Klosterneuburg, Austria, 15<sup>th</sup> of December 2015.
11. *Multicellularity and organismal integration: an organizational approach*. Department of Philosophy, Leibniz Universität, Hannover, 23 November 2015. Hannover, Germany
12. Multicellularity and the type of functional integration for organismal interaction, *International Society for the History, Philosophy, and Social Studies of Biology*, Montreal, Canada, 5-10 July 2015
13. From processes to individual organisms: an organizational perspective, *Society for Experimental Biology (SEB 2015 –session's title: "A process view of life")*, 1-3 July 2015, Prague.
14. *When and why should a collection of cells be considered an individual organism?* Department of Theoretical Philosophy, University of Groningen, Groningen, The Netherlands, May, 2015.

15. Constitutive self-determination in the transition from uni- to multi-cellularity, *International Workshop on Autonomy and Identity in the Biomedical Sciences*, IAS-Research Centre for Life, Mind, and Society, Department of Logic and Philosophy of Science, University of the Basque Country, San Sebastian, Spain, April 24, 2015.
16. Multicellular systems and organismal action. *3<sup>rd</sup> Hellenic Conference of the Philosophy of Science*, Department of Methodology, History and Theory of Science, University of Athens, Athens, Greece, November 28, 2014.
17. Integration of constitutive and interactive aspects in the transition from unicellular to multicellular organisms. Presented at the workshop “*On the origins and consequences of multicellularity*”, organized by Karl Niklas and Stuart Newman and the KLI, (25-28 September 2014), KLI Institute, Klosterneuburg, Austria.
18. Commentator at the “*European Advanced Seminars in the Philosophy of Life Sciences*” (1-5 September 2014), KLI Institute, Klosterneuburg, Austria
19. Organizational requirements for organismically-integrated wholes. *British Conference for the Philosophy of Science (BSPS 2014)*, Cambridge, UK (10-11 of July 2014)
20. Multicellular systems and organismal action. *KLI Colloquia*, KLI Institute, Klosterneuburg, Austria, May 2014.
21. An organizational approach to organisms. *Philosophy of Science Conference* at the IUC (Inter-University Centre) in Dubrovnik, 14-18 of April 2014.
22. Autonomy and multicellular organisms. *International Society for the History, Philosophy, and Social Studies of Biology*, Montpellier, France, July 2013
23. Organizational requirements & developmental regulatory mechanisms for multicellular systems. *Genomics, Bioinformatics and Evolution Group*. Department de Genètica i Microbiologia, Universitat Autònoma de Barcelona, Barcelona, Spain, May 2013.
24. Multicellular autonomy and behavioral agency. In the *III<sup>rd</sup> Research Workshop on Philosophy of Biology and Cognitive Science*, Faculty of Philosophy of the University of Santiago de Compostela (USC), Santiago de Compostela, Spain, April 2013.
25. Autonomous multicellular systems: organizational requirements & developmental regulatory mechanisms. *KLI Brown bag*, KLI, Altenberg, Austria, February 2013.
26. Autonomy as a property that characterises organisms among multicellular communities. *I Congreso de la Asociación Iberoamericana de Filosofía de la Biología (AIFBI)*, Universidad de Valencia, Facultad de Filosofía y Ciencias de la Educación, Valencia, Spain, 28-30 November 2012.
27. Multicellular organisms as 2<sup>nd</sup>-order autonomous systems. Department of Logic, History and Philosophy of Science. Facultad de Filosofía, Edificio de, Humanidades, UNED, Madrid, Spain, November 2012.
28. Autonomy and multicellular organisms. All Souls College, Oxford, UK, November 2012.
29. Autonomous multicellular organisms and regulatory developmental mechanisms. WORKSHOP: *Autonomy and Individual Organisms in Biology – A Collaborative Perspective*. IAS-Centre for Research on Life, Mind and Society, Department of Logic and Philosophy of Science, University of the Basque Country, San Sebastian, Spain, 27-28 October, 2012.

30. Autonomy in an ecological context: defining individuation and organismality. Institute of Biology, Salvador de Bahia, Brazil, July 2012.
31. Internalization of functions as a model of minimal semiosis in autonomous systems: towards a scientific biosemiotics, *Biosemiotics 2012*, Tartu, Estonia. July 17-22, 2012, July 2012.
32. Autonomy and biological individuality in early multicellularity. *IAS-Research Seminar*, Dept. of Logic and Philosophy of Science – UPV/EHU, Donostia, Basque Country, Spain, April 2012.
33. An organizational account of function with a focus on functional differentiation, *ISI 2011*, Syros, Greece. July, 29-31, 2011. July 2011 (with A. Moreno).
34. Conceptualizing and Researching Organisational Design through a Naturalized Approach to the Design Process: Autonomy and Interaction as the Core Features for Best Organisational Change. ALBA Graduate Business School, Athens, Greece, December 2009.
35. The Role of Emotions in Cognitive Architectures for Robots. Institute for Language and Speech Processing, Athena Research Centre, Athens Greece, November 2009.
36. Naturalising Autonomy – On the neurobiological grounding of emotions. *Kazimierz Naturalised Epistemology Workshop (KNEW09)*, Kazimierz Dolny, Poland, September 4-8, 2009.
37. Emergent Representations, Digital-Analog forms and Biosemiotics: Integrating the tools to model complex phenomena in living organisms. *The 9th Annual Gatherings in Biosemiotics*, Prague. 30 June – 5 July, 2009.
38. Autonomy in Virtual Agents: Integrating Perception and Action on Grounded Representations, *SETN 2008*, October 2008.
39. A Biosemiotic Modeling of Signal Transduction in the B-cells Activation: Implications for Simulation Methods, in *the 8th International Conference in Biosemiotics*, Hermoupolis, Syros, Greece, June 2008.
40. Naturalising the design process. *Kazimierz Naturalised Epistemology Workshop (KNEW07)*, Kazimierz Dolny, Poland, September 4-8, 2007.
41. The Emergence of Interactive Meaning Processes in Autonomous Systems, *Foundations of Information Science Paris (FIS 2005)*, July 4-7, 2005.
42. Pervasive Digital Signatures: Syntactic robustness and simplicity of signed documents, *IEEE SecPerU'05, Security, Privacy and Trust in Pervasive and Ubiquitous Computing*, Santorini, Greece, July 2005.
43. A Framework Supporting Creativity in the Design Process: A Systems-theoretic Perspective. *The 6th International Conference of the European Academy of Design (EAD06)*, University of the Arts, Bremen, Germany, March 29-31 2005.
44. Dynamic Interactions in Artificial Environments: Causal and Non-Causal Aspects for the Emergence of Meaning, *the 8th World Multi-Conference in Systemics, Cybernetics and Informatics*, Orlando, Florida, July 2004
45. Analysis of the design of a framework supporting meaning processes in living and artificial systems. *The 48th Annual Conf. of the Int. Society for the Systems Sciences (ISSS)*, Asilomar, California, USA, July 4-9, 2004.

46. Extending Artificial Agency to Incorporate Ethics-oriented Social Interaction. *The Seventh ETHICOMP International Conference on the Social and Ethical Impacts of Information and Communication Technologies*, Syros, Greece 14-16 April 2004.
47. Towards a Framework that Models the Emergence of Meaning Structures in Purposeful Communication Environments. *The 47th Annual Conf. of the Int. Society for the Systems Sciences (ISSS)*, Iraklion, Crete, Greece, July 7-11, 2003.

## SERVICES TO THE PROFESSION

### MEMBERSHIP IN EDITORIAL COMMITTEES

- **2017-:** Member of the editorial board of *Biological Theory* (Springer)
- **2008-:** Member of the executive committee of the *International Society of Biosemiotic Studies (ISBS)*.
- **2008-:** Member of the editorial board for the journal *Biosemiotics* (Springer)
- **2011-:** Member of the editorial board for the *International Journal of Signs and Semiotic Systems (IJSSS)*.
- **2008-2014:** Member of the editorial board for the journal *Cybernetics and Human Knowing* (Imprint Academic)
- **2008-2014:** Executive web editor for *Cybernetics and Human Knowing* (Imprint Academic)

### REVIEWER OF INDEXED PEER-REVIEWED JOURNALS AND OF BOOK SERIES

- Springer book series in History, Philosophy & Theory of the Life Sciences, Springer.
- Oxford University Press, Oxford.
- MIT Series on Theoretical Biology, Cambridge
- Reviewer for the following international journals: *Biology and Philosophy*, *Bioessays*, *Adaptive Behavior*, *New Ideas in Psychology*, *Origins of Life and Evolution of Biospheres*, *Biosemiotics*, *Acta Biotheoretica*, *Biological Theory*, *Journal of Theoretical Biology*, *Frontiers in Psychology*, *Philosophical Psychology*, *Frontiers in Physiology*, *Design Studies*, *Cybernetics and Human Knowing*, *Artificial Intelligence for Engineering Design*, *Analysis and Manufacturing*.

## ORGANIZATION AND MANAGEMENT SERVICES

### ORGANIZATION OF CONFERENCES AND WORKSHOPS

1. **Οκτώβριος 2018:** Scientific and organizing committee of the International Workshop: *Autoregulation in Health and Disease*, Munich, Germany.
2. **October 2012:** Organiser and member of the editorial committee of the international workshop: *Autonomy and Individual Organisms in Biology: A Collaborative Perspective* – IAS-Research Centre for Life, Mind, and Society.
3. **July 2011:** Organiser of the 6<sup>th</sup> Interactivist Summer Institute – ISI 2011.
4. **October 2008:** Organiser and member of the editorial committee of the 5<sup>th</sup> Hellenic Conference on Artificial Intelligence - SETN 2008, in the University of the Aegean, Syros, Greece.

5. **2008 (June):** Organiser and member of the editorial committee of the 8<sup>th</sup> International Conference on Biosemiotics - BIOSEMIOTICS 2008, in the University of the Aegean, Syros, Greece.
6. **2004 (May):** Co-organiser of the 7<sup>th</sup> ETHICOMP International Conference on the Social and Ethical Impacts of Information and Communication Technologies, ETHICOMP 2004, in the University of the Aegean, Syros, Greece.

### **MANAGEMENT**

- **2011 – 2013:** Moderator of the IAS-Research Group (UPV/EHU) internal seminars and administrator of the internal library and the activities calendar of the group.
- **2007 – 2011:** Accounting manager for one of the two postgraduate (MSc) programs of the department of Product and Systems Design Engineering, University of the Aegean, Greece.

### **OTHER PROFESSIONAL ACTIVITIES**

- *December 1996 – April 1998:* Network and systems manager – Institute of Nuclear Physics, National Centre for Scientific Research, DEMOKRITOS, Athens, Greece.
- *June 1995 – November 1996:* Network and systems administrator – Institute of Informatics and Telecommunications, National Centre for Scientific Research, DEMOKRITOS, Athens, Greece.

### **LANGUAGES**

Greek: mother tongue; English: fluent; Spanish: fluent, French: fair.