

Information Systems Governance and Industry 4.0 - Epistemology of Data and Semiotics Methodologies of IS in Digital Ecosystems

Ângela Lacerda Nobre, Rogério Duarte, Marc Jacquinet

► **To cite this version:**

Ângela Lacerda Nobre, Rogério Duarte, Marc Jacquinet. Information Systems Governance and Industry 4.0 - Epistemology of Data and Semiotics Methodologies of IS in Digital Ecosystems. Kecheng Liu; Keiichi Nakata; Weizi Li; Cecilia Baranauskas. 18th International Conference on Informatics and Semiotics in Organisations (ICISO), Jul 2018, Reading, United Kingdom. Springer International Publishing, IFIP Advances in Information and Communication Technology, AICT-527, pp.311-312, 2018, Digitalisation, Innovation, and Transformation. hal-01928295

HAL Id: hal-01928295

<https://hal.inria.fr/hal-01928295>

Submitted on 20 Nov 2018

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Information Systems Governance and Industry

4.0 - Epistemology of Data and Semiotics

Methodologies of IS in Digital Ecosystems

Ângela Lacerda Nobre^{1(✉)}, Rogério Duarte², and Marc Jacquinet³

¹ Escola Superior de Ciências Empresariais do Instituto Politécnico de Setúbal ESCE-IPS, Campus do IPS Estefanilha, 2910-761 Setúbal, Portugal
angela.nobre@esce.ips.pt

² Escola Superior de Tecnologia do Instituto Politécnico de Setúbal ESTS-IPS, Campus do IPS, Estefanilha, 2910-761 Setúbal, Portugal
rogerio.duarte@estsetubal.ips.pt

³ Universidade Aberta Rua da Escola Politécnica,
141-147, 1269-001 Lisbon, Portugal
mjacquinet@uab.pt

Abstract. Contemporary Information Systems management incorporates the need to make explicit the links between semiotics, meaning-making and the digital age. This focus addresses, at its core, pure rationality, that is, the capacity of human interpretation and of human inscription upon reality. Creating the new real, that is the motto. Humans are intrinsically semiotic creatures. Consequently, semiotics is not a choice or an option but something that works like a second skin, establishing limits and permeable linkages between: (i) human thought and human's infinite world of imagination; and (ii) human action, with its correspondent infinite world of intentionality, of desire and of unexplored possibilities. Two instances are contrasted as two reading lenses of current business reality: IS governance and industry 4.0. These phenomena correspond to the need to take accountability, transparency and responsibility into account, when designing IS and when using such systems through the ecology of connectivity, Big Data and the Internet of Things. Political, social and cultural dimensions are brought into the equation, when addressing the question of the relevance and adequateness of IS theory and practice to respond to contemporary challenges. The message is that what has already been achieved is but a shadow, a pale vision, of what might be achieved in the age of the new Renaissance.

Keywords: Semiotic learning · Social semiotics · Material phenomenology
Poetic rationality · Data epistemology

1 Epistemology of Data and Semiotics

Challenging times call for challenging thought and action. The multitude of factors involved in addressing the relationship between technology and society is paramount. Semiotics enables addressing such complexity because semiotics analysis captures the

value chain of signification and of meaning-making (Nobre 2007). Artificial Intelligence (AI) is a central knowledge area to take into account in order to situate, position and interpret contemporary societies. From understanding the power of AI it is possible to acknowledge the need for semiotic-based information systems' theories, such as Ronald Stamper's Organisational Semiotics (OS).

Bernard Stiegler and Bruno Bachimont (1996) are interesting authors whose contributions have helped to understand the importance of the epistemology of data. There are four paradigms that help to explain current contexts, in terms of historical evolution: first, the empirical age, where meaning emerged from practice; second, the theoretical age, where meaning emerged from ideas, such as Descartes' contribution to modern science; third, the period between 1950 and 1990, forty years of development of applied calculus; and forth, the present age of data manipulation.

Pédauque (2006) addresses the role of documentation in the context of post-modernity. The digital world and its capacity to cut the connection to the heterogeneous nature of reality, is both its strength and its weakness. Whilst digital media agglomerates everything creating an homogeneous set of data, semiotics maintains the heterodox nature of reality, therefore it does not loose meaning neither the meaning-making capacity.

Epistemological and phenomenological perspectives are needed in order to trace, to map and to explore the different dimensions of the complexity of IS contexts. Baranauskas and Bonacin (2018) address the role of design and of its relation to signs. IS governance will be part of business leaders' agendas once the full impact of their power to bring much needed change at global level is understood. Issues related to sustainability and to human development have much to gain from IS engagement in social innovation and in global change. The digital era has found in manufacture a stronghold for the creation of new possibilities of human realization. Lu (2017) calls attention to the open research importance of industry 4.0. The core idea is that new categories of thought and action, new cognitive structures, are the product of technological evolution. Such technical change, visible through realities such as industry 4.0 or augmented reality, is understood as an enabler of human capacity to read, to interpret and to intervene upon the world. This new digital world is both a product of human endeavors and a process through which humans create new realities, the new real.

References

1. Bachimont, B.: *Herméneutique matérielle et artéfacture*. Thèse en épistémologie (1996)
2. Baranauskas, C., Bonacin, R.: *Design: indicating through signs*. *Des. Issues* **24**(3), 30–45 (2018). MIT Press
3. Lu, Y.: *Industry 4.0: a survey on technologies, applications and open research issues*. *J. Ind. Inf. Integr.* **6**, 1–10 (2017)
4. Nobre, A.L.: *Knowledge processes and organizational learning*. In: McInerney, C.R., Day, R.E. (eds.) *Rethinking Knowledge Management*. Information Science and Knowledge Management, vol. 12. Springer, Heidelberg (2007)
5. Pédauque, R.: *Document et modernités*. Version finale dite «Pédauque 3» (2006)