

# **The Librarian's Equilibrium: Cycles and Epicycles, Centers and Epicenters of Information Revolution.**

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***Abstract:** The term "Information Revolution" is widely used in a broad range of scientific and parascientific studies and no unified definition has ever been established. At the same moment Library and Information Science questions its very existential position in relation to the fields of Humanities. Does it generally import elements from these fields or does it agreeably export elements towards them? Which is the center and which the periphery? Are partial schemes operative for this question? This paper (1) aims at a general definition of "Information Revolution" under the theoretical light of Thomas Kuhn, Luciano Floridi, Vilém Flusser, Bruno Latour and Manuel Castells, and, through that, (2) proposes a dialectic relation between the field of LIS and the fields of Humanities expressed by defining Information Revolution as an continuous social and scientific oscillation between shifting humans, tools, networks and societies. A Pascalian/Borgesian spherical model is proposed as a further elaboration of this paper's findings.*

**Keywords:** Actor-Network Theory, Fourth Revolution, Operator-Apparatus Complex, Information Revolution, Network Society, Philosophy of Information.

## **Introduction – Hypotheses – Methodology**

Does contemporary Library and Information Science (henceforth LIS) import elements from the humanities, or is it quite ambitious to claim that the humanities import elements from LIS? This question briefly summarizes the Philosophy of Information panel session of CoLIS 8 (Thellefsen et al, 2013). Contemporary theoretical LIS includes various relatively new dimensions such as Information History (for instance Weller, 2010) or the Philosophy of Information (for instance Floridi, 2002, 2009, 2010), so LIS seems to adopt elements from other fields such as History, Philosophy, Psychology, Psychoanalysis, Sociology, Semiotics, Postmodernism, Media Theory, Communication Studies and more (for instance Capurro, 2009, Hjørland, 2000, 2002, 2004, Juncker, 2007, Mai, 1999, 2001).

Living in the age of Information Revolution (henceforth IR), one could say that LIS, that used to be circulated on the periphery around the central node of humanities, is now posed somehow in a central position, as a bridge of interdisciplinarity to other more technological fields (such as computer science, cybernetics and others), and that its unifying position has dislocated the humanities to the periphery among the other sciences. But what is IR? This paper proposes a definition of IR as a basic cyclical scheme where LIS and the humanities can be applied were IR is illustrated as a tendency towards an awareness of our continuous shiftability and sustainable oscillation between nature and culture.

## **In Search of Definition: Defining Search.**

But, after all, what is information?

Several information definitions were attempted, and any information researcher (which is also re-searching *for* information) is to admit that various definitions, even very contradictory to each other are to be accepted under different circumstances and scopes. Inductively, the

infinite amount of definitions of information could lead to an even vaster amount of definitions for IR. This paper would like to be classified mainly under the scope of an interdisciplinary Philosophy of Information, term established by Luciano Floridi, and thus recognizes his structured formula of information as *data + meaning* being a justified point of departure:

“GDI)  $\sigma$  is an instance of information, understood as semantic content, if and only if:

GDI.1)  $\sigma$  consists of  $n$  data, for  $n \geq 1$ ;

GDI.2) the data are *well formed*;

GDI.3) the well-formed data are *meaningful*.” (Floridi, 2010, p. 20-21).

In assistance to Floridi’s technical definition of information, this paper treats information thermodynamically as a factor of probability shift between maximum entropy and maximum negentropy. The more informative something is, the less possible and the less entropic. Existence of semantic Floridian information is in coherence with James Joyce’s description of the situation “where the possible was the improbable and the improbable the inevitable” (Joyce, 2012, p. 110).

Floridi’s definition is the founding basis for IR’s definition structure aimed here.

### **Thomas Kuhn’s Pre-scription in a Postscript:**

#### **Copernicus – Scientific Revolutions – Paradigm Shifts**

Thomas Kuhn developed a detailed investigation on the nature of scientific revolutions mainly in two of his books, the “Copernican Revolution” (1957) and the “Structure of Scientific Revolutions” (1996, first published in 1962).

Nicholas Copernicus and his book “*De Revolutionibus Orbium Coelestium*” (On the Revolutions of the Heavenly Spheres), marks the spot for scientific revolutions and their impact on religion, philosophy and social theory, in other words how the Copernican Revolution affected the world vastly from astronomical proportions to everyday life: “The Copernican Revolution was a revolution in ideas, a transformation in man’s conception of the universe and of his own relation to it” (Kuhn, 1957, p. 1-4).

The 1969 edition of “The Structure of Scientific Revolutions” (1996, p. 174-211) offers a postscript where Kuhn defends his notion of paradigm. The first is “sociological”: “A paradigm is what the members of a scientific community share, *and*, conversely, a scientific community consists of men who share a paradigm” (p. 176, italics by the author). There is a circular, reversible egg/chicken or rabbit/duck (in Jastrow’s scheme) way of perceiving the same thing and a shift of perception from one to another can be recognized as a paradigm shift, usually only *a posteriori*. Kuhn, among other reasons, wrote this post-script to defend himself from his critics’ accusation for being pre-scriptive rather than de-scriptive, confusing the “Is” with the “Ought” (p. 207) and having a relativistic viewpoint (p. 205). The scientist should always have an eye for an examination through another’s eyes and also observe natural, “physical situations rather than rules or laws” (p. 191).

#### **Luciano Floridi: Fourth Revolution – Infosphere – Hyperhistory**

Luciano Floridi’s notion of the Fourth Revolution (for instance 2008, 2009, 2010, 2011 and an unpublished book bearing the same name) is based on a processual sequence of “dislocation and reassessment of humanity’s fundamental nature and role in the universe” (2009, p. 156). Simply put, Floridi’s current Information Revolution is resulting from the

existential (epistemological/extrovert and ontological/introvert) positional shift of humans as centralities in four different environments. Through Copernicus we moved from the center of the universe to the heliocentric system. Through Darwin we moved from the center of the biological kingdom to the result of evolution. Through Freud we were transformed from Cartesian rational beings to subjects of our unconscious (Floridi, 2009, p. 156).

The Fourth Revolution's representative scientist is Alan Turing, the founder of our new ontology in relation to Artificial Intelligence. Floridi claims that the development of the automata that store and process information (as this is defined in the GDI given in the introduction of this paper), shifts our position in the world as standalone entities, sets up a new environment, the *infosphere*, turning us into *inforgs*, interconnected informational organisms.

So far we have seen "information" and "revolution" on a spatial point of view. Floridi brings us to the position to think of a more spatio-temporal one. In accordance to the "Fourth Revolution" he divides human evolution into three stages:

"In prehistory, there are no ICTs; in history, there are ICTs, they record and transmit data, but human societies depend mainly on other kinds of technologies concerning primary resources and energy; and in hyperhistory, there are ICTs, they record, transmit and, above all, process data, and human societies become vitally dependent on them and on information as a fundamental resource" (2012, p. 129-130).

As he mentions in the same paper, this hyperhistorical impact on our ontological views "about (a) the world, (b) about ourselves, (c) about our interactions with the world and (d) among ourselves" invites the development of "(a) a new philosophy of nature, (b) a new philosophical anthropology, (c) a synthetic e-nvironmentalism as a bridge between us and the world and (d) a new philosophy of politics among us" (2012, p. 131).

### **Vilém Flusser: The Operator-Apparatus Complex – Nature/Culture – Posthistory**

Quite related to Floridi's division (see also Vlieghe, 2013, p. 13)., Flusser locates three stages of human evolution. Revolutions occur as results of position displacement of humans and their various cultural tools, in relation to nature. Culture is the shaping of nature, the forming of the impossible, the in-formation generation and processing. Cultural revolutions are actually revolutions on the way informational objects are produced. As he mentions,

"[t]ools in the usual sense tear objects from the natural world in order to bring them to the place (produce them) where the human being is. In this process they change the form of these objects: They imprint a new, intentional form onto them. They 'inform' them: The object acquires an unnatural, improbable form; it becomes cultural.

[...]

When the tools in the usual sense became machines their relationship to human beings was reversed. Prior to the Industrial Revolution the human being was surrounded by tools, afterwards the machine was surrounded by human beings. Previously the tool was the variable and the human being the constant, subsequently the human being became the variable and the machine the constant. Previously the tool functioned as a function of the human being, subsequently the human being as a function of the machine" (1983a, 23-24)

That's Flusser's key concept of the operator-apparatus complex (Ströhl, in Flusser, 2002, p. xi-xii). The industrial society was dominated by workers, with industry being the violent

manipulation of inanimate nature. The information society is dominated by functionaries. Flusser distinguishes an industrial theory of communication based on linear discourse (transmitting pre-existing information) from a post-industrial theory of information (creating new information) based on circular and networked dialogue. The revolution embedded in the programs of our time is the turn of discourse into dialogue. In his phenomenological analysis of spring buds he mentions:

“This miracle (because every ontological leap, every revolution is a miracle) is called ‘spring.’ And it does not matter that it repeats itself every year. In the *kyklos tes geneleos* [Romanized Greek: genesis cycle] it doesn’t matter that it is a cycle. What matters is that it is about generation, the emergence of something new. The generative form, the revolutionary process, superimposes itself over the cyclical form, the repetitive form, and this is the miracle. The eternal return as the will to power, the buds of every March as a revolution, Nietzsche and Marx as twin brothers” (1979, p. 115)

During the triple historical periodization, the cycle of nature-culture-waste-nature has been (and now is) halted on two of the consisting positions. While mostly in pre-industrial societies the material with the inscribed information was returned to nature (animal skin turn to a shoe that eventually dissolves), in the industrial societies the cycle was/is halted on “waste,” thus creating a problem that calls for recycling. In the posthistorical, telematic societies the process is halted in “culture,” where vast amounts of data and information are stored with no criteria for preserving the useful parts. So, what Flusser, that died in 1991, would recognize in the contemporary issues as “Big Data,” or “Information Overload” appears as a call for information literacy as the main education system and a preparation for learning not only how to produce and learn, but also how to delete and forget. (1985, p. 108-110).

### **Manuel Castells as a reflection of Marshall McLuhan as a reflection of Bruno Latour: Actors-Networks – Internet Hybrids – Social Counter-Copernican Revolutions**

Flusser’s analysis on the oscillation between humans and their tools revives Marshall McLuhan: “we shape our tools and thereafter our tools shape us.” McLuhan already noticed in 1967 that “our time is a time of crossing barriers” because of the media of his “electric age” (McLuhan, 1994, 7-10, McLuhan & Fiore, 1967, p. 8-10, 26, 41).

Manuel Castells established the term “Network Society,” emphasizing on political/social/technological networks, instead of information, “[b]ecause networks do not stop at the border of the nation-state, the network society constituted itself as a global system, ushering in the new form of globalization characteristic of our time” (Castells, 2011, p. 1969). “[I]t just happened. Suddenly dictatorships could be overthrown,” says Castells (2012, p. 1), reminding Flusser’s miracle-like nature of revolutions. Castells narrates the stories of social movements in the twenty-first century From Tunisia, to the Occupy Wall Street movement. The digitally born and through the Internet diffused and maintained movement expanded with the usage of web 2.0 tools, from YouTube videos to Facebook “likes” instantly proved the existence of movements.

Media censorship, the shutdown of the Internet or limited Internet manipulation led to the creation of postmedia within the social conflict. Castells detects a continuous extensionality between traditional social networks of the occupied urban space and the Internet cyberspace that generates a hybrid third space of places and a timeless time of simultaneity. He refers to neurological studies of emotions, claiming that revolutions result from a passage from fear, to anxiety and outrage ending up to “hope,” showing a reflective oscillation between the individuals’ neural networks and the social networks of autonomy. Thus, he calls this

movement a multimodal, non-linear, rhizomatic revolution of a new kind whose most revolutionary act is the invention of itself. Tacitly paraphrasing McLuhan, reverses his message, claiming that it's the networked movement's message that actually constructs the medium. As one of the chapters is called "The Process is the Message," meaning that these spontaneous unplanned and unprogrammed revolutionary acts of outrage do not have means, but a very goal at themselves and at the development of direct democracy in practice (2012, p. 5-6, 8, 11, 14, 27-29 54-59, 61 63 120, 122, 127, 134, 144-145, 168-169, 185, 219, 222-233).

Bruno Latour introduces three basic notions that support this paper's scope, namely the Counter-Copernican Revolution, that bases his Actor-Network Theory and the hybridical nature of the the "quasi-objects/subjects" (see Seres, 1982, 224-234) that act and get networked within that. The Counter-Copernican Revolution is the reversed reversal were Latour counter argues against the Kantian notion of Copernican Revolution that sets humans as the main subjects opposed to nature. Latour suggests that dipoles as Nature/Society are mere ephemeral reference points, as the East/West dipole. "For each state of Nature there exists a corresponding state of society" (Latour, 2012, p. 78, 95).

"Nature does revolve, but not around the Subject/Society. It revolves around the collective that produces things and people. The Subject does revolve, but not around Nature. It revolves around the collective out of which people and things are generated. At last the Middle Kingdom is represented. Natures and societies are its satellites" (p. 79).

This type of symmetry establishes the basic philosophical foundation for his Actor-Network Theory (AT): a background/foreground reversal: "unconnected localities" rather than universal laws, a nodal notion that Latour relates to the order-out-of-disorder reversals found in chaos philosophy, as well as in the Deleuzian Rhizome (Latour, 1996, p. 2-3). A network of circumstances modifies an actor's actions that in turn modify the environment(s) that "does not wish to add social networks to social theory but to rebuild social theory out of networks. It is as much an ontology or a metaphysics, as a sociology. [...] A network is not a thing but the recorded movement of a thing" (1996, p. 2, 16).

### **Conclusion – Sphere – Future Work**

Synopsizing the previous theories (and practices), a General Definition of Information Revolution (GDRI) can be:

GDRI) Information Revolution is a phenomenon that:

GDRI.1) is superimposed on and succeeding the Industrial Revolution, including it, together with all previous sorts of scientific and social revolutions in a posthistorical/hyperhistorical timeless time flow in a simultaneously local and global space of places finding itself in the sustainable oscillation between nature and culture.

GDRI.2) is based on structures and functions that are characterized by shiftability, liquidity, and reversibility between elements that can be recognized in different occurrences as: humans, networks, actors, tools, machines, media, mediations, operators, apparatuses or artificialities, with the list to be open.

GDRI.3) its significance is defined as a further oscillation between human societies and their technologies on the meaningful semantic production and assessment of information, together with the ongoing expansion of the data storage possibilities.

This elastic and liquid nature of IR leaves any kind of definition open for discussion, change or rejection. Perhaps this is also the reason that no structured definition has been given until now. Hence, the humanities and LIS do not have sharp borders and the very question of what stands at the center and what at the periphery is out of question. They are ephemeral terminological epicenters of overlapping epicycles that are superimposed on each other with no fixed and distinct peripheries and centers.

This type of emerging technological networked society might even overcome the cyclical nature of revolutions and be much better described by Borges' notion of the pascalian sphere that has its center everywhere and its circumference nowhere (1964, also Small, 1983). But this more psychological and philological analysis of IR can be the subject of a future work.

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