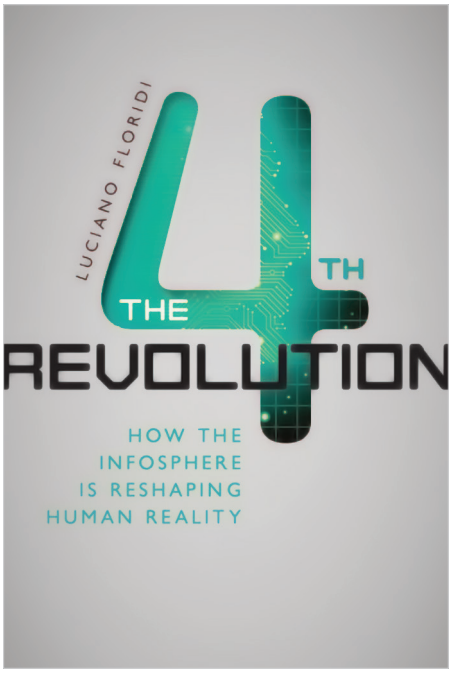
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Luciano Floridi

The 4th Revolution: How the Infosphere is Reshaping Human Reality

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Reviewed by Sheldon Richmond

Why Humans Matter

Where are we now historically? Who are we becoming? Where are we going? These are the main questions of Floridi's book. The answer to the third question is wrapped in the answers to the other two questions.

Floridi overtly answers: we are now in *hyperhistory*; we are becoming predominately *inforgs*; we are at the doorway of a no-return path towards a total *onlife* existence surrounded by the *envelope of the infosphere*. I will explain Floridi's answers and his technical terminology later. Before I do so, I have a few background comments.

Floridi admittedly uses neologisms as a technique for solving what he calls in his Preface "a huge conceptual deficit" (ix) for understanding the increasing control by the technology of ICT (information and communication technology). Though not mentioned by Floridi, Neil Postman called the current development of technology, the Technopoly, and Marshal McLuhan coined the phrase "looking at the world through a rear-view mirror" to describe our failure to comprehend the current envelopment of humanity by electronic media. So, I suppose we can expect a plethora of new linguistic coinage to help us understand the rapidly changing *cybersphere*, and *cyborgs,* a linguistic coinage that Floridi finds below par. Before going further, I state what I think amounts to the covert and even repressed message of the book — of the answers to the three questions of the condition of humanity in our current and development historical situation. The repressed message is one of biophobia: life is messy, mortal, and murky; whereas, modern informatics systems are neat, on the verge of providing a form of immortality, and pure or at least clean — all unobtainable in the biosphere. Moreover, the biosphere included and especially humanity will become the silent servants of the *infosphere* and of *ICTs*.

The skeptical and cynical reader may wonder whether all this new linguistic coinage does no more than cloak the real issues, cover the real message, and attempt to promote a new

intellectual brand for those looking for the latest academic fad. I want to take those concerns off the table because I think there is a real problem that Floridi is exploring in a new way that deserves critical attention. The problem is to ensure that humanity does have an important role to play. Moreover, the problem is to ensure that humanity remains in control of the new world of automated servo-mechanisms that are becoming increasingly self-replicating and self-programming with minimal human intervention. Automata are fulfilling the program if not prophecy of John von Neumann (not mentioned by Floridi) in von Neumann's classic monograph, *Theory of Self-Reproducing Automata* (1966).

Now that I have provided a brief overview and background, a frame for critical discussion, I return to explaining Floridi's over-all diagnosis of humanity's current condition. Here is a quote that summarizes not only the overt ideophilic and technophilic message of the book but what I think is the covert and repressed biophobic message of the book: "As in a classic Renaissance house, we now inhabit a *piano nobile*, the upper, noble floor, not even knowing what happens in the ground floor below us, [upstairs-downstairs] where technologies are humming in the service rooms. Unless there is some malfunctioning, we may not even know that such technologies are in place. But, if something goes wrong, it is the specialist who will now have to take care of both sides of the interface, with the result that specialists are the new priests in Janus' temple. They will become increasingly powerful and influential the more we rely on higher-order technologies" (p. 37).

This paragraph concisely states everything in the book, the spoken and the unspoken, and the fundamental issue of the new power-imbalance with the new technologies — of the informatics professionals (cards on the table, I was one of those technology experts and have my own personal stance about the *Technopoly*) or "new priests" and of the new human condition where the power is shifting towards the self-running and self-regulating automata increasingly becoming self-programming and self-replicating. We are now in the *hypersphere* stage of historical time (Chapter 1) where we have evolved from pre-history (or pre-literacy) to history (or literacy) and now to the *infosphere of hyperhistory* where messages, or information or data is all important and can escape time (once the technical bottleneck of data-storage is overcome) and overcome space (once the bottleneck of network capacity or speed or bandwidth is overcome). The *infosphere* is increasingly becoming not merely a product of humans producing data (once called ideas) and humans organizing the data into patterns (once called theories, or propositions, or even knowledge) but of "third-order" technologies where technologies *interface* not merely with nature on one side and humans on the other side, or even interface with one form of technology (keyboards, monitors) and another form of technology (processors, applications) and humans, but only technology interfacing with technology on both sides. The medium of technology (what Floridi calls the "in-betweenness") intermediates humanity to nature (first-order), humanity to technology (second-order), and now we increasingly have humans and nature (the physical and the biological) out of the picture (third-order). In other words, every technology is "Janus" faced — one side faces towards nature/humans and the other side faces towards humans/technology, with the third-order of technology having its two faces looking towards technology on both sides. (An aside: third-order technology is the dream-world of informatics professionals or our "new high priests," where "pebkac" — problem exists between keyboard and chair — is no longer an issue.) Third-order technologies represent

who we are becoming: either, humanity as nobles (the upstairs crowd) who know nothing of what their servants as third-order technologies (the downstairs crowd) do but the nobles will have all the political and decision making power; or, humanity as the servants or downstairs crowd who serve the upstairs crowd or nobles consisting of the third-order technologies that will take over all political and decision-making power. Crucial to Floridi's answer to who we are becoming and where we are going is his discussion later on in the book about what computers can't do, semantic interpretation. That is to say, only humans can act as "semantic machines" and understand the patterns in the data. But here in the book, Floridi focuses on the question of where we are now and who we have become so far in this fourth revolution which Floridi does not explain until Chapter 4 — no coincidence. The Copernican revolution (1st revolution) knocked us down one step by moving us to a peripheral location in the solar system (no longer earth-centric); the Darwinian revolution (2nd revolution) knocked us down another step by explaining our animalistic origins; the Freudian and neuroscientific revolution (3rd revolution) knocked us down a further step by explaining the opacity of our self to our self where mental processing goes on in the dark corners of the mind; and now we are at the beginning of the 4th revolution where technologies have given us a new identity as *onlife* (Chapter 3) where our minds inhabit the *infosphere* and are almost complete functions of ICTs that produce the *infosphere* (Chapter 4): "ICTs [...] are modifying or creating the environment in which we live. We have begun to understand ourselves as *inforgs* [ivory tower intellectuals] [...] through the radical transformation of our environment and the agents operating within it" (p. 96).

I use apps, therefore I exist.

The 4th revolution is due, according to Floridi, to Turing and the Turing Machine. In other words, the 4th revolution is due to computers and processors. However, I think John von Neumann needs mentioning again not just in the context of the theory of automata but also in this context of computer design as a partner with Turing in the hypothetical 4th revolution: von Neumann created the "architecture" for computer processing that has come to be called von Neumann architecture, basically re-programmable machines that along with data can be uploaded into the read-write memory or storage/memory of the machine. (Turing described the mathematical principles or the theory for computers; von Neumann described the actual physical design of physically based computers where reprogrammable computers don't need changes in their "hard wiring" but can be transformed by changing the "software" or by changing not only the data stored in memory, but also changing the programs or algorithms for processing the data.)

Here I think is where Floridi shows us a crucial current issue: how do humans fit in or why do humans still matter in the world dominated by computer technology? Firstly, humans have a minor role due to "information friction" (Chapter 5) — bottlenecks to the access of information which indirectly protects privacy — in sharing information online. Secondly, humans will not be superseded in "intelligence" by "superintelligent machines" or "the singularity," ideas that according to Floridi are mistaken because they overlook the well-known problems of Artificial Intelligence theory, and overlook the obvious limits of computers regarding semantic interpretation. So, humans are needed to interpret data and data-patterns (Chapter 6). Floridi (Chapter 7) goes on to demolish another idea that he thinks is mistaken — namely the idea

of the "semantic web," where meanings will be transparent online in "cyberspace." However, semantic interpretation is feasible only by humans. Thirdly, according to Floridi (Chapter 8) humans apparently gain more direct democratic power when the nation state withers away (echoes of Marx) due to the shift to multi-national and multi-agent, decentralized processing power. However, when "the political multi-agent systems" (p. 180ff) take over "political and social space," human political and social involvement will become next to minimal. Fourthly, humans might have (according to Floridi in Chapters 9 and 10) some role to play in solving our environmental problems and in "configuring our ethical infrastructure" or in creating an ethical social environment that guides individuals to act in socially acceptable ways. The irony is that we will need more and better ICTs to essentially solve environmental and ethical problems for us because "we have moved inside the infosphere" (p. 218).

As ICTs become more linked, more autonomous, do humans matter? Are we becoming organic computers (*inforgs*, in Floridi's terms) that serve other computers? Does what Floridi say about ICTs running the household downstairs increasingly apply covertly to us? For instance are we really "the ideal butler" serving ICTs in what Floridi says about "the multi-agent system": "The multi-agent system (the state) is as transparent and as vital as the oxygen that we breathe. It strives to be the ideal butler. There is no standard terminology for this kind of transparent multi-agent system that becomes perceivable only when it is absent" (pp. 188–89). There is "standard terminology": slave labor or at the best low wage labor, when the terminology is applied to humans.

The use of metaphors such as the "piano nobile" and the "ideal butler" betrays, to my mind, a hidden message that though humans as far as getting meaning from data will still be needed, computers don't need the meaning and therefore, computers that totally interact with each other to do all that is needed for the computers — get data, transmit data, transform data, self-program, self-replicate — don't need humans. These computers will be the main resident of the *infosphere* and will do all that is needed for the *infosphere*: data-creating-writing-storing-transmitting-transforming. No need for humanity. We won't even be needed as the invisible butlers: computers will have other computers to act as the invisible butlers.

According to the subterranean level of meaning in the text of Floridi's book, in the mansion of the universe, the second and first floors will only be occupied by computers. If humans are around we will do nothing of any importance for anything. The question is still open to readers, even though not imagined by the author: *Will we have to do a counter-revolution to regain our importance in the scheme of things?*

In the Preface, Floridi rationalizes his use of newly minted neologisms by claiming a dearth of concepts for grasping our modern day predicament with the prevalence of information technology. As I said previously, I think we are not lacking in concepts, only in questions and answers. Raising challenging questions and developing new answers, as Floridi does, is what we need in our current situation, rather than inventing new terminology, as Floridi also does. As well we need thorough criticism or debugging of the guesses. Floridi does not miss a beat in his intensive criticisms. However, Floridi misses an obvious set of questions that I think are the most important questions when considering technology: What do we want to do? Why do we want to do it with informatics technology? How can we do this in a manner that enriches our lives? This obvious non-jargon loaded set of questions are not grand metaphysical questions

requiring a new system of thought. Rather these human-centric questions require looking at specific social practices and situations; and presuppose the demand that we build and use our products to serve us rather than we serve our products. Moreover, Floridi's theory of historical stages, and his theory of the 4th Revolution as a non-reversible stage in historical development, presupposes historical determinism. In other words, Floridi assumes that a counter-revolution to the trend where we increasingly serve our products and let automata control us, is impossible. If we have learned from the mistake of historical determinism, human practice and human thought is open-ended. Our supposed stage in this so-called *hyperhistory* with the so called 4th Revolution, is not a speeding train on a fixed track going over a cliff, but rather our supposed stage in history is at best a steerable raft or evolving ship, to borrow the metaphor cited in the Preface, in an ocean where the winds and waves are erratic.