Digital's Cleaving Power and Its Consequences

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The digital is deeply transforming reality. This is much obvious and uncontroversial. The real questions are *why*, *how*, and *so what*. In each case, the answer is far from trivial and definitely open to debate. To explain the ones I find most convincing, let me start in *medias res*, that is, from the "how". It will then be easier to move backwards, to understand "why", and then forward, to deal with the "so what".

The digital "cuts and pastes" reality, in the sense that it couples, decouples, or recouples features of the world—and therefore our corresponding assumptions about them—which we never thought could be anything but indivisible and unchangeable. It splits apart and fuses the "atoms" of our experience and culture, so to speak. It changes the bed of the river, to use a Wittgensteinian metaphor. A few stark examples bring home the point vividly.

Consider first one of the most significant cases of coupling. Self-identity and personal data have not always been glued together as indistinguishable as they are today, when we speak of *personal identity* of *data subjects*. Census counts are very old (Alterman 1969). The invention of photography had a huge impact on privacy (Warren 1890). European governments made travelling with a passport compulsory during the First World War, for migration and security reasons, thus extending the state's control over the means of mobility (Torpey 2000). But it is only the digital, with its extended power to record, monitor, share, and process endless amounts of data about Alice, that has soldered together who Alice is, her individual self and profile, with personal information about her. Privacy has become a pressing issue also, if not mainly, because of this coupling, and today, at least in European Union legislation, data protection is discussed in terms of human dignity (Floridi 2016a) and personal identity (Floridi 2005, 2006).

The next example concerns *location* and *presence*, and their decoupling. In a digital world, it is obvious that one may be physically located in one place, say a coffee shop, and interactively present in another, say a page on Facebook. Yet, all past generations

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that lived in an exclusively analogue world conceived and experienced location and presence as two inseparable sides of the same human condition: being situated in space and time, here and now. Action at distance and telepresence belonged to magic worlds or science fiction. Today, this decoupling simply reflects ordinary experience in any information society. We are the first generation for which "where are you?" is not just a rhetorical question. Of course, decoupling has not severed all links. Geolocation works only if Alice's telepresence can be monitored. And Alice's telepresence is possible only if she is located within a physically connected environment. But the two are now completely distinguished and indeed their decoupling has slightly downgraded location in favour of presence. For if all Alice needs and cares about is to be digitally present in a particular corner of the infosphere, it does not matter where in the world she is located analogically, whether at home, on a train, or in her office. This is why banks, bookstores, libraries, and retail shops are all *presence* places in search of a *location* repurposing.

Consider next the decoupling of *law* and *territoriality*. For centuries, roughly since the Peace of Westphalia (1648), political geography has provided jurisprudence with an easy answer to the question of how widely a ruling should apply, and that is as far as the national borders within which the legal authority operates. That coupling could be summarised as "my place my rules, your place your rules". It may now seem obvious, but it took a long time and immense suffering to reach such a simple approach, which is still perfectly fine today, as long as one operates only within a physical space. However, the Internet is not a physical space, and the territoriality problem arises from an ontological misalignment between the normative space of law, the physical space of geography, and the logical space of the digital. This is a new, variable "geometry" that we are still learning to manage. For instance, the decoupling of law and territoriality became problematically obvious during the debate on the right to be forgotten (Floridi 2015). Search engines operate within an online logical space (cyberspace) of nodes, links, protocols, resources, services, URLs, interfaces, and so forth, which means that anything is only a click away. So, it is difficult to implement the right to be forgotten by asking Google to remove links to someone's personal information from its .com version in the USA because of a decision taken by the Court of Justice of the European Union, even if that decision may seem pointless, unless the links are removed from all versions of the search engine. Note that such a misalignment of spaces does not cause only problems; it also provides solutions. The non-territoriality of the digital works wonders for the unobstructed circulation of information. In China, for example, the government has to make a constant and sustained effort to control information online.

Finally, here is a coupling that turns out to be more accurately a re-coupling. In his book *The Third Wave*, Alvin Toffler coined the term "prosumer" to refer to the blurring and merging of the role of producers and consumers (Toffler 1980). Toffler attributed this trend to a highly-saturated marketplace and mass production of standardised products, prompting a process of mass customization, and hence an increasing involvement of consumers as producers of their own customised products. The idea had been anticipated by Marshall McLuhan and Barrington Nevitt (McLuhan & Nevitt 1972), who attributed the phenomenon to electricity-based technologies. Later, it came to refer to the consumption of information produced by the same population of producers, for

example on YouTube.[1] However, this is not a *new* coupling. To be precise, it is rather a recoupling. For most of our history (90% to be precise, (Lee & Daly 1999)), we have lived in hunting-gathering societies, foraging to survive. During this long time, producers and consumers normally overlapped. Prosumers hunting wild animals and gathering wild plants were, in other words, the normality, not the exception. It is only since the development of agrarian societies, ca. 10,000 years ago, that we have seen a complete, and after a while culturally obvious, separation between producers and consumers. Unsurprisingly, human behaviour online has been compared and studied in terms of foraging models since the 1990s (Pirolli & Card 1995, 1999, Pirolli 2007). One may therefore stress that this parenthesis is coming to an end and that prosumers are back, recoupled by the digital.

The reader may easily list more cases of coupling, decoupling, and recoupling. Think, for example, about the difference between *virtual reality* (decoupling) and *augmented reality* (coupling), the ordinary decoupling of *usage* from *ownership*, or the current debate about a universal basic income, a case of decoupling *salary* from *work*. But it is time to move from the how to the why question. Why does the digital have this *cleaving power*[2] to couple, decouple, and recouple the world? Why do other technological innovations seem to lack a similar impact? The answer, I surmise, lies in the combination of two factors.

On the one hand, the digital is a *third order technology* (Floridi 2014a). It is not just a technology between us and nature, like an axe (first order), or a technology between us and another technology, like an engine (second order). It is rather a technology between a technology and another technology, like a computerised system controlling a robot building a car (third order). Because of the autonomous processing power of the digital, we may not even be on (let alone in) the loop. On the other hand, the digital is not merely enhancing or augmenting reality, it radically transforms it because it creates new environments that we then inhabit and new forms of agency, with which we interact. There is no term for this profound form of transformation, so in the past (Floridi 2010) I coined *re-ontologising* as a neologism to refer to a very radical kind of re-engineering; one that not only designs, constructs, or structures a system (e.g. a company, a machine, or some artefact) anew but that fundamentally transforms its intrinsic nature, that is, its ontology. Put together, these two factors suggest that the digital owes its cleaving power to its being a re-ontologising, third-order technology. This is why it does what it does, and why no other technology has come close to a similar effect.

If all this is even approximately correct, then it may help us make sense of some current phenomena that are apparently unrelated and yet may be due to an implicit misunderstanding about the digital's cleaving power and its increasing, profound, and long-lasting consequences: artificial intelligence (AI) and direct democracy.

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[1] Unaware of these precedents, almost 20 years after Toffler, I introduced the word "produmer" to capture this phenomenon in (Floridi 1999), see also (Floridi 2004, 2014b). I should have known better.

[2] I have chosen "cleaving" as a particularly apt term to refer to the de-re-coupling power of the digital because "to cleave" has two meanings (a) "to split or sever something", especially along a natural line or grain; and "to stick fast or adhere strongly to" something. This may seem contradictory, but it is due to the fact that "to cleave" is the result of a merging into a single spelling, and hence into a twofold meaning, of two separate words: (a) comes from the Old English *cleofan*, related to the German *klieben* (to cut through); whereas (b) comes from the Old English *clifian*, related to the German *kleben* (to stick or cling). They have very different Proto-Indo-European roots, see http://www.etymonline.com/index.php?term=cleave.

Many people today think that AI is about coupling artificial agency and intelligent behaviour into new artefacts. This is a misunderstanding. The opposite is actually true: AI is about decoupling successful problem solving from any need to be intelligent. And it is only when this decoupling can be achieved that AI is successful. Let me explain.

The best definition of AI is still the one provided by McCarthy, Minsky, Rochester, and Shannon in their classic "Proposal for the Dartmouth Summer Research Project on Artificial Intelligence", the founding document and later event that established the new field of AI in 1955:

"For the present purpose the artificial intelligence problem is taken to be that of making a machine behave in ways that would be called intelligent if a human were so behaving". (McCarthy, Minsky, Rochester, & Shannon 2006).

It is a counterfactual: were a human to behave in that way, we would call that behaviour intelligent. It does not mean that it is intelligent. This is a fallacy that smacks of superstition (compare: the river reaches the lake by following the best possible path, removing obstacles in its way; if this had been done by someone, we would have considered that behaviour intelligent; so the river's behaviour is intelligent). It echoes Turing's test (Floridi, Taddeo, & Turilli 2009): it is about performing a task successfully—what I have called solving a problem—in such a way that the outcome is indistinguishable from (Turing), or perhaps even better than, what a human intelligent agent would have been able to achieve. But above all, the definition contains the seeds of an engineering, as opposed to a cognitive, approach to AI. It is only the outcome that matters, not whether the agent or its behaviour is intelligent. Thus, AI is not about reproducing human intelligence, it is about doing without it. AI is the continuation of intelligence by other means, to paraphrase Carl von Clausewitz. A dishwasher does not clean the dishes as I do, but at the end of the process, its clean dishes are indistinguishable from mine, indeed they may even be cleaner. The same applies to AI. This is why driverless cars are not cars driven by robots seated behind the wheel instead of you. Today, AI decouples successful problem solving from intelligent behaviour, and it is thanks to this decoupling that it can relentlessly colonise the boundless space of tasks, whenever these can be successfully performed without any understanding, awareness, sensitivity, concerns, hunches, insights, meaning, experience, even wisdom—and all those other ingredients that contribute to qualifying human intelligence. In short, it is precisely when we stop trying to reproduce human intelligence that we can be successful in replacing it in an increasing number of jobs. Had we waited for even a spark of real artificial intelligence, my smart phone would never have become so much better than me at playing chess. John McCarthy knew this very well. This is why he never stopped complaining about treating competitive chess as a case of AI (McCarthy 1997). He was right. It is not. But he was wrong in thinking that it is not a good alternative.[3]

The second phenomenon concerns democracy. In this case, we are being misled into thinking that the digital *should* (note the normative as opposed to descriptive approach) recouple *sovereignty* (political power that can be legitimately delegated) and *governance* (political power that is legitimately delegated, temporarily, conditionally,

[3] I met John in is the late 1970s at different meetings and then more regularly because of a book project to which we both contributed. He never changed his mind about the real feasibility of true AI as the non-biological equivalent (or perhaps a better version) of human intelligence.

and accountably, and that can be equally legitimately withdrawn). I already wrote about this in a recent letter (Floridi 2016b) so I shall be brief. *Representative* democracy is commonly (if mistakenly) seen as a compromise due to practical, communication constraints. True democracy would be *direct*, being based on unmediated, constant, and universal participation of all citizens in political matters. Unfortunately, so goes the argument, we are too many, and so delegation of political power is a necessary, if minor, evil ((Mill 1861), p. 69). It is the myth of the city-state, and especially of Athens. The compromise in favour of a representative democracy has seemed inevitable for centuries, until the arrival of the digital. According to some people, this now promises to couple (or recouple, if you believe in some mythical good old days) sovereignty and governance to deliver a new sort of democratic, digital agora, which could finally enable the regular, direct involvement of every interested citizen. It is the same promise made by the referendum instrument (especially if it is binding rather than advisory). In either case, voters are asked directly what should be done. The only task left to the political, administrative, and technical class would be that of implementing the popular decision. Politicians would be *delegated* (not *representative*) civil servants in a very literal sense. Yet, this is a mistake, because indirect democracy was always the plan. The decoupling is a feature not a bug, to be trite for a moment. And this is because a democratic regime is first of all characterised not by *procedures* or *values* (which it also is) but by a clear and neat *separation*—that is, a decoupling—between those who hold political power (sovereignty) and delegate it legitimately by voting, namely all voting-age citizens and those who are entrusted with this political power (governance) and exercise that mandate by governing transparently and accountably, for as long as they are legitimately empowered. To put it simply, a democratic regime is not merely a way of exercising power but first and foremost a way of structuring it: those who hold the power do not exercise it but give it to those who exercise it but do not hold it. Conflation of the two sides leads to brittle forms of dictatorship or mob rule. From such a perspective, representative democracy is not a compromise but actually the best form of democracy. And using the digital to couple (or, more mythically, recouple) sovereignty and governance would be a costly mistake. Brexit, Trump, the Five Star Movement, and other populist disasters caused by the "tyranny of the majority" (Adams 1787) are sufficient evidence of this. We need to consider how best to take advantage of the planned, representative decoupling between sovereignty and governance, not how to erase it. Consensus is the problem. And with this invitation, we are really getting now to the "so what" question.

Assuming that the previous answers to the why and how questions are acceptable, what difference does it make to understand the power of the digital in terms of cutting and pasting the world in unprecedented ways? An analogy may help to introduce the answer. If one has only one piece of paper and absolutely nothing else, not even another piece of paper to put next to it, there is nothing else to be done apart from enjoying the piece of paper itself. But if we could cut the paper into two, there would already be several possibilities of combining them together. Two pieces of paper provide more affordances and fewer constraints than a single one, and a lot of them even more so. But cutting and pasting the single piece of paper is exactly what the digital does best. And taking advantage of such affordances and constraints in view of some problem solving is called *design*. So, the answer should now be clear. The digital's cleaving power hugely decreases reality's constraints and escalates its affordances. By doing this, it

makes design—the art of taking advantage of constraining affordances to satisfy some requirements that define the fulfilment of a goal—the innovating activity that defines our age. Our journey is now complete. Each age has innovated its cultures, societies, and environments by relying on at least three main elements: *discovery*, *invention*, and *design*. They are tightly intertwined, yet innovation has often been skewed, like a three-legged stool in which one leg is longer than the others. Post-renaissance and early modernity may be qualified as the age of discoveries, especially geographic. Late modernity is still an age of discoveries but, with its industrial and mechanical innovations, is perhaps even more an age of inventions. And of course all ages have also been ages of design, at least because discoveries and inventions require ingenious ways of linking and giving form to new and old realities. But if I am correct in what I have argued so far, then it is really our age that is quintessentially and, more than any other, the age of design. Because the digital is lowering the constraints and increasing the affordances at our disposal, it offers us an immense and growing freedom to arrange and organise the world in a multitude of ways. Of course, any design requires a project. And in our case, it is a *human project* for our digital age that we do not have yet. But we should not let the digital's cleaving power shape the world without a plan. We should make every effort to decide in which direction we wish to exploit it, to ensure that the information societies we are building thanks to it are open, tolerant, equitable, just, and supportive of the environment and human flourishing. The most important consequence of the digital's cleaving power should be a better design of our world.

References

Adams, J. (1787). *A defence of the constitutions of government of the United States of America*. London: C. Dilly.

Alterman, Hyman. 1969. *Counting people: The census in history: Harcourt*, Brace & World.

Floridi, L. (1999). *Philosophy and computing: an introduction*. London: Routledge.

Floridi, L. (2004). LIS as applied philosophy of information: a reappraisal. *Library Trends, 52*(3), 658–665.

Floridi, L. (2005). The ontological interpretation of informational privacy. *Ethics and Information Technology, 7*(4), 185–200.

Floridi, L. (2006). Four challenges for a theory of informational privacy. *Ethics and Information Technology, 8*(3), 109–119.

Floridi, L. (2010). *Information—a very short introduction*. Oxford: Oxford University Press.

Floridi, L. (2014a). *The fourth revolution—how the infosphere is reshaping human reality*. Oxford: Oxford University Press.

Floridi, L. (Ed.). (2014b). *The onlife manifesto—being human in a hyperconnected era*. New York: Springer.

Floridi, L. (2015). "The right to be forgotten": a philosophical view. *Jahrbuch für Recht und Ethik - Annual Review of Law and Ethics, 23*(1), 30–45.

Floridi, L. (2016a). On human dignity as a foundation for the right to privacy. *Philosophy & Technology, 29*(4), 307–312.

Floridi, L. (2016b). Technology and democracy: three lessons from Brexit. *Philosophy & Technology, 29*(3), 189–193.

Floridi, L., Taddeo, M., & Turilli, M. (2009). Turing's imitation game: still an impossible challenge for all machines and some judges—an evaluation of the 2008 Loebner contest. *Minds and Machines, 19*(1), 145–150.

Lee, R. B., & Daly, R. H. (1999). *The Cambridge encyclopedia of hunters and gatherers*. Cambridge: Cambridge University Press.

McCarthy, J. (1997). AI as sport (book review of "Kasparov Vs. Deep Blue" by Monty Newborn). *Science, 276*(5216), 1518–1519.

McCarthy, J., Minsky, M. L., Rochester, N., & Shannon, C. E. (2006). A proposal for the Dartmouth Summer Research Project on Artificial Intelligence, august 31, 1955. *AI Magazine, 27*(4), 12.

McLuhan, M., & Nevitt, B. (1972). *Take today; the executive as dropout*. New York: Harcourt Brace Jovanovich.

Mill, J. S. (1861). *Considerations on representative government* (2nd ed.). London: Parker, Son, and Bourn.

Pirolli, P. (2007). *Information foraging theory : adaptive interaction with information*. Oxford: Oxford University Press.

Pirolli, Peter, and Stuart Card. 1995. Information foraging in information access environments. *Proceedings of the SIGCHI conference on Human factors in computing systems*:51–58.

Pirolli, P., & Card, S. (1999). Information foraging. *Psychological Review, 106*(4), 643.

Toffler, A. (1980). *The third wave*. London: Collins.

Torpey, J. (2000). *The invention of the passport: surveillance, citizenship and the state*. Cambridge: Cambridge University Press.

Warren, Samuel D, and Louis D Brandeis. 1890. The right to privacy. Harvard Law Review:193–220.