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Not-so-SMART: Why new platform and surveillance technologies are bad news for science and understanding

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ABSTRACT

This short paper critically engages with new technologies for data processing related to research outputs, connections and management. Such technologies are generally heralded as making research and publishing more efficient, enabling better connections between researchers and bringing disparate forms of research data together for better research and output management. Based on the examples of Elsevier's Pure and Fingerprint technologies, I argue that in reality the effects of these new technologies and the surveillance platforms they are based on, will be precisely the opposite: they degrade scientific understanding and relations by reducing them to superficial numbers, clicks and hits; they will lead to increased anxiety and stress among academic staff; and they open up the possibilities for new types of panopticon academic governance. The paper concludes by exploring an alternative based on decentralized diversity in research(er) representation.

1. Introduction

Over the last years, many universities have introduced new technologies for data processing related to research outputs, connections and management. Many of these come from various corporate entities, though in this paper I focus on Elsevier's fingerprint and PURE technologies due to their increasingly dominant market position. The general promotion around these systems is that they will enable all of us to create more extensive research profiles of ourselves, render visible research collaborations and, most importantly, search more efficiently for knowledge and expertise. This sounds good on the surface. However, in reality, it is a disaster for academics, for meaningful academic work and for all a university should stand for. The actual effects in practice of these 'platform' or 'surveillance capitalism' technologies are predictable (Srnicek, 2017; Zuboff, 2019). Academics are likely to be further pressured to focus on superficial lists and metrics (how many citations, likes, shares, mentions, etc) and content work will increasingly shift from meaningful, in-depth *understanding* to a focus on superficial exchange and connection of (commercially interesting) *knowledge*. The actors that will mostly benefit from this 'Facebook-ization' of research and academic work are the corporations that already make excessive profits from public universities, including Elsevier.

In this short article, I will explain PURE and Fingerprint, as applications of broader forms of platform or surveillance capitalism. I will then explain why this this degrades science and understanding, and what could be an alternative.

2. PURE and fingerprint

First, what do PURE and Elsevier's 'Fingerprint Engine™' do? PURE basically captures research(er) data that includes, but also goes far beyond publication and output data. According to Elsevier:

> "Pure can combine your institution's internal systems such as your HR, student administration, finance and award management systems, along with a variety of external data sources including prebuilt researcher profiles through Profile Refinement Services, plus any legacy data into a single platform. Researchers, administrators and delegates enter supplemental data just once and personnel throughout the organization use the information in Pure for a wide range of purposes." (https://www.elsevier.com/solutions/pure/features)

As a result, Elsevier boasts that "Pure delivers your institution an all-inclusive view of your researchers' activities, areas of expertise and accomplishments" (idem). The panopticon effects are worrying, yet for brevity I will not delve into those here.

'Fingerprinting' is a related (Elsevier patented) technology focused on content. According to Elsevier, it "mines the text of scientific documents – publication abstracts, funding announcements and awards, project summaries, patents, proposals/applications, and other

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sources – to create an index of weighted terms which defines the text, known as a Fingerprint™ visualization" (https://www.elsevier.com/solutions/elsevier-fingerprint-engine). The promised result: "By aggregating and comparing Fingerprints, the Elsevier Fingerprint Engine enables institutions to look beyond metadata and expose valuable connections among people, publications, funding opportunities and ideas" (idem).

Superficially, this sounds promising. Yet in actual reality, it is nothing short of disastrous for academics and academic work. I will explain why this is so in various steps, starting with the most elementary point that Elsevier's algorithms will increasingly be in charge of how academic work is represented. As the website says, the fingerprint technology 'mines' texts to create 'an index of weighted terms'. What this means in practice is that our writing is translated into boxes and categories (defined by Elsevier) that are then given weight based on *quantitative* appearance. According to the Fingerprint white paper: "Concepts found in documents are weighted according to their frequency, their occurrence in a text's title or text body" (https://www.elsevier.com/_data/assets/pdf_file/0008/181763/FPE_WhitePaper_May_2016_update.pdf, page 3). Hence, whether you are critical of – for example – resilience or positive about this term is not taken into account. If you use it often enough, it will come out as something that has a *quantitative* 'weight'. This, therefore, already provides a distorted reflection of content, as researchers might give completely different weight about what is important in their texts and hence their profile as intellectuals. After all, an abstract is meant to give the researcher the opportunity to actually state what is important and why. Yet this seems no longer really relevant, and Elsevier states this openly:

> "Our Profile Refinement Service will create rich researcher profiles with *minimal customer involvement*. Take advantage of Elsevier's Profile Refinement Service to enhance your profiles. Before importing Scopus data into Pure, our Profile Refinement Team subjects your researchers' publication lists to automatic name disambiguation and rigorous manual review. New publications are automatically added to each profile as they become available in Scopus. The result: peace of mind that your author information is accurate, dependable and up to date, *with minimal manual intervention*" (https://www.elsevier.com/solutions/pure/features, emphasis added).

In other words: Elsevier will *minimize* your own involvement in your research profile. As long as you upload your 'data' (your 'output'), they will take care of your 'profile' for you. Besides the fact that this will lead to a totally bland homogeneity in terms of our profiles, it also means that actual qualitative differentiation in how you would like to profile yourself and your texts is no longer possible or necessary. Academics and their research become reduced to a set of 'weighted indexes and terms'.

3. From understanding to connectivity

Next, all this is supposed to lead to (creating more) 'valuable connections' between "people, publications, funding opportunities and ideas". Yet what 'valuable' means here is unclear. There are several basic problems. First, connections based on *quantified* indexes say nothing about the *quality* or *relevance* of the work you are connecting to. It simply and only says that (apparently) someone else has been using the same terms. How, why and in what context disappears from view. Second, connections based on quantified indexes have a high risk of making wrong inferences about *importance*. If many people use the term methodology, it does not necessarily mean that (A) they attach importance to it (it may be just a ritual of including it); (B) they actually take it seriously; (C) that different people who use the term could or *should* be 'connected'.

Third, and arguably most problematic, is that connections (will) become increasingly focused on the alleged popularity of certain terms and hence certain research(ers). More specifically, for example, research funding can be increasingly directed to those terms or research (ers) that apparently receive a lot of 'weight' in fingerprint and PURE systems, and are thus – falsely - equated with importance or quality. The result will be that Elsevier or universities can start to check, akin to Twitter, what is 'trending' or going 'viral'. The obvious problem again is that an 'algorithmic push of intensity' will side-line or overpower quality (cf Van Dijck, 2013: 77).[1] Indeed, the two (algorithmic intensity and actual quality) will become increasingly harder to separate for many researchers, especially those new to complex debates.

In all this, a broader point is crucial. As Jose van Dijck argues in her book *The Culture of Connectivity* 'human connectedness' and 'automated connectivity' are not the same, yet they are conflated through these algorithm-driven technologies. Based on these weighted indexes, combined with your citations, 'Altmetrics' (uptake of your research in social media, etc) and other 'accomplishments', it can make research, ideas or people seem important that are actually not or, critically, *should not be*. To give a crude example: the journal *Third World Quarterly* recently published an article 'The Case for Colonialism' that argued *for* a return to colonial enterprise. It quickly became the 'most viewed' article of the journal, which was originally set up as a journal *against* colonial thinking. The broader point here is that context and quality get lost in algorithms, while they can be quite easily manipulated; for instance, by deliberately putting many terms in an article even though it serves no content purpose.

All of this will therefore further shift academic work from meaningful in-depth *understanding* and *engagement* to a focus on superficial, 'clickbait-focused' exchange and connection of *knowledge* (whereby actual understanding is *not* the same as knowledge, as understanding is about 'knowledge that becomes meaningful in context'). Moreover, algorithms and the data platforms will pigeonhole us and our research into categories and boxes we have little control over (Zuboff, 2019). This leads to what is known in the literature as a 'nichification' of audiences, where our ideas and achievements are increasingly organised into boxes and generic profiles, leading to 'increased insularity', 'reinforced prejudice' and enhanced potential for 'social polarization' (Pasquale, 2015: 79). This is the opposite of what meaningful knowledge exchange should be about.

4. Predictable effects on academics and knowledge production

All this is reason enough to not want to be engaged in any 'fingerprinting', but there are two additional points that are important, related to the predictable effects this will have on academics and on knowledge production.

The first predictable effect of all this will be that academics (especially younger ones who grow up with this) will be increasingly focused on superficial lists and metrics (how many citations, how many tweets), rather than actual quality. You can already see this on the fingerprint website on different University websites (like Eindhoven University, https://research.tue.nl/en/persons/ or my own Wageningen University, https://research.wur.nl/), where under every researcher there is a superficial graph of quantified output. This *literally* pushes quality to the background and increases the pressure to manipulate the system in order to gain rewards (tenure, promotion, etc). While these systems may perhaps be customized per institution (so not showing this graph per researcher but per unit of research output), the effect in terms of power in neoliberal academic contexts will be the same: ever-increasing pressures on academics to write more, get more citations, bring in more money, get more tweets, and so forth. The logical consequence

[1] What emerges, according to Andrejevic (2013: 140), "is a model in which correlation takes the place of correspondence (between symbolic representation and that which is represented) and effective intensity comes to stand in for and displace referential "truth," authenticity, and factual evidence".

of these superficial pressures will be more stress, burn-outs and less genuine pleasure in your work (which, after all, derives from meaningful quality, not from meaningless quantity).

Second, all this enables a deeper commodification and manipulation of knowledge and academics, and leads us further away from the core mission of the university, to be a *public* institution not beholden to political or economic power or influence.[2] Elsevier and many universities will insist, of course, that the technologies respond to our needs for recognition, connection and effective academic labour. Yet, according to Zuboff (2019: 53), "the precise moment at which are needs are met is also the precise moment at which our lives are plundered for behavioral data, and all for the sake of others' gain. The result is a perverse amalgam of empowerment inextricably layered with diminishment". The organizing structure through which this occurs is what she refers to as 'surveillance capitalism', though others refer to this as 'platform capitalism' (Srnicek, 2017).

While I do not have space to get into detail about these connected issues (see Büscher, 2020); the point here is that different types of data about all of us can be analyzed by our universities, and thus can also easily be (mis)used to do away with types of thinking or ideas that are not (directly) commercially viable or worse, in the (commercial or other) interests of the university. I am not arguing that this will (immediately) happen, but the pressures and temptations towards this type of panopticon governance will increase, certainly in a context where universities also have to compete intensely over students, funds and (top) academics. This trend will be further stimulated by the excessive focus on equally superficial global university rankings. Moreover, it is not clear how much of this data will become directly accessible to Elsevier or other corporations, but it has to be assumed that they will be able to access a lot of data about all of us, that they can use to their commercial advantage. After all, as Srnicek (2017: 63) explains for data platforms more generally: "today every area of the economy is increasingly integrated with a digital layer; therefore, owning the infrastructure that is necessary for every other industry is an immensely powerful and profitable position to be in". And the mandatory '™' after Fingerprint on Elsevier's website is a clear give-away that they aim to protect their 'infrastructure' at all costs, even though they are keen for all universities to use it.

Hence, as Elsevier owns the fingerprint and PURE infrastructure, it is assumed that they will have access to much of our data. And having access to all this data is immensely profitable for Elsevier, as it can be linked with their Evise journal manuscript submission and management system and other data so that they can surveil, target and influence researchers much more directly and individually. They can so – literally – become the 'technological' background to our academic lives, which is an immensely commercially powerful position to be in for them. These concerns have already been aired from the perspective of journal publishing and the pressures journal are under (see Wainright and Büscher, 2019; Geoforum Editors, 2019). It allows them to stimulate all types of metrics and 'analyses' that will have the above predictable effects on all of us academics.

5. Conclusion

In conclusion, the introduction of connected technologies, such as fingerprinting and PURE, at many universities is nothing short of disastrous and should be actively resisted. It may look and sound attractive on the surface, but it will degrade science and understanding, while turning academics into pawns of a larger form of academic surveillance capitalism. We and our knowledge and expertise will – literally – be seen as resources that can/should be 'mined'. And the term 'mining' is pivotal here: this system is set up so that data can be 'extracted' from us so that knowledge production and researchers can further be 'encouraged' and manipulated towards particular (commercial or other political, economic, social) ends. This system sees our intellectual work the same way that Facebook sees social relations and AirBnB sees tourists and visitors: as numbers to be mined, exploited and 'optimized' for all the wrong reasons.

What would be an alternative? Instead of allowing private companies to 'extractively' mine us, we could simply be given space on our university websites to creatively develop our own profiles where we, academics, (are able to) highlight what we believe is important. We can still quite easily make a list of all our outputs in excel or word, so that these become available for peer-review evaluation. Yet instead of a focus on quantitative data gathering, the emphasis could be on qualitative selection of material that is seen as representative of ideas, debates and interventions. This will not translate in a homogenous set of 'profiles' that can be quantitatively compared. But this is exactly the point, as it will showcase (and celebrate!) the diversity of ideas, directions and people that operate in any university. It will also not facilitate endless amounts of new, superficial connections, but perhaps slow academia down just enough so that we actually have time to meaningfully engage with a more limited number of colleagues and peers. It will be focused not on competitive connectivity, but on stimulating and treasuring collaborative community.

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[2] As so aptly formulated in the Magna Charta Universitatum signed in Bologna in 1988 by over 800 universities in over 85 countries. The Magna Charta states about universities that: "to meet the needs of the world around it, its research and teaching must be morally and intellectually independent of all political authority and economic power".