Global Communications Governance Research:

Colliding Epistemologies and Methodologies

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ABSTRACT

What risks arise with a turn to epistemologies and methodologies of science (data science, cultural analytics, web science or data analytics) in research aimed at critically examining the datafied world? This chapter reflects on the consequences of deploying these approaches and on whether they sustain a normative agenda invariably aligned with the interests of capital and corporate datafication strategies. The chapter argues for constant vigilance and efforts to ensure that researchers are sensitized to differences in the epistemologies and methodologies of science, humanities and social science traditions to ensure that these are not papered over by claims to inter- or trans-disciplinarity.

INTRODUCTION

'Artificial intelligence is changing the world, and humankind must adapt' says the CEO of Enterra Solutions, (DeAngelis, 2014, np). Enterra, a big data analytics technology company, supplies computational technologies 'that mimic the human brain'. [1] It employs specialists in artificial intelligence, knowledge management, mathematics and network security, drawing multidisciplinary skills together to enable adaptations to innovations in digital technologies. The assertion that humans must *adapt* to innovative technology is all too familiar in discourses about disruptive technology innovation, notwithstanding decades of research convincingly demonstrating that simplistic claims of this kind vastly oversimplify and, worse, misrepresent, the integration of technology within society (Mansell, 2021).

Skills in the expanding field of data science, including data analytics tools developed in support of digital business strategies, are being repurposed to support academic research aimed at investigating the impacts of digital innovations. In the media and communications field, researchers are appropriating these tools to support novel research designs and methodologies (Rogers, 2019), often involving collaborations with researchers in the science and engineering fields. When media and communications governance is understood as "the sum total of mechanisms, both formal and informal, national and supranational, centralized and dispersed, that aim to organize media systems according to the resolution of media policy debates" (Freedman, 2008, p. 14), how helpful are these research tools for creating an evidence-base that can be used to inform media and communications industry governance choices?

Researchers are developing sophisticated data analytics tools to examine, for example, the impacts of harmful or illegal information on social media, the susceptibility of human beings to algorithmic nudges to their behaviour and links between data literacy and socio-economic inequalities (Amoore, 2020; Ananny & Crawford, 2018; Helsper, 2021; Shah, et al., 2015; Zuboff, 2019). They are deploying the tools of data science, often using vast

[1] See https://www.linkedin.com/company/enterra-solutions-llc/

repositories of commercial data.[2] As they do so, they are crossing the boundaries of the humanities, social sciences and sciences.[3] Boundary crossing involves encounters with epistemologies, framings of research questions, objects of research and methodologies for investigation and these are often incommensurable if they are applied uncritically in combination. The media and communications governance research field always has been interdisciplinary insofar as it draws upon insights from many disciplines within the social sciences and upon administrative or instrumental as well as critical traditions of research (Melody & Mansell, 1983). Contemporary collaborations among scholars trained in the social sciences and humanities and in computer science and software engineering are offering new opportunities to undertake research that utilizes sophisticated computational methods, but these opportunities come with a risk. The risk is that the epistemologies and methodologies of a calculative science will become the preferred approach over qualitative critical approaches. In this chapter, I reflect on some of the risks and consequences of the collision of epistemologies and methodologies that occurs when inter- or transdisciplinary research is deployed to examine global media and communications governance arrangements and their consequences.

THE RESURGENCE OF (DATA) SCIENCE

New institutional arrangements for the governance of media and communications are being introduced in the wake of concerns about multiple harms associated with the business strategies of digital platform and data analytics companies.[4] Many of these harms are a consequence of commercial datafication strategies' erosion or subversion of public values, including rights to privacy, freedom of expression and non-discrimination; that is, what constitutes good and bad behaviour online. Insofar as choices about governance arrangements in the media and communications industry are informed by evidence, as distinct from popular expressions of outrage, research on the causes and consequences of technology-enabled developments in the media and communications industry has an important role to play in the policy making process (Mansell & Steinmueller, 2020; Van Dijck et al., 2018).

Evidence in support of the case for intervention in the digital market to address such harms increasingly is drawn from studies in the data science field. One goal in this field may be described as creating "viable datasets out of messy, real world data" that can be processed using data analytics techniques "to tell us something about the world, through explanation, prediction and the testing of interventions". [5] It is in this context that

[2] These data may be 'social data' collected from the public web or provided by Google, Facebook or Twitter, 'machine data' such as that generated by sensors, or 'transactional data' including records and receipts, all raising questions about completeness, presentation, etc.

[3] For example, the Processing Citizenship project examines the digital registration of migrants and involves social scientists and software developers, see https://processingcitizenship.eu/project/ or the Oxford Internet Institute programme on the Governance of Emerging Technologies involving a legal scholar, ethicists and specialist in machine learning, see https://www.oii.ox.ac.uk/research/governance-of-emerging-technologies/

[4] At the time of writing there were some 108 reports on policy in Austrailia, Canada, the European Union and the United States, see https://docs.google.com/document/d/1AZdh9sECGfTQEROQjo5fYeiY_gezdf_11B8mQFsuMfs/edit#heading=h.j2s0yj6z5dii , together with multiple legislative initiatives pending or implemented and measures are also being introduced in the global South.

[5] See https://www.oii.ox.ac.uk/study/msc-in-social-data-science/

questions need to be asked about whether an inter- or transdisciplinary turn to computer science and other sciences will reduce the scope for research concerned with the normative consequences of the spread of digital technologies. Will analytical approaches that rely increasingly on these techniques be able to reveal the causes and consequences of power asymmetries, exclusions and injustices associated with the deployment of digital technology-based services? As Burns *et al.* (2018, p. 126) ask "is a radical politics possible through new data sources and analytics?"

Gibson portrayed cyberspace – a datafied world of digital networks and services – as "a consensual hallucination" (Gibson, 1984, p. 59). His characterization suggests an imagined world in which human systems are represented by datafied abstractions. Such abstractions are of principal concern in fields such as behavioral economics, marketing and strategic management which have a strong affinity to computational models. These fields of study are employed by leading developers of the artificial intelligence-enabled data analytics tools taken up by companies that are honing their datafication strategies. With scholars in computing science, they are major contributors to the flourishing field of data science, typically understood as a predictive science (Dhar, 2013). This field is attracting substantial investment into studies that privilege a particular view of scientific inquiry, one that favors investment in advances in machine learning to support capabilities for mathematical behavioral modelling. A principal goal is to augment individual human abilities and to enable machines to mimic those abilities (Johansen et al., 2012). It is not to ask questions about why certain values and power relations come to be articulated through corporate datafication strategies.

There are several reasons. The first is that data science is predominantly located in the tradition of scientific inquiry that depicts research as a predictive endeavour within "a non-ideological environment" (Royal Society, 2010, p. 15), that is, in an environment unconcerned with normative or value-based assessments. In this context, data science is concerned with the causes and consequences of digital systems *within* the parameters of specified computational models. The emphasis is on how determinants of change in the digital ecology operate. With researcher access to vast data resources and new computational tools, they are able "to view data mathematically first and establish a context for it later" (Anderson, 2008, np). When context is abandoned, however, factors external to the computational models are necessarily at risk of being neglected. The aim is to determine how people's behaviours align with identifiable patterns in digital traces and to improve the computational models so as to reduce distinctions between augmented and physical reality and to shape what comes to be recognized as a desirable future (Jasanoff, 2015; Palermos, 2017; Reigeluth, 2014). In the context of media and communications governance research, when predictive modelling is the priority, analysis of the determinants of power asymmetries that can give rise to the harmful consequences in a datafied world for individuals and social groups is not typically on the theoretical or empirical research agenda.

Second, data science typically involves a decoupling of explanation from prediction. The association of the science of data analytics with the 'end of theory', that is, with a shift away from raising contentious questions about why power asymmetries arise and are replicated in the online context is not a new phenomenon (Boyd & Crawford, 2012). There have been moves to achieve an integrated scientific programme of research associated with technological innovation for decades with the result being occlusion of the need for

"reasoned history and socio-political debate", achieved by a decoupling of explanation from prediction (Freeman, 1994, p. 10). This agenda is advanced by deploying the dominant epistemologies and methods of a 'universal' science with "vain pretensions … to understand mind as computation" (Winograd, 1995, p. 443). What is relatively new is the deployment of the tools of data science to address research questions that purport to address the choices available to policy makers who are seeking to introduce new media and communications governance arrangements. The turn in data science to a non-normative ambition to constitute a universal science certainly enables researchers to ask new questions about human behaviour and to undertake predictive analysis. But it also requires stringent modelling assumptions and, frequently, it embraces the epistemological claim that causality can be read from data patterns and visualizations (Canali, 2016).

Data science also often involves agnosticism with regard to social science theory or is biased towards positivist theories. Research that engages critically with data as an object for investigation and does not embrace the epistemology of the dominant data science approach is developing. Some social scientists are calling for a "symphonic approach to big data" (Halford & Savage, 2017, p. 1140), mixing new data analytics methods with ethnographic and interview-based methods, for example, so as to examine the changing digital materiality. In these research initiatives, critical theory may inform studies and be drawn from disciplines such as anthropology, design studies, media and communications or sociology (Dourish, 2016; Goulden et al., 2017; Neff & Nagy, 2016). And it may be argued, for example, that "not only has tools such as predictive machine learning led to new possibilities in existing, quantitatively oriented schools of thought in the field, it has also led to the application of explanatory strategies not normally associated with quantitative analysis (e.g. interpretivism) to quantitative data" (Helles & Ørmen, 2020, p. 291). Similarly, in the digital humanities the use of data analytics techniques is being welcomed when it gives rise to new paradigms and hybrid methodologies (Presner, 2010).

When the results of scientistic approaches to tools and methods are received by policy makers as 'objective', however, the fact that the consequences of 'real' world deployments of datafication strategies can depart substantially from modelled outcomes can be easily overlooked. The growing emphasis on research that is intended to "to foresee our behaviours and pre-empt our intent" (Hildebrandt, 2016, p. viii; Zuboff, 2019) is attracting the interest of policy makers who are charged with devising governance arrangements. Yet the aim of such research is not to explain the cultural, social, political or economic conditions that give rise to societal harms. In these instances, the tendency is to presume that data science research methodology practitioners are agnostic with regard to the choice of theory as an explanatory framework, e.g. neo-positivism or critical realism, and this is when epistemology becomes delinked from methodology.

In addition to these issues which make it difficult to ask questions about why commercial values and asymmetrical power relations are maintained or exacerbated, there are multiple practical issues when large scale data analytics techniques are applied. Large scale data sets are rarely formatted in a manner appropriate to research questions that are being posed and coding or computational skills are required to retrieve and prepare data for analysis. Outputs of computational programmes often lack transparency and it is challenging to assure those who want to rely upon results that the outputs are interpreted in a way that respects the limitations (and biases) of input data (Boyd & Crawford, 2012). Research ethics regarding anonymity and non-traceability to assure the protection of

individual privacy also need to be attended to. While none of these issues are new facets of the conduct of research, as quantitative methods become more sophisticated and arguably less transparent, they present new challenges for researchers working with data sets which are made available to them by companies.

DATA SCIENCE AS A SITE OF CONTESTATION

Theoretical or methodological agnosticism are common when inter- or transdisciplinary research is understood simply as an effort 'to achieve outcomes (including new approaches) that could not be achieved by established disciplinary approaches alone'.[6] In this context it may be argued that each disciplinary tradition in the sciences, social sciences and humanities has its own methods and 'habits of thinking' (Abbott, 2001). The argument is that inter- or transdisciplinary research endeavours can be conducted with equity accorded to otherwise clashing epistemologies and methodologies as researchers work to foster the 'unity of all knowledge' (Nicolescu, 2010). Some computational social scientists even suggest that in time divides between the sciences and social sciences (or humanities) will disappear as the tools of data science are taken up more widely (Wagner, et al., 2021). It is not possible to predict the likelihood of this happening in the media and communications policy field (Puppis & Van den Bulck, 2020), but it is important to draw attention to the epistemological and methodological contestations that are at stake. This is because of the risk that blending the predominant approach in data science with the critical branches in the social sciences will give rise to a 'common epistemological tool box' (Urquhart & Rodden, 2017); one that elides important differences.

In the critical traditions of the social sciences, knowledge is understood to be conditional upon the circumstances under which it is produced and it necessarily embraces contested values. This contrasts with 'digital positivism' in data science which privileges a methodological essentialism that favours the neglect of history, subjectivity and unequal power relations (Mosco, 2018). In the sciences and the critical social sciences there are substantial differences concerning what counts as knowledge (Sayer, 2000). Sometimes it is argued that data science is capable of a 'reflexive turn' if researchers can embrace "a conversational conception of human beings" and acknowledge "human agency and the ability of redesigning reality" (Krippendorff, 2008, p. 180). Such reflexivity requires, however, that researchers understand how their data analytics tools work; that is, "the consequences of developing software and algorithms in one way rather than another" (Halford & Savage, 2017, p. 1142). In the field of media and communications governance, there are few signs of this is happening. Instead, there are cautionary tales of the datafication of social media, internet governance and cybersecurity research with a neglect of "specific histories, ideologies, and philosophies" (DeNardis et al., 2020; Iliadis & Russo, 2016, p. 2).

The drive towards an inter- or transdisciplinary data science is dominated by the increasingly well-resourced efforts of researchers whose mission is best described as a dedication to establishing a "unitary, formal and scientific discourse" (Foucault, 1980/1972b, p. 85). As Taylor (2020, p. 2) observes, the data science community persists in privileging "positivist rhetorics of objectivity, rationality and certainty … a belief that

[6] https://www.ref.ac.uk/media/1112/idap-criteria-phase-review-report.pdf, p. 13. The different uses of terminology across the sciences and social sciences are not taken up here, see (Hulme & Toye, 2007).

quantification produces truth". This leaves little or no room for a "posthuman form of doubt" (Amoore, 2019, p. 149); for uncertainty and for an analytics of asymmetrical power. As Manovich (2020) argues, regardless of whether the new data analytics is called cultural analytics, web science or data science, they are the product of a normative agenda that is closely aligned with the interests of capital and corporate datafication strategies.

A literature on the critical uses of data analytics methods is developing in the field of 'critical data studies' with the aim of exploring "the mutual imbrication of data with spatial, social, political, economic, and institutional processes" (Burns et al., 2018, p. 1; Dalton & Thatcher, 2014; Larsen, 2020). In science and technology studies and in media and communications research, it is well recognized that data are imbued with social values, norms and epistemological claims (Couldry & Mejias, 2019; Jasonoff, 2017; Kitchin, 2017). Nonetheless, as data science comes to be treated as the preeminent apparatus of knowledge production, it is likely to create a wedge between "what may from what may not be characterized as scientific" (Foucault, 1980/1972a, p. 197). This separation has consequences. It influences whether evidence-based research entailing critiques of asymmetrical digital platform power can inform deliberations about the governance of the media and communications industries.

CONSEQUENCES OF METHODOLOGICAL COLLISION FOR POLICY MAKING AND GOVERNANCE

The search for patterns in data with little regard for how they are collected and curated or why and with what consequences algorithms condition what emergences from data analysis is in danger of being normalized. Critical research on people's experience of a datafied world and its harms which can be acknowledged by policy makers as a legitimate input to policy decisions is "scrambling to keep up" (Livingstone, 2019, p. 174). The power of the digital platforms and other data analytics companies is increasingly conferred on them by the prevailing epistemologies and methodologies of data science (Andrejevic, 2019). This is because data science calculative tools are performative (van Lente, 2012), that is, they '"do" something' (Kerr et al., 2020, p. 3). What they do is to make it difficult to undertake research that explains the complex determinants of harms associated with the digital environment. This is because research questions about the origins and determinants of power asymmetries tend to be excluded within the predominant data science paradigm. Or, if these kinds of questions are asked and researched using qualitative methods, the resulting evidence may be devalued as 'non-scientific' in policy forums. As a result, those responsible for governance are less likely to be influenced by research-based evidence that challenges commercial datafication values and less able to conceive of alternatives for developing digital environments that could uphold public values (Cammaerts & Mansell, 2020; Tripathi, 2016).

In the critical tradition of media and communications governance research historically, the focus has been on inquiry into whose interests are being served by the marketized deployment of new technologies (Halloran, 1974; Smythe, 1979). In the face of the current huge investment in data science, there is an urgent need for complementary investment in an 'analytics of power' (Foucault, 1980/1972a, p. 198). A priority must be to approach data science as an 'ontological epoch' (Berry, 2011); that is, as an emergent field that is shaping our comprehension of the benefits and risks of a datafied world. Data

science-based research on, for instance, the incidence of misinformation is limited by the 'pre-packaging' of data by companies (Acker & Donovan, 2019; Bruns, 2019) and, as Dalton et al. (2016, p. 7) says, "power asymmetries between data creator, data captor and data analyst play out unevenly across time and space". A research agenda that critiques the increasing dominance of a scientistic approach to data analysis must, however, go beyond concerns about the fact that research on behavioral manipulations, platform power and gatekeeping or content diversity is limited by inaccessible corporate data resources or by restrictive data access conditions.

What is needed is recognition that data science and its involvement in inter- or transdisciplinary research in the media and communications governance field is an important site of epistemological and methodological collision. This requires constant vigilance. Differences in the epistemologies and methodologies of data science and the critical traditions in the social sciences and humanities should not be papered over by claims to inter- or transdisciplinarity. When the calculative tools of data science dominate, research cannot yield evidence to inform governance deliberations that concern the exploitative power relations that threaten citizens' rights. The question is whether the tools of data science can work in the service of critical inquiry. One response is that subverting 'dataism' requires a confrontation of claims that data represent 'behavior-as-it-is' (Wu & Taneja, 2020). This, in turn, requires reflexivity to avoid being compromised by corporate data providers' agendas. More than this is required, however, if the march of 'digital positivism' is to be tackled effectively.

What is needed is a vigorous and persistent effort to provide insight into how contemporary digital media and communications providers are constituting people's engagement with the on and offline world and into the ways in which resistance can be mobilized effectively in the wake of the unseen 'attributive power of the algorithm' (Amoore, 2020; Kubitschko, 2018, p. 629). In effect, what is required is a heightened awareness of the need for an 'insurrection of subjugated knowledge' (Foucault, 1980/1972b, p. 81). There is precedent for this in the media and communications field, informed as it is by Innis's observation that when the 'mechanization, now digitization and datafication, of knowledge occurs with a tendency towards a monopoly of knowledge, it is essential to 'make some critical survey and report' (Innis, 1951, p. 190).

When there are signs that a universal data science is conferring legitimacy on the results of research that adheres to the data science standards consistent with a universalizing knowledge agenda, such critical surveys and reports are essential. Reports on the harms of commercial datafication and the structures of power that give rise to them are present in works that are intended to inform governance debates, (e.g. Ghosh & Couldry (2020) and Mazzoli & Tambini (2020)). In some instances, these works retain legitimacy in policy forums despite their location within the critical tradition of the social sciences. However, much greater attention needs to be given to sensitizing researchers to the incommensurable epistemologies and methodologies used in prevailing approaches to data science and in the critical research tradition.

Another response is to call for education to strengthen researchers' data literacy as well as the data literacy of policy makers and the public. Training programmes in data science are proliferating in universities and many companies are offering certification

programmes.[7] These typically provide for skills acquisition in computer science, software development, statistics, data visualization, machine learning and the infrastructures required to apply these skills. Training may extend to capabilities for data 'stewardship' including data cleaning and data management, often with a view to responding to organizational information management needs. Sometimes education in the humanities or social sciences is included, but training rarely encompasses in-depth awareness of disparate epistemological traditions. Yet this knowledge is essential if critical or normative questions are to be investigated concerning the risks and harms of a world saturated by algorithmic assemblages. Enhancing individuals' skills is important for employability, but it is also crucial to foster understanding that it is not possible to render commensurable that which is inherently incommensurable. This requires heightened respect for difference.

CONCLUSION

The answer to the question - how helpful are data-related research tools for creating an evidence-base that can be used to inform media and communications industry governance choices, is this. These tools can be helpful, for example, in the case of research revealing discriminatory outcomes of algorithms in relation to housing, employment, or social services (Wachter, 2021). They can also operate as a distraction insofar as they suppress research aiming to reveal the reasons that societies face increasing risks as a result of commercial datafication. The reasons stem, not only from undetected biases in research results arising from data inputs and less than transparent algorithms. They stem from power asymmetries associated with capitalist economies in which datafication, augmented by data science tools, contributes to socio-economic disadvantage, to exclusions due to gender or race, and to the view that the only pathway to a sustainable, fair and inclusive future is the advancement sophisticated tools for the manipulation of data.

One role for critical scholars is to document occasions when elisions in the name of interdisciplinary or transdisciplinary science occur such that the results of data science research on issues such as misinformation and filter bubbles leads to policy or regulatory decisions that paradoxically augment the power of digital technology companies. Only by exposing the operation of power mediated by computational datafication techniques that embrace a universalist science agenda are we likely to obtain insight that can help to lay bare the harms of commercial datafication.

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[7] See https://www.codespaces.com/best-data-science-certifications-courses-tutorials.html for a list of certification courses in the United States. The International Association of Business Analytics offers a suite of certification programmes - https://iabac.org/data-science-certification; and the European Commission has supported numerous projects, e.g. EDISON https://cordis.europa.eu/project/id/675419

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