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Set in motion by data: human and data intra-actions in educational governance

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With the increased use of data in the governance of education, studies on how human beings interact with data become increasingly important. Recent scholarship has conceptualized human responses to data through the notion of affectivity. While this conceptualization offers a viable alternative to previous rational choice theorizations of human responses to data that over-emphasize rational thought, it in turn under-emphasizes rational thought. This paper theorizes human responses to data as a matter of being set in motion by data, a term that includes rational thought, affect, and other responses. Through the philosophy of agential realism and an empirical analysis of various actors engaging with Danish graduate unemployment data, the paper elaborates how data and human beings (among other entities) intra-act and how human beings are affected by data, both in terms of what the data articulate and in terms of a code of conduct for dealing with data.

Keywords: data; subjectivity; performative effects; new materialism

Introduction

Recent studies in the performative effects of ‘governing by numbers’ (Ball, 2017; Grek, 2009; Miller, 2001; Piattoeva & Boden, 2020; Rose, 1991) or data in education, which are propelled by a more and more thorough implementation of tests, performance indicators, economic modelling, algorithmic governance, and many other forms of data-based governance in Western educational governance, have brought the analytical concept of affectivity to the forefront (Brøgger & Staunæs, 2016; Sellar & Lingard, 2018; Webb & Gulson, 2012). While these studies demonstrate how data affect various human actors affectively and thereby cause them to act accordingly, and furthermore offer an important alternative conceptualization of human engagements with data than the one offered by rational action theory, the emergence of these studies raises the question if affectivity can account for human responses to data alone, or if the emphasis on affective responses brings about particular analytical biases.

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The argument of this paper is that previously dichotomized notions of cognitively conscious action and affectivity can simply be understood as different modalities of the same process of subjectivation. The paper seeks to bridge these contrasted conceptualizations through a theorization of human-data-relations as intra-actions with asymmetrical effects on human beings and data respectively. The result is a conceptualization of what I term the capacity of data to set human beings *in motion* – a term that includes both cognitive and affective responses to data. This capacity is developed from a relational concept of subjectivity, encompassing both affect and thinking, as radically co-constituted by and co-constituting other entities in the world, including data. To be set in motion can thus be conceptualized as constant re-configurations of subjectivities produced by a simultaneous co-constitution of seemingly exterior entities such as data and subjectivities. Through this conceptualization, the paper also addresses an analytical bias sometimes seen in analyses of how data affect human beings, where the affective effects on those governed are differently emphasized or conceptualized compared to effects on those governing. The conceptualization offered by the paper enables analysis of how both the governed and the governing are set in motion by data, and thereby an analytical symmetry towards governed and governing.

This paper takes off by providing a brief review of two contemporary approaches to the study of how human beings respond to quantitative data; first, an approach emphasizing affectivity, and second, an approach emphasizing rationality. Next, the paper introduces key thoughts from Barad (2007), which serve as the foundation of a third theorization of human responses to data, emphasizing their entanglement and mutual becoming. This theorization is further elaborated through a Barad-inspired concept of subjectivity provided by Højgaard & Søndergaard (2011), which allows the paper to theorize the reciprocal but yet asymmetrical constitutive power of human beings and data that propels the idea of the capacity of data to set human beings in motion. Hereafter, an empirical example of Danish graduate unemployment data is included to further elaborate the idea of human-data intra-actions and furthermore to show how the theorization allows for an analytically symmetrical analysis of the performative effects of data on human subjectivities and responses.

Human-data intra-actions

The performative effects of performance data (Sellar, 2015, p. 131) and data visualizations (Brøgger, 2018, p. 359) on human actors in the field of education have been the focus of several scholars in recent years (Brøgger, 2018; Lewis, 2018; Lingard & Sellar, 2013; Sellar, 2015; Sellar & Lingard, 2018; Webb & Gulson, 2012; Webb, Sellar, & Gulson, 2019). In a similar vein, scholars have studied and theorized the performative effects of standardization on human actors (Brøgger, 2016, 2019; Brøgger & Staunæs, 2016; Juelskjær & Staunæs, 2016; Nissen, Staunæs, & Bank, 2016), a body of research that I include here, because the main theorizations and findings are in close proximity and relevant to the study of data. The research field composed by these studies often draws on concepts of affectivity and affect in the analysis of the performative effects of data in its various forms, either inspired by a Deleuzian concept of affect (for example, Lewis, 2018; Sellar, 2015; Webb & Gulson, 2012) or more broadly inspired by

scholars like Wetherell and Ahmed (for example, Brøgger & Staunæs, 2016). The results are compelling theorizations and intriguing analyses that show how data can affect human beings in affectively wired ways that cause them to act accordingly. For example, Sam Sellar and Bob Lingard (2018) show how PISA results have an affective impact on the public and thereby ‘catalyze a reaction and open windows for policy reform’ (p. 368). Steven Lewis (2018) shows how PISA for Schools data work affectively in order to produce desires to become someone else in the future. Katja Brøgger and Dorthe Staunæs (2016) show how colliding ontologies of seemingly loyal implementation of and simultaneously resistance towards standards are embodied in mid-level managers as dizziness and nausea (p. 238). And Webb, Sellar and Gulson (2019) more generally show how algorithms and other data-producing knowledge-based technologies are implied in anticipatory governance, causing educational subjects to ‘anticipate, desire, and “presume” (rather than consume)¹ their own chronologically arranged future’ (See note). While there is a slight tendency towards a focus on the effects of data on those governed in these studies, some studies address both the caused affective states among the general population and among policy-makers (Brøgger, 2016; Sellar, 2015).

As elaborately unfolded by Sellar (2015), the concept of affectivity relates to visceral forces *different* from conscious knowing (p. 136), and thereby the research field offers a different conceptualization of how human beings interact with data than those offered by rational choice/action theory. Rational action theory assumes human beings to be characterized by a maximizing behavior and dependent on available information to make the optimal choice (Becker, 1976, pp. 5–14; Goldthorpe, 2000). In this theory, data plays the role of information that human beings use when they choose how to act to optimize their situation. The rational choice/action literature approaches the relation between human beings and data from a realist perspective, whereby it maintains an exterior relationship between human beings (individuals, institutions, or countries) and data. Consequently, responses to data emerge as deliberate, rational reactions, subsequent to the event of an encounter with data. A concept of governing based on such a theorization emphasizes human intentionality and optimization, and thereby favors incentive instruments that align the interests of individuals with those of the state, for example by rewarding performance as measured in performance data. The idea of rational action also appears in sociology studies of performative effects of data, for example in the term ‘reactivity’ (Espeland & Sauder, 2007, 2016) as also argued by Piattoeva & Boden (2020, p. 15).

The use of the concept of affectivity thereby offers a valuable alternative to the idea of human beings as rational, optimizing individuals that interact with data consciously in their life choices. However, the emphasis on affectivity comes with an under-theorization of thinking and of acting based on conscious knowing. Webb & Gulson (2012) explicate that thought in their theorization is influenced by *prior* affective encounters, and thereby occurs subsequent to affectivity (p. 91), but the other mentioned studies do not explicate the status of conscious knowing in the relation between human beings and data. Nevertheless, several of these studies have embedded in them implicit ideas of conscious thinking, knowing, and acting rationally, revealed through notions of ‘gaming’ the data (Lingard & Sellar, 2013, p. 646; see also Espeland & Sauder, 2007, p. 29) and of ‘using’ data to create various effects in the population (Sellar & Lingard, 2018, p. 368). These different forms of strategic behavior in relation to data appear to be differently distributed

across different positions in the governance hierarchies. Often, affectivity is associated with those governed rather than the governing. For example, Sellar & Lingard (2018) attribute the role of (strategically) using data (e.g. to create public feelings and attempting to ensure a specific affective impact of data) to the media, politicians, governments, and the OECD, while the population in terms of students and their parents are attributed the role of being affected (pp. 368, 371). This different analytical attribution of strategic, deliberate action and visceral, bodily affect to different actors entails an analytical bias. As I read the literature, this bias emerges from the questions asked, the empirical sources included, and the focus of analysis, but also from different ideas of how human beings interact with data associated to different actors.

The aim of this paper is to understand the relationship between human beings and data through theoretical discussions and empirical analyses that builds on the contributions of the affectivity-oriented studies of performative effects of data on human beings, wherein data are more than exterior objects that people can use to act rationally or in their governing of others. Through these theoretical discussions and empirical studies, the paper seeks to (a) overcome the binary of affect and conscious thinking without ignoring thinking as a phenomenon in need of theorization, and (b) contribute to an analytical symmetry in terms of the ways thinking and affect are distributed among the governing and the governed. The theorization draws on relational conceptualizations of data and subjectification, which will also be the focus of the empirical analyses towards the end of the paper.

The ongoing becoming of human beings and data

The theorization provided by this paper starts from a philosophical point of ontological entanglement, in which human responses to data can be understood as a product of re-configurations, constituted by the particular data and by data as a phenomenon, of those human beings. This philosophical starting point draws on the work of Karen Barad (2007), who theorizes the world as made up of entangled matter, rather than of individual entities exterior to one another. The idea of the primary ontological state of the world as *entangled* implies that entities, such as human beings or a piece of data, acquire their properties and individuality as a result of ‘agential cuts’ within the entanglement (Barad, 2007, p. 345). Agential cuts are processes in which the world is re-configured or becoming, performed by apparatuses such as those that produce various kinds of data. A test is one example of an apparatus performing agential cuts through which the students, schools, and perhaps entire school systems, as well as skills like reading and math, background characteristics such as ethnicities, socio-economic backgrounds, or parents’ level of education, and different numerical test results emerge or materialize as separate entities or phenomena with particular properties. In this process, a test score emerges as high or low, a student emerges as above or below the average, a school system emerges as a success or a failure, a school subject emerges as a specific set of test items, and a particular ethnic or socio-economic background emerges as significant for student performance (for a thorough example on how metrics configure educational phenomena, see Madsen 2021). ‘Before’ or ‘outside’ the test, these properties do not exist and the entities might not be separable in the same ways. Barad (2007) calls her philosophy

agential realism, because entities can be understood as real, not in an absolute sense but in the sense that they are made what they are through particular agential cuts performed by for example measurements (p. 120). Barad also terms this process *intra-action*, thereby indicating that entities co-constitute and relate to each other in ways that are conditioned by the wider entanglement they are part of (p. 33).

The ongoing becoming of entities via intra-actions however does not mean that the properties of entities are detached from other processes distributing other separations between, and properties to, entities. Barad emphasizes how matter emerges as an enfolding of matter into itself in ongoing, iterative materialization processes that leave traces of previous materializations in matter (p. 180). Materializations of for example data on parents' educational background, of test items, or of school capacity of overcoming inequality, hold traces of other materialization processes in them, for example, processes of educational segregation at the time and place of one's parents' schooling. Similarly, in the case of PISA, test items hold traces of processes of OECD consensus on how to measure reading across various lingual, cultural, and curricular contexts (see, for example, Gorur, 2012). These traces intra-act with entities in their becoming.

From this theorization, we can understand data as entities that emerge out of intra-actions through which human beings or their measured behaviors, but also the measurement devices, calculation practices and perhaps statistical tests, conventions of significance, policy contexts, societal structures of inequality, and epistemological ideas obtain their particular properties (Dixon-Román, 2016). Data hold traces of all these entities, including those human beings that they intra-act with in their becoming. As data usually aggregate information on a large amount of human beings, their individual traces may be very small, and yet the data are made up of these traces. Importantly, this paper highlights the reciprocity of intra-action in the sense that the data, which hold aggregate traces of human beings, simultaneously co-constitute human beings. This means that the data cannot initially be understood as exterior entities or objects available for governance maneuvers performed by some human beings over others. Rather, the data are part of the fabric of the human beings that they concern (and possibly also those that they do not concern), no matter where these are positioned in what is conventionally considered a governance hierarchy. To enable an understanding of how this enfolding takes place, and how this may lead to a different theorization of human responses to data, I will introduce a Barad-inspired concept of *subjectification* in the following section.

Subjectification conditioned by data

As part of their work on bullying in schools, scholars Lis Højgaard and Dorte Marie Søndergaard (2011) have developed a new materialist concept of subjectification which, in their view, is undeveloped in the work of Karen Barad. They do this by drawing on a concept of subjectification from Foucault, which in their reproduction is based on the foundational simultaneity of a submission of the subject and the emergence of an agentic subject, and thereto adding the insights from Barad on what they call a radical co-constitution of a multiplicity of forces and entities. Through this elaboration, they end up with a concept of subjectification that emphasizes the subject as both enacted by and

enacting forces such as ‘discourse, matter, technology, subjectivity, etc.’ (Højgaard & Søndergaard, 2011, p. 348). In the becoming of the subject, other entities such as data radically co-constitute the subject but are also re-enacted by the subject, for example through its responses to the data. Processes of mutual co-constitution and enactment are non-linear, as multiple entities affect one another in complex ways. Hence, the intra-actions of data and human subjectivities are not processes with a predictable outcome, but rather processes affected by myriad forces that do work upon subjectivities. Yet, in the study of governance through data in the educational sector, human-data intra-actions play an important part.

The conceptualization of subjectivity suggested by Søndergaard & Højgaard is useful, as it adds specificity to an arguably implicit concept of subjectivity within the theory proposed by Barad. However, the conceptualization is also loyal to the vocabulary and thinking of Barad and thereby it does not require a different set of concepts than the ones Barad has provided for the conceptualization of any type of entity. Strictly speaking, both data and human beings, as well as all other kinds of entities, can and should be conceptualized through the same vocabulary in the thinking of Barad, because all entities are undetermined until they emerge in a particular entanglement, from where they obtain their specificity. In the situatedness of contemporary Western educational governance, data and human beings can however be observed to behave differently through different dynamisms (or becoming; Barad, 2007, p. 180), and thereby affect each other in asymmetrical ways. In this context, data are rigid beings, regardless if they are dressed in colourful two- or three-dimensional diagrams or merely printed as numbers on a piece of paper, black on white. As soon as one piece of data, for example a test score, is produced, it is no longer dynamic or fluid, but static and firm. Data do not adapt to the social relations they enter into. We tend to consider it illegitimate to alter a piece of data that has already been produced due to its epistemological status as an objective representation of the world. Instead, the dynamism of data is chronological, serial (Webb et al., 2019, p. 4), and consecutive, with the possibility to produce a new set or *series* of data. A new data series usually hold slightly different traces of the human beings measured, since these human beings are not exactly the same as they used to be. Thus, data remain while their object of measurement may move.

In turn, subjectivities are far more adaptable and fluid. Subjectivities are constantly affected or re-configured by the data they encounter (unless the set of data is so insignificant or weakly sedimented or distributed that it is not capable of affecting, Piattoeva & Boden, 2020). The difference between the static and serial dynamisms of data and the adaptable dynamisms of human beings in terms of their subjectivities means that being addressed by data causes a movement in the human being, a re-configuration of the subjectivity. Human beings are, in these terms, set in motion by data, when they intra-act with data. The re-configuration of subjectivity entails a complex emergence of material-discursive or visceral-cognitive ways of becoming, including feelings, understandings, identifications, rationalizations, ideas, decisions, articulations, facial grimacing, and movements of the body. These ways of becoming cannot be confined to either material or discursive effects, as they involve both matter and meaning. The reverse operation, where human beings are cut into data, is not in the same sense a motion, but rather a momentary measurement or representation of those human beings.

Thus, the different dynamisms of human beings and data imply different ways of affecting each other.

Empirical examples: the constitution of educational governance subjectivities

The theorization of human responses to data as a matter of a re-configuration of subjectivities accompanied by various effects, such as cognitive thoughts, affectivity, decisions, and actions, allows for a rich analysis of one type of performative effects of data. In the following section of the paper, I empirically show how these effects occur across different positions we usually conceive as governing and governed, and how the subjectification effects brought about by data appear to be much the same across these levels. The section illustrates the theoretical points elaborated above in an analysis of how various subjectivities, including both individual human being subjectivities and institutional subjectivities, are re-configured by the same set of data.

The analyzed case examples all concern the Danish graduate unemployment data, which are calculated annually by the Danish Ministry of Higher Education and Science as a ‘graduate unemployment rate’. The data measure the unemployment rate of graduates according to the study program they graduated from in the 4th-7th quarters after graduation. I have studied these data empirically in terms of both their development, their use, and their performative effects on various actors through a comprehensive ethnographic fieldwork (Madsen, 2019), including observations of meetings in various governing bodies at three Danish universities, more than 40 interviews with teachers, students, leaders, managers, quality workers, and national actors, and a thorough document study of policies, administrative procedures, and calculation models. The fieldwork, and thus also the cases included here, relate to the humanities departments of the universities, as the humanities programs stand out negatively in the graduate unemployment data. The fieldwork furthermore took place at a time when the field was already marked by traces of a negative image of the humanities and experiences of government interventions in line with these data. Thus, the analysis focuses upon the re-configuring of subjectivities brought about by what can be termed as ‘negative’ data.

The three cases are selected from the wider empirical material, because they represent different positions in the hierarchy of governance, and they are read with the purpose of illustrating the theoretical points of the paper. As the main argument of the paper revolves around a theoretical discussion, the empirical material will not be problematized methodologically in terms of how affectivity and cognitive thought can be read off observations and interviews, however relevant these concerns may be. Instead, the analysis will indicate how subjectivities are re-configured by the same data across various contexts, and how these re-configurations set human beings in motion in various ways.

Student subjectivities

One example of how subjectivities are addressed by graduate unemployment data relates to students. The graduate unemployment data have been distributed to potential students via the website Education Zoom, launched in 2015. The explicit purpose of the website,

which was a part of the 2014 ‘growth kit’ [*Vækstpakke*] (Finansministeriet, 2014), was to improve the productivity of the Danish population through a reduction of graduates from areas of study with a ‘systematic and striking excess unemployment’. The website provides potential students with transparent information on different areas of study, and enables them to compare programs on a range of different factors related to both student life and the subsequent work life, including average salaries, work hours, used skills in work life, and the graduate unemployment rate of graduates from the program. Thus, the website officially targets potential students who can (seemingly) make their choice of study in a rational way based on data.

The data distributed through the website however also address students who have already made their choice of area of study. Even though these students neither intra-act with unemployment data as members of the measured population, nor targets of the distribution of data, unemployment data re-configure the subjectivities of these students. Humanities student subjectivities are re-configured as ‘those who made an irrational and irresponsible choice despite the availability of data directing them away from programs within the humanities’. These students made themselves eligible for subjectivities that involve the responsibility for one’s own future failure at the labor market, because they made a choice different from the one suggested by unemployment data. Through these re-configured subjectivities, the students in my empirical material are set in motion in different ways. Some students are set in motion in a demobilizing way through affects like ‘anxiety’, ‘frustration’, ‘panic’, ‘stress’, ‘the nagging thing in the stomach’, ‘doubts’, and ‘mental disorders, anxiety, and depression’. These words were used by the students to describe how unemployment data affected themselves and others (Interviews with students, November 2017 – March 2018). For those students, these affective states were accompanied by a lack of motivation to engage in their studies, involving a sort of standstill or paralyzing pessimism, and by rational-cognitive considerations of abolishing or changing the course of their studies. Other students are set in motion in mobilizing ways, where the discomfort of their re-configured subjectivities is accompanied by affectively-strategically wired thoughts and actions towards recovering a rational and responsible student subjectivity. They make career choices that narrow down the requirements of what it means to be employable, they formulate narratives that can be articulated in situations where, for example, a family member confronts them with unemployment data, they strategize their own studies in line with the career choices made, they engage in part-time work along their studies, they collaborate with companies during their studies, and they make particular choices of electives that provide them with educational profiles more attractive for the labor market. While these activities are demanding and prevent the students from engaging fully in their academic interests, they allow the students access to more comfortable affectivities. Finally, some students are set in motion in an upstream-mobilizing way, as they rationally decide to not engage with unemployment data and the narratives brought about by them.

The re-configuring of humanist student subjectivities performed by graduate unemployment data thus set students in motion in ways that encompass both viscerally embodied affect, rational and strategic thought, narratives and decisions, and tangible action. The student subjectivities intra-act with data in several ways: They are co-constituted first by the articulations performed by particular data, which evaluate graduates of their kind and in this case thereby demobilize some students and install

negative affectivities and discomfort. Second, they are co-constituted by the course of action suggested by particular data, which for potential students involve an implicit definition of the right kind of educational choice, but for some of these students mobilize them to compensate for their previous wrong or irrational choice through a range of employability-enhancing activities. And third, they are co-constituted by the code of conduct of data as a phenomenon, which involves expectations of taking data into account, not only by acting according to them, but also by responding in an affectively appropriate manner (i.e., with anxiety, stress, or at least unease) – in this case taken up by some and consciously resisted by others. Here, the conscious decision of resisting the expectation of engaging with data may be affected by the desire to avoid the negative affectivities provided by the articulations performed by the data.

Institutional subjectivities

Another arena for the deployment of graduate unemployment data in the governance of Danish higher education is universities' quality assurance systems, which are being developed in line with the international Standards and Guidelines for Quality Assurance (ENQA, 2015) and corresponding guidelines from the Danish Accreditation Institution (The Danish Accreditation Institution, 2013). According to these guidelines, the quality procedures must ensure that 'knowledge', in the form of data or 'key figures' on individual degree programs, circulate across different hierarchical levels within the university. This knowledge needs to be available for leaders and managers in order to enable them to act upon problems revealed in the data. The data are divided into satisfactory and unsatisfactory data by a threshold, and usually this categorization is marked by a colour coding of the data into either green or red numbers. As part of the quality assurance procedures, heads of programs and senior managers are obliged to report and take action on red numbers in order to pass through internal and external quality assurance reviews. In these processes, heads and managers are necessarily confronted with data, and thus the conduct of engaging with data is more firmly governed in this case than in the case of the students governed via the Education Zoom website.

The humanities educational leaders involved in processing negative unemployment data in these quality assurance processes respond to data with a combination of indignation towards managers and policy-makers, conscious defensive strategies of negotiating the quantitative practices behind the data and the narratives revolving around the data, resignation towards their limited power of improving the numbers, and a continuous entrepreneurial approach towards doing exactly that. These defensive responses emerge together with concerns for those managerial consequences of red data, which the professionals very well know that senior managers are expected to initiate as part of the conduct of how to engage with data and as part of the courses of action suggested by unemployment data. Data intra-actions both paralyze, as leader and teacher subjectivities are co-constituted by disempowering negative data indicating 'bad quality programs' and 'unsuccessful leadership', and mobilize them to demonstrate the kind of power of action which is expected as a code of conduct associated with educational data. This code of conduct is illustrated in this interview quote with a senior executive from the Danish Accreditation Institution:

... if you had an issue with high unemployment in 2012 [after several years with high unemployment], and know that you had a problem, then you had a meeting on it where you changed an optional course module. But then the unemployment is still high, and in 2013 you see the same picture, and again in 2014, and nothing really ... there are no new initiatives from those who are responsible. Then we would say, from this process consideration, that the issue has maybe not been met in a sufficiently serious manner. (Interview with Chief Executive from the Danish Accreditation Institution, May 2017)

Those who do not act upon red numbers in a ‘sufficiently serious manner’ do not live up to their role as responsible. Here, to act means to continue taking ‘initiatives’ in line with data. The entrepreneurial efforts, despite resignation towards whether those efforts will have the intended effects, can thus be understood as a response to the discomfort of not living up to the code of conduct of acting upon the data, including potential material consequences in terms of demotion or program cutbacks. Thus, much like in the case of the students, high graduate unemployment numbers first set educational professionals in motion via their data values, addressing both the value of their disciplines, the quality of their teaching, and their ability to manage the program, and second via the code of conduct surrounding governance by data in the context of quality assurance.

Governing subjectivities

Data also set those governing in motion. This became clear to me when I interviewed a Ministry Official from the Danish Ministry of Higher Education and Science in order to explore how and why the graduate unemployment rate and policy initiatives such as Education Zoom had been constructed. One important event that he pointed out as the reason for producing the graduate unemployment rate was that ‘the numbers started speaking for themselves’ (interview with Ministry Official, March 2017). The articulations of the numbers affected the Ministry and the Minister to get a sense that ‘something is about to go wrong here’ (interview with Ministry Official, March 2017). As part of the code of conduct on data, they had a responsibility to act, and thus produced several new policy instruments around the graduate unemployment rate in line with the course of action implicitly suggested by data. The subjectivities of a Ministry and a Minister can thereby also be re-configured by data, and they can be set in motion by these re-configured subjectivities in order to avoid discomfort.

Again, like the students and heads of department, the Ministry was set in motion in a combination of ways, including affective-strategic concerns for the reputation of the Ministry as capable of taking action, strategic thoughts about how to take action and overcome resistance from the universities, and the meticulous technical work of developing a calculation model – but also an affective-strategic concern and ‘gut-feeling’ about developing a policy that was ‘fair’ and ‘viable’ and thus not too harsh on the higher education sector (interview with Ministry Official, March 2017). While the Ministry Official was keen to emphasise rational responses to the data during the interview, terms like a ‘gut-feeling’ reveals that rational responses are entangled with both affective sensations and strategic calculations of how to best respond to the data. Those in power are thus also co-constituted by data in various ways, or in other words governed by data. A different expectation than the one to students and to some extent academics is however

part of the intra-action here, namely the expectation of government officials and policy-makers to respond rationally and strategically to data.

Closing comments

This paper has sought to explore a possible theorization of the performative effects of data on educational governance subjectivities based on an empirical case study. The provided concept of subjectivity as radically co-constituted by, as well as co-constituting, other entities such as data, supports a theorization of the relationship between human beings and data that does not view these as initially exterior to one another. Instead, data become part of what constitutes subjectivity. In this conceptualization of subjectivity, a response to data appears as a phenomenon implied in the intra-actions of data and subjectivity, and not as a subsequent reaction of the subject towards data. Data and their constitutive force in relation to particular subjectivities emerge as entangled with particular yet non-linear affective-cognitive responses.

Data seem to affect subjectivities in several ways. First, they affect subjectivities in terms of the articulation performed by the data, for example of high graduate unemployment of particular study programs. The articulations address different actors differently, as those that are associated to the measured populations are addressed in terms of their own life circumstances, while those that are associated with governance are addressed in terms of they succeed in governing. Second, subjectivities are affected in terms of the courses of action suggested by the data, for example specific educational choices, various means to counter the unemployment risk, or policy initiatives that can govern institutions and students away from graduate unemployment. Third, they are affected in terms of a general code of conduct of how to engage with data, for example to make rational decisions in line with the data and take adequate action to improve the numbers. In all cases, adequate action becomes a route out of the discomfort of the misconduct subjectivities. This empirical point supports the notion of *being set in motion by data*, because the encouragement to 'take action' proves an important performative effect of data, with an uncomfortable standstill characterized by negative affectivity appears as the deterrent alternative.

The three case examples have shown that strategic, cognitive thought often occurs simultaneously and deeply entangled with affectivity. The cases illustrate how responses to data are not either primarily affective nor primarily cognitive, but made up of a combination of different ways of being set in motion, including thoughts, calculations, affectivities, actions, and so forth. These responses occur in combination both in the case of students, in the case of university middle managers, and in the case of ministries. This empirical point supports the analytical symmetry ambition of the paper pointing out that those governing do not first and foremost respond rationally-strategically and that those governed in turn do not first and foremost respond affectively to data. These different ways of engaging with data, either rationally-strategically or affectively, may perhaps rather be understood as expectations regarding how the governing and the governed interact differently with data: Students and academics must respond affectively with embarrassment and discomfort, while policy-makers and to some extent managers must respond strategically and use the data to govern others. These expectations are themselves

involved in the co-constitution of subjectivities and the code of conduct of engaging with data that set different actors in motion in various ways, and they furthermore co-constitute the hierarchy of governance. With this conclusive point, the paper points towards further studies of how data-human-interactions take place that treat those in power and those subject to power in analytically symmetrical ways.

Notes

¹ 'Prosume': Produce-and/to-consume

References

- Ball, S. J. (2017). *Governing by numbers: Education, governance, and the tyranny of numbers*. London: Routledge.
- Barad, K. (2007). *Meeting the universe halfway: Quantum physics and the entanglement of matter and meaning*. Durham: Duke University Press.
- Becker, G. S. (1976). *The economic approach to human behavior*. Chicago: The Univ. of Chicago Press.
- Brøgger, K. (2016). The rule of mimetic desire in higher education: Governing through naming, shaming and faming. *British Journal of Sociology of Education*, 37(1), 72–91. doi:10.1080/01425692.2015.1096191
- Brøgger, K. (2018). The performative power of (non)human agency assemblages of soft governance. *International Journal of Qualitative Studies in Education*, 31(5), 353–366.
- Brøgger, K. (2019). *Governing through standards: The faceless masters of higher education: The Bologna Process, the EU and the open method of coordination*. Cham: Springer International Publishing.
- Brøgger, K. & Staunæs, D. (2016). Standards and (self)implosion: How the circulation of affects accelerates the spread of standards and intensifies the embodiment of colliding, temporal ontologies. *Theory & Psychology*, 26(2), 223–242. doi:10.1177/0959354316635889
- Dixon-Román, E. (2016). Diffractive possibilities: Cultural studies and quantification. *Transforming Anthropology*, 24(2), 157–167. doi:10.1111/traa.12074
- ENQA. (2015). *Standards and guidelines for quality assurance in the European higher education area (ESG)*. Brussels, Belgium: European Association for Quality Assurance in Higher Education (ENQA), European Students' Union (ESU), European University Association (EUA), European Association of Institutions in Higher Education (EURASHE), Retrieved from https://enqa.eu/wp-content/uploads/2015/11/ESG_2015.pdf
- Espeland, W. N. & Sauder, M. (2007). Rankings and reactivity: How public measures recreate social worlds. *American Journal of Sociology*, 113(1), 1–40. doi:10.1086/517897
- Espeland, W. N. & Sauder, M. (2016). *Engines of anxiety: Academic rankings, reputation, and accountability*. New York: Russell Sage Foundation.
- Finansministeriet. (2014). Aftale om en vækstpakke 2014. [Agreement on a Growth Kit 2014] Retrieved from <https://www.fm.dk/nyheder/pressemeddelelser/2014/07/aftale-om-en-vaekstpakke-2014>
- Goldthorpe, J. H. (2000). *On sociology: Numbers, narratives, and the integration of research and theory*. Oxford: Oxford University Press.

- Gorur, R. (2012). ANT on the PISA trail: Following the statistical pursuit of certainty. In T. J. Fenwick & R. Edwards (Eds.), *Researching education through actor-network theory* (pp. 60–77). Chichester: Wiley-Blackwell.
- Grek, S. (2009). Governing by numbers: the PISA 'effect' in Europe. *Journal of Education Policy*, 24(1), 23–37. doi:10.1080/02680930802412669
- Højgaard, L. & Søndergaard, D. M. (2011). Theorizing the complexities of discursive and material subjectivity: Agential realism and poststructural analyses. *Theory & Psychology*, 21(3), 338–354.
- Juelskjær, M. & Staunæs, D. (2016). Orchestrating intensities and rhythms: How post-psychologies are assisting new educational standards and reforming subjectivities. *Theory & Psychology*, 26(2), 182–201. doi:10.1177/0959354316634217
- Lewis, S. (2018). PISA 'yet to come': Governing schooling through time, difference and potential. *British Journal of Sociology of Education*, 39(5), 683–697. doi:10.1080/01425692.2017.1406338
- Lingard, B. & Sellar, S. (2013). 'Catalyst data': Perverse systemic effects of audit and accountability in Australian schooling. *Journal of Education Policy: Testing Regimes, Accountabilities and Education Policy*, 28(5), 634–656. doi:10.1080/02680939.2012.758815
- Madsen, M. (2019). *Entangled Simplicities: A metricography on 'relevance' and 'graduate employability' configurations in Danish university education*. (PhD). Aarhus University, Aarhus.
- Madsen, M. (2021). The configurative agency of metrics in education: a research agenda involving a different engagement with data. *Journal of Education Policy*, 36(1), 64–83. doi:10.1080/02680939.2019.1682679
- Miller, P. (2001). Governing by numbers: Why calculative practices matter. *Social Research*, 68(2), 379–396.
- Nissen, M., Staunæs, D., & Bank, M. (2016). A 'post-psychological' curiosity about subjectivities and standards. *Theory & Psychology*, 26(2), 137–143. doi:10.1177/0959354316628691
- Piattoeva, N. & Boden, R. (2020). Escaping numbers? The ambiguities of the governance of education through data. *International studies in sociology of education*, 29(1–2), 1–18. doi:10.1080/09620214.2020.1725590
- Rose, N. (1991). Governing by numbers: Figuring out democracy. *Accounting, Organizations and Society*, 16(7), 673–692. doi:10.1016/0361-3682(91)90019-B
- Sellar, S. (2015). A feel for numbers: Affect, data and education policy. *Critical Studies in Education*, 56(1), 131–146. doi:10.1080/17508487.2015.981198
- Sellar, S. & Lingard, B. (2018). International large-scale assessments, affective worlds and policy impacts in education. *International Journal of Qualitative Studies in Education*, 31(5), 367–381. doi:10.1080/09518398.2018.1449982
- The Danish Accreditation Institution. (2013). *Guide to institutional accreditation*. Retrieved from https://akkr.dk/wp-content/filer/akkr/Korektur%C3%A6st-og-godkendt_Vejledning-om-institutionsakkreditering-enderlig_godkendt.pdf
- Webb, P. T. & Gulson, K. N. (2012). Policy prolepsis in education: Encounters, becomings, and phantasms. *Discourse: Studies in the Cultural Politics of Education*, 33(1), 87–99.
- Webb, P. T., Sellar, S., & Gulson, K. N. (2019). Anticipating education: Governing habits, memories and policy-futures. *Learning, Media and Technology*, 1–14. doi:10.1080/17439884.2020.1686015