

1 The construction of worlds: On the function and fiction of quantified data in education policy

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Introduction

‘Educational reform movements would not have been able to get started without quantitative comparisons’, the German sociologist Niklas Luhmann (1981/2010) once remarked, pointing out concisely and not without irony how the warm intentions of well-meaning reformers go hand in hand with stone-cold numbers. In this chapter, we present an overview of how Luhmann’s systems theory, and in particular a subsequent generation of scholars working within his theoretical framework, deals with the issues of quantification and educational reform. The ambition is thus to unearth its rather distinctive position on the sociological landscape – one all too often left unheard – which offers a different vista on reform efforts and the role of numbers, challenging many of the accounts currently more in vogue.

As a first taste, it is worth mentioning that systems theory cannot readily subscribe to the ubiquitous mantra of ‘governance by numbers’. By such an assertion we do not so much mean that systems theory necessarily remains blind to the transition to (usually supranational) governance mechanisms and how these differ greatly from the conventional governing-via-government practised on a national scale (for more or less recent examples, *cf.* Thornhill 2011 or Kjaer 2015). Rather, such a conclusion takes stock of the extensive body of literature in which systems theory has put some welcome question marks next to explanations that, perhaps precisely in their all too eager attempt to unmask latent sources of power, blindly re-affirm the ability to steer society according to political specifications. Especially in the domain of education, it is widely assumed and accepted that policy is capable of shaping, indeed of governing educational praxis. That such an assumption is commonly contradicted by reforms failing to live up to their own ambitions, is then usually remedied by speaking of flawed implementations or diverging policy enactments. Seldom, if ever, have such outcomes led the scholarly debate to question with more radicality the implied causality between policy and education. Systems theory, as we wish to demonstrate in this chapter, might bring a valuable contribution here.

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Like so many things today, the reform of education systems is a worldwide phenomenon and, as we will show later on, one of systems theory's acknowledged merits indeed lies in the elaboration of that observation. What sets educational reforms apart, however, is their particularly recurrent nature: 'reforming again, again, and again', as Larry Cuban (1990) has famously summarized the idea. Even beyond the differences that might characterize its numerous national settings, education as a whole appears to be deeply marked by the conviction that changing how instruction is structured or organized is necessary, virtuous and, above all, feasible. As Giancarlo Corsi (1998) has commented, we are facing a *syndrome* of sorts – a curious tendency towards continuous self-negation, which stretches well beyond isolated cases or conjunctural trends. However, contrary to what the literature around David Tyack and the aforementioned Cuban (1995) has concluded, systems theory does not refer to a fixed, unshakeable 'grammar of schooling' in order to explain the often-disappointing results of so much reform fervour.

This, of course, raises the question as to what systems theory *can* say about quantification and educational reform. If numbers are not depicted as steering education and if the latter's inertia is not explained by implementation effects or by the tenacious hold that an immutable grammar of school exerts, how is the relationship between the two to be understood? Surveying how systems theory has answered this question, we will argue in this chapter that the theory's overall contribution consists in the subtle inversion already visible in the quotation we began with: numbers are not so much a tool for decision-makers to wield power with, as they are a historically situated mechanism by which the social world increasingly opens up for decision-making. Quantification itself, the thesis goes, fuels a need for decisions and action. It drives society away from an institutional order based on invariable being towards a 'cosmology of contingency' (Luhmann 2005, p. 39), where everything that is shown by numbers, at once reveals the promise of difference and change – more, less, better or worse, but above all no longer necessarily the same. In order to make this argument, we will first review how the historical emergence of statistics since the 17th century has been dealt with as an instrument to double reality, offering a probable duplicate of reality from where to address future uncertainties. Next, we will step to the more current usage of numbers in education, and review how they establish education as a global affair. In both cases, we argue, systems theory shows quantification as the construction of worlds – *speculum* and *artifex mundi* at once. In conclusion, we return to the steering question and elucidate Luhmann's theorem of functional differentiation, together with its implications for educational policy.

Doubling reality

Today, we are largely accustomed to the ubiquity of numbers and their statistical elaboration into rates, estimates and rankings. We depend on them in the most diverse situations of our lives, ranging from deciding where to live or work up to even more mundane tasks, such as pondering what clothes to wear tomorrow or which groceries (not) to buy. In the domain of education too, of course,

quantification is omnipresent, where it is used to express how pupils, but increasingly also teachers, individual schools or national schooling regimes, have been evaluated. We will return to this given later. It is easy to forget, we should underline first, that from a historical perspective such abundant presence of numbers is a rather curious novelty. Many of the statistical measures we routinely rely on were developed less than two centuries ago, Theodore Porter (1986) reminds us. The current numerical abundance – in electoral polls, economic growth rates, climate forecasts and many more – is hence a typically *modern* phenomenon and one of the more original contributions systems theory has made to the scholarly debate starts precisely from this simple observation.

In her work on the improbable success of probability theory, Elena Esposito (2008a) points out with a rich and detailed historical analysis how the birth of chance theory, followed later by modern statistics, intriguingly coincides with the emergence of the modern novel and the deployment of perspective in the visual arts. What such parallel changes have in common, she argues, is that they all constitute instances of an unexpected upheaval in which reality gives way to elaborate fictitious constructions, which rebuild that reality and, strangely enough, often become regarded as more informative than reality itself. The case of statistics is a particularly telling one: today, surveys and numeric revelations of various kinds are considered as referring to the reality of the world. But at its origins, statistical calculations served to unravel the obscure realm of uncertainty and opinions, the non-real sphere par excellence, Esposito (2008a, p. 8) points out and hence asks: ‘How can we explain this shift of accent whereby the unreal takes the place of the real?’

At its core, the question boils down to modernity’s changed conception of reality and, in a fashion characteristic of systems theory, Esposito approaches such a shifting conception of the real by addressing its opposite – its fictions – in order to understand how the difference between the two is established. Before we turn to this reshuffling distinction between what is real and not real, the reasons Esposito advances for this shift are worth mentioning, since they highlight the rise of statistics as an expression of (if not a coping mechanism for) the radical changes with which systems theory characterizes modernity. These changes can be summarized as the following double movement. First, as Luhmann’s oeuvre extensively elaborates, modernity is in many ways the historical moment wherein a normative concept of nature starts to wane. The nature of things denotes no longer necessarily ‘an invariant basis of being’ (Luhmann 2013a, p. 248) and, as a result, nature itself can no longer provide us with sufficient orientation for our knowledge of the world. For science, empiricism thus came to replace blind faith in the nature of things as declared by religious authority. But, Esposito (2008a, p. 16) rightly remarks, that also implied that assertions on the state of things could no longer justify themselves by reference to an idealized nature. Instead, they now have to include their own legitimation. The classic distinction between truth and opinion (dogma versus scepticism, certainty versus uncertainty) thus lost its self-evidence and centrality, since it was mainly the twilight zone between the two that now gained in interest: the (inflating) space where there can be no certainty, but where decisions nonetheless impose themselves. How is one to

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decide then? The modern interest in probability calculus, and hence statistics, emerged against such a background as the study of human ignorance – of *not* knowing – and materialized as the wish to yet establish reasonable certainty in those areas of high uncertainty. Second, systems theory understands modernity as the historical transition away from societal stratification. With this today still provocative stance, Luhmann characterized modern society as defined no longer by social hierarchies, but instead by a heterarchy of different functional domains. We will return to this characterization. For now, it is more important to underline that this socio-historical evolution has broken the cosmological compactness of the classical world. The once-stable relationship between the facts (what), the opinions of observers (who) and their moment of observation (when) begins to falter: not only does the world no longer appear as an invariant point of reference, but personal idiosyncrasies and particularities gain more acceptance too: we all become strongly ‘individualized individuals’ (Luhmann 2013a, p. 156). Time, of course, becomes uncertain too, since increasingly dominated by a future that we necessarily and ineluctably ignore (Luhmann 1976). Precisely the resulting loss of congruence or unity between those various dimensions of meaning, observes Esposito, fostered new techniques that seek to expose new regularities and so, in extremis, restore order within what seemed mere chaos at first.

The order of modern society, which can no longer rely on a single authority or a single Reason, must somehow recognize the multiplicity of individual perspectives and reasons, and yet successfully establish itself. The calculus of probability, and the Gauss curve in particular, seem to accomplish the miracle of combining specificity with generalization, idiosyncrasy with normality, and of legitimizing an order that admits and encourages individual diversity and unpredictability.

(Esposito 2008a, p. 33)

While probability theory and statistics, Esposito argues, search for the so-called laws of chance, seeking certainty in the quantitative formalization of uncertainty, they promote and enable a social order based on sheer contingency (*cf.* Luhmann 1998, pp. 44–62), emancipated from earlier impossibilities or necessities that are increasingly unable to dictate the limits of what is possible now. The central mechanism behind this evolution, Esposito suggests, is a *doubling of reality*.

With this Luhmannian concept, she underlines how numbers – but the same goes for novels or paintings – duplicate within reality a *new* reality, different from the reality they depict. The notion of reality doublings offers, in many ways, a very condensed entry point to Luhmann’s particular re-articulation of constructivism. The point of this is not that our observations of the world produce mere fictions, as cruder versions of radical constructivism might advocate. Rather, in an attempt to leave behind the sterile discussions between realists and constructivists, it is argued that systems *operate* whenever they *observe* and vice versa. An extensive elaboration lies far beyond the scope of this chapter. But we could summarize the position as follows: via their operations, systems are both constructed and constructing reality, since they establish themselves while observing

their environment. The world itself, then, remains inaccessible and that is precisely why 'there is no possibility other than to construct reality'. The sociological task at hand, hence, is 'to observe observers as they construct reality' (Luhmann 2000, p. 6), as an observer among others.

Two traits need to be underlined. First, reality doubles are *necessarily* fictitious, since in order to convince, they have to construct an imaginary world with its own rules and necessity, as if it were reality. In other words, statistics, novels or any other duplicate reality have to construct a fictitious world that is able to compete with the realistic character of the actual world (cf. Blumenberg 1969). They have to produce the conditions for their own existence. Only then can they succeed in telling us something about the world (from which they differ). Secondly, such competition between realities cannot be understood as the sheer antagonism between what represents and what is represented. Duplicate realities cannot be reduced to merely faithful depictions of the world – and if they could, they would not work. Neither do reality doubles control or model the world to their likeness. As Gustave Flaubert's *Madame Bovary* illustrates painfully, duplicate realities do not steer the world in their direction. Much to the contrary: regardless of all her efforts, the tedium and tragedy of Emma Bovary's life remains diametrically opposed to the much more exciting adventures depicted in the contraband romances she devoured. Similarly, and in more general terms, it can be said that the effects of reality doublings are much less direct than the univocal causality that is implied when speaking of governing or other concepts to express a steering control. The relationship between real and duplicate reality is much less straightforward. With the idea of duplicate realities, systems theory seeks to show how 'a special (let us call it a *real*) reality is generated through the existence of something that is different/distinguished from it' (Luhmann 2013b). Duplicate realities – whether sacral, fictional or statistically probable realities – produce the world as *real* and we could call that their 'performative' effect. But then on the understanding that such reality doublings do not simply force the world to conform to their image. Rather, while constructing a different, *sui generis* reality, they draw a line, as it were, from behind which the real world appears and thus can be distinguished from what that real world is not.

If we now transpose the above to the surge of quantification in and around the classroom, it is clear that the contemporary scholarly debate has neglected much of these facets. There seems to be more enthusiasm to condemn numeric excess than a sociological interest in understanding why such excessive quantification emerges in the first place. That is precisely why we considered it fruitful to bring up the work of Esposito and its underlying theorization of reality doubles, since the two undoubtedly shed light on a lacuna in the present literature on educational reform and the role of numbers within it. Vice versa, however, the same holds true as well: systems theory has hitherto paid little attention to the specificity of statistics in the educational domain. This chapter cannot, of course, bridge such a gap. But we can indicate, in line with the main tenets of Esposito's historical reconstruction, from where future research that takes up such a task could begin.

If the modern fascination with numbers answers above all a lack of certainty, studying the statistical quantification of education then should above all have

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more eye for the classroom and why it has become, too, an *area of uncertainty*. It is easy to see, in light of the above, how educational numbers, rankings and figures establish a statistical duplication of reality that appears both more informative and certain, or at least more controllable than the reality of classrooms itself. The question then is: why is this the case? What kind of evolution are we witnessing in the domain of education to which this quantification reacts? Easy and tired explanations that propagate monocausal accounts of this change, mistaking quantification for either the politicization or the economization of education, simply miss this point. They remain blind to the much more spectacularly growing indeterminacy and uncertainty that education is currently facing. What should schools teach today? Are all pupils learning what they will need later in life? How should education prepare for or engage with a future of which we know nothing, except that it will probably be different? What role does a professional teacher play in these questions? To speak of quantification should imply more engagement with these and similar questions. It should lend space to this increased uncertainty and education's institutional change – or decline, as others have termed it (Dubet 2002). From such a viewpoint, the question of numbers, as we could summarize the above, is hardly any longer a mere question of governance and power. Instead, such research would observe how educational quantification works much like the images produced by mirrors. It does not depict reality itself, but instead it is asked to guide reality by reflecting back to the world a version that is at once *less* and *more* than the world itself:

one does not see oneself in the mirror but only the countenance that one composes for the mirror and shows to it. But this is not all. In addition, by looking over one's own shoulder, one sees others who also act before the mirror.

(Luhmann 2010, p. 180)

Reality doublings such as numbers, to conclude with the metaphor, offer just like mirrors a different view on reality. They allow one to observe oneself and others, but in return demand a certain distance from reality in order to succeed. They simplify and complexify at once. One is no longer 'glued' to reality (Luhmann 1990, p. 97) and can resort to a simpler version of it, which more easily accepts manipulation. At the same time, however, they increase the available options by adding a fictitious, incongruent perspective on the world and that, as we have tried to show in this paragraph, affects the complexity of reality – and not only its fictitious duplicates.

Creating world society

The simultaneously reductive and productive qualities of numbers have, of course, been recurring themes in much of the sociology of quantification, far beyond systems theory. Alain Desrosières (1998, p. 236), for example, indicates in a similar vein that the aim of statistical work 'is to make a priori separate things hold together, thus lending reality and consistency to larger (...) objects.' Wendy Espeland and

Mitchell Stevens (2008, p. 406) add that this remarkable achievement is due to the faculty to transform 'all difference into quantity', an operation they name 'commensuration' and which, they explain, brings distinct 'objects' together and unites them, while simultaneously distinguishing them by assigning to each one a certain quantity (a score, a price, a grade, a performance, etc.). The constructed nature of statistics, resulting from many choices that could have turned out differently, has also been emphasized in this branch of the literature, notably with regard to the construction of the categories and equivalences (like occupational categories or age cohorts) without which counting would simply not be possible in the first place. But systems theory brings a specific contribution to this discussion.

With the help of a rather unusual conceptual opposition, Luhmann (1990, pp. 399–401) characterized *quantity* as the medium science developed for its internal purposes. Borrowing the distinction from the *Gestalt* psychologist Fritz Heider, he opposed media to form so as to explain the connectivity among phenomena – the succession of forms – by the presence of a medium that itself always remains invisible. Much as a series of sounds always relies on silent air to be heard or a variation of colours needs invisible light in order to be seen, Luhmann theorized, numbers and their scientific calculations, too, exist only by virtue of an invisible medium, quantity, in which they can be expressed.

As Luhmann remarks, 'numbers (and the same applies to all kinds of quantities) are indifferent to the concrete constellation of their application' (1990, p. 399). There exists no necessary link between context and numbers, which enjoy their own operative autonomy. They are thus capable of extracting information from the thickness of concrete events. It is sufficient, for example, to calculate how many students passed or failed, or how well they performed on this or that test, in this or that school, in this or that country. The rest – everything else that happened simultaneously, the full scope of the present – is easily forgotten. For statistics to exist and obtain meaning, all remnants of the thick present *must* be neglected.

By relying on Esposito's work on social memory, one may further conceive the role of numbers from a temporal perspective.¹ Memory, she suggests, never does full justice to the past. Most of the 'past present' must be sacrificed for it to translate into a 'present past'.² Remembering all that happened simply amounts to a mere impossibility: the present would immediately suffocate and choke on such an unbearable accumulation of information. In order to remember, it is necessary to forget almost everything. Without the ability to forget, a system could actually not observe its own past, let alone learn from it. The function of memory is therefore not to passively preserve the past, but to forget most of it in order to reconstruct it in such a way that it can productively be connected to further operations in the present.

While this is not a privilege of statistics, it is easy to see how quantification functions as a specific and productive, indeed fecund, forgetting technique. As the surge in large-scale international assessments in education illustrates, the forgetfulness of statistics even allows new global realities to emerge, showing correlations or causalities while connecting remote places, drawing statistical analysis between distinct variables on a worldwide scale. Thus, numbers do more than

achieving the necessary task of forgetting the past. Their amnesia simultaneously establishes the ground for other versions of reality to arise. This leads us to the second contribution systems theory brings to the debate on numbers and education: it understands quantification as a medium for the genesis of world society.

In dialogue with the current literature on quantification, Bettina Heintz (2010) further elaborated on this characterization so as to sketch out the first contours of a sociological history of comparison. Central to her account is the observation of a societal evolution towards mechanisms (or indeed media) that allow for increasingly abstract, decontextualized comparisons, culminating in the birth of official statistics. If comparison involved for centuries the actual presence of what was compared, first writing, but since the second half of the 18th century, above all, publicly available statistics, freed comparison from the requirement of co-presence, thus extending its scope towards a largely anonymous audience. In that regard, Kaat Louckx and Raf Vanderstraeten (2014) note how statistics was first and foremost an exercise in 'state-istics, the empirical study of the state'. Indeed, numbers not only enabled comparison across a wide range of variables, they simultaneously uncovered an overarching comparative context and homogenized the previous administrative differences (among dioceses, counties or kingdoms) into a uniform social body: national society. As Vanderstraeten (2006) points out, such 'discovery' of society has been accompanied not only by the generation of ever more numbers, but by a close linking to the schemata and patterns ingrained in the statistical processing of national data.

If several studies operating within the framework of systems theory hence largely concur with the tenets of the mainstream literature, underlining the coincident emergence of national society and official statistics, the extension of that line of thought to the genesis of a *world society* is much less common. As Heintz argued, though, quantification 'helps to relate events far away in time and space, regardless of the context in which they took place'. The construction of such a comparative order, she continues, 'is an – or even: the – essential moment of globalization' (2008, p. 124, our translation). The case studies on which Heintz relies to make her point include external evaluation, international comparisons, rankings and league tables. It is not difficult to see how such new realities establish comparative orders of a potentially worldwide scale.

By means of publicly communicated comparisons, individual events are related and brought into an overarching context that is visible to all. Every university, every sporting achievement, every publication and every state can now be observed in the light of such potentially worldwide comparative contexts and evaluated with regard to its past and future development. [...] It is this integrating and at the same time differentiating effect that makes comparisons – and especially quantitative comparisons – a globalization mechanism in its own right

(Heintz 2010, pp. 177–178)

The conviction that (quantitative) comparison sets in motion dynamics on a global scale via processes of reciprocal observation constitutes one of systems

theory's most fruitful lines of research. Especially in the domain of education, this very idea has been extensively explored and documented, even well beyond purely quantitative comparisons. As Jurgen Schriewer (1989) argued in his seminal text on the role of comparison, international survey data are an essential part of the "frames of reference' within which to specify appropriate reform policies".

Their function, accordingly, is not to present 'models for emulation'; rather this function is to establish on 'firmer grounds', to give 'greater depth' to, to increase the 'problem awareness' needed in, and, in sum, to 'enrich', by means of 'supplementary meaning' as derivable from external points of reference, the system-internal debates on policies adapted to the needs of the time.

(Schriewer 1988, p. 66)

With as its well-known conclusion, that such externalizations establish a globally operating education system:

As a result of that, a kind of 'social construction of internationality' flowing from recurrent externalizations to world situations, as well as 'main-streaming', along the lines of internationality, help shape the 'standardized world model of education', or 'transnational ideology', that correspond, as its semantic correlates, to the emerging world society.

(Schriewer 1988, p. 70)

Rather than denoting a global sameness, such world education then points towards the jumbled 'socio-logic of externalizations' (Schriewer & Martinez 2004, p. 51) by which reform movements outsource the legitimacy for their own decisions to examples from abroad. Instead of uniformity or integration, it denotes the global attainability and connectivity of the education system against the backdrop of a worldwide horizon of possibilities (Luhmann 1971).

The governance of an ungovernable world

Modern education has always, even routinely, relied on doubling the complex reality of its classrooms by means of numbers. In the last decades, however, as has been widely noticed and regularly lamented, the quantification of education began to play a new role: numbers became a central component of education policy, where large-scale assessments developed with a view to holding teachers, schools and even national systems accountable for their own success or lack thereof. Such accountability measures initially merely intended to inform stakeholders, policymakers or the wider public about the performances of those thus evaluated, as Michael Power (1994) reconstructs in his overview of the phenomenon. Only later arose the idea that, beyond their merely informative function, such measures could be turned into means of steering practices. Notwithstanding their differences, these more recent modern accountability policies all rest on the same assumption that information does not simply describe, but instead affects the world it depicts (Espeland & Sauder 2007).³ In education, the expectation is

that providing professionals and organizations with feedback regarding their performance will drive them to reflect, to process and account for their results, ultimately leading to responses and strategies to improve them (Verger & Parcerisa 2017).⁴ Unsurprisingly, research on accountability policies became primarily interested in assessing their effects: do they actually work and meet their targets? Do teachers, schools, systems perform better as a result? Many research efforts have gone into answering this question; yet the findings remain stubbornly inconsistent. The scholarly debate suggests distinguishing between various types of accountability policies in order to examine how each distinctively affects those held accountable (Maroy & Voisin 2015).⁵ But even such refinements do not produce firmer conclusions. The argument that high-stakes accountability, for example, would be more likely to realign education and policy, while low-stakes accountability would be more efficient in bringing about reflexivity, is not supported by clear evidence (Barbana, Dumay & Dupriez 2020). All in all, from the literature results a rather ambiguous picture: effects are often moderate, uncertain, multiple, sometimes contradictory, regularly unexpected and even counter-productive (Mons 2009; Maroy & Pons 2019).

Systems theory, we wish to show in this section, suggests a different understanding of the relation between these policies and what happens on the ground as a result of their implementation. We have already alluded to this problem in the first section by underlining that systems theory considers the relation between reality doubles and the world they mirror and inhabit to be much less straightforward than what is presumed when one speaks of power relations in causal terms.

To better grasp the position of systems theory on the matter, one may follow Luhmann's hint that steering necessarily involves distinct strands of operations: 'one has to distinguish the operation of steering, which produces its own effects, from the operation of observing this operation, which produces for its own part its own effects' (1997, p. 45). As the long history of education reforms illustrates, the mere attempt to steer the world, simply by virtue of being visible to that world, tends to produce effects that cannot be steered. Indeed, Luhmann notes, 'steering always creates an additional effect by being observed and by the reactions of the observer in the one or the other way' (1997, p. 49). The well-known difficulties of reform ambitions then result from the given that both the political intent to steer and its intended addressee observe and process this steering event usually very *differently*.⁶ As a consequence, the very question of policy effects appears as, however understandable, simply ill-conceived. It assumes and silently reproduces causal attribution schemes between policy and the societal domain that policy addresses, thus effectively concealing the latter's autonomy and ignoring the much more paradoxical nature of decision-making (Luhmann 2019, pp. 98–121). In contrast to both difficulties, systems theory starts from the *self-referentiality* of observing systems (Luhmann 1995). Reform or decision-making is hence not framed in causal or hierarchical terms (*cf.* Vanderstraeten 1997). Instead, each system is observed as recursively and selectively processing the information it distinguishes in its environment.⁷

The outcome of this ensemble, the contingent coexistence of the most diverse societal domains autonomously processing information according to their own

standards, constitutes the centrepiece of systems theory's observation of modern society and is commonly abridged as the latter's *functional differentiation*. This means that for systems theory, function and not (hierarchical) rank, is the dominant principle organizing modern society. From its viewpoint, since each societal domain accepts for its organization only the primacy of its own function and subordinates everything else as a purely secondary matter, society becomes *ungovernable*.

Like every system, politics cannot transcend itself and act on higher orders; [it is] only able to steer itself by a specific political construction of the difference between system and environment. That this happens and how it happens has without doubt tremendous effects on the society because the other functional systems must orient themselves along the differences thus produced. *But this effect is certainly not steering and it is not possible to steer it* because it depends on the construction of differences in the context of other systems and because it falls under the [self]steering programmes operating in these systems.

(Luhmann 1997, pp. 47–48, emphasis in original)

Such characterization, which has been addressed by various scholars (see, e.g., Willke 1986; Andersen & Pors 2016; Wansleben 2020), should of course not be read as a thinly veiled invitation for more *laissez-faire*. Rather, it highlights the limits of political steering and the highly paradoxical constellation wherein modern politics operates: a society that requires and institutionalizes the production of collectively binding decisions, but is structurally unable to abide by them. Accountability policies, then, make for an interesting case in point, since they can be said to *reflect* and *react to* much of the above. Together with practices such as evidence-based policy, evaluation policy, benchmarking, best practices or peer learning, accountability policies belong to a range of tools for which the umbrella concept of *governance* is usually reserved (as, for example, Kjaer 2010), so as to express a withdrawal from firm state government towards more nimble mechanisms to exert power. According to systems theory scholars, what such governance structures have in common is that they do not rely on the normative power of the law or political decision-making – in contrast with traditional governing techniques. Rather, as Anders Esmark (2009) points out, they attempt to mobilize the functional logic of other domains instead. They do not confront individuals and organizations with rules or hierarchy but offer (and request) *information* as a substitute. Schools, universities, teachers, or even national systems are given feedback on their own performances, practices or outputs, compared with others, or showered with examples of 'best practices' from abroad.

In that light, two remarks can be made. The *first* remark starts from the above observation that information plays a central role in accountability policies. The quantification implied by its 'governance by numbers' is expected to produce numbers that inform. Adopting Gregory Bateson's (1972) canonical definition, Luhmann defines information as a 'difference that makes a difference': information necessarily adds something new, otherwise it simply fails to inform. Today's prevalence of ratings and rankings can be explained that way (Esposito & Stark 2019).

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They order and chart evolutions, thus translating numbers into information necessary to guide us through uncertain choices. But, Luhmann warns, information ‘is a concept with two sides. It helps – and it troubles’ (Luhmann 2005, p. 28). Information, in other words, is a profoundly ambivalent matter.

It contains, so to speak, its own counter-concept. It reproduces knowledge and ignorance ever anew from moment to moment. As information, it provides connectivity options, but in so doing – on the other side, the ‘unmarked space’ of its form – it always renews the background knowledge that there are other possibilities too.

(Luhmann 2013a, pp. 311–312)

The ambivalent nature of information leads straight into paradox: we hope to take better decisions when gaining information, but simultaneously more information fuels the need to make more decisions. Or phrased differently: as long as we remain unaware of alternatives, there is no room for decisions in the first place. Once those alternatives become present, however, choices become necessary and the initial problem returns: how to decide? It should hence not surprise that the use of quantified information in accountability policies says nothing about how its addressees will react, which remains an empirical matter, but certainly participates in and perpetuates what Ian Hacking (1983) so aptly described as the endless avalanche of numbers. The latter, Sotiria Grek (2013) points out, coincides with the emergence of dense networks of calculating experts, who, together with a series of new governance mechanisms (like benchmark-setting), redefine governing as the examination of such quantitative information (*cf.* Verschraegen 2015).

As the previously mentioned relevance of information and knowledge accentuates, *secondly*, accountability policies rely primarily on cognitive processes, rather than on legal norms or political authority. They can be said to belong, together with other governance mechanisms, to a *post-sovereign* steering mode (*cf.* Esmark 2009). What such characterization seeks to make clear, is that accountability policies have often been adopted, or even initiated and developed, by non-state actors (such as the European Commission or the OECD) in order to intervene in domains where they lack formal power. Of course, such policies have also been implemented by formal governments which, in some cases, have mobilized their binding power to associate the observed performances with incentives and sanctions. But even that cannot hide from sight the plain truth that the turn to governance designates primarily a restructuring or reshaping of the political: what is being steered, is indeed the political system itself, nothing beyond it.

Coda: Irritating numbers?

In the previous pages, we have sketched out the various ways in which systems theory can be and has been used to rethink the role of quantification in today’s world. In line with previous research continuing on the precepts of Luhmann’s

systems theory, we have put emphasis on how quantification yields *new worlds*: either as a doubling of reality that sets out the probable against the real, or as the emergence of world society, resulting from the comparisons enabled by the thus created statistical reality. With our contribution, we have sought to relate this world-constructing capacity of quantified data to the debate on transnational governance and education policy. Unlike an overwhelming portion of the scholarly debate on the role of quantification in contemporary education, we have emphasized that systems theory cannot simply portray, let alone criticize, numbers as a steering mechanism. Rather than seeing it as mere technocratic aid (as official discourse might present it) or as an instrument of the powers-that-be (as many social scientists insist), we have discussed quantification against the background of steering limits. That is: as a repercussion of the paradoxical necessity of governing a world that appears ungovernable.

To conclude this chapter, let us return a last time to the topic of accountability policies in the domain of education. Together with other governance techniques, such policies rely on quantity as a medium to extract information from concrete situations, allowing ever more benchmarks and comparisons to be drawn, circulated and fed back to professionals and organizations. Whether and how the latter may be affected, we have argued, cannot be causally deduced from the characteristics of the steering attempt itself. Such a lack of control should naturally not be confused with an absence of effects (*cf.* Luhmann 2019, p. 280). Steering efforts do not leave the world unchanged, Luhmann acknowledges (1997, p. 47) – quite the contrary: more intentional steering, he reckons, might ‘lead to more (and more rapid) unintentional evolution’⁸ (Luhmann 1982, p. 134). Indeed, such proliferation multiplies the possibilities for systems to become irritated by, and to react to, the circulation of (quantified) information in their environment. Irritations introduce discontinuities in the course of time. They create the present as the time when reactions must occur, and decisions be made in the face of new uncertainties: should we change our habits or hide our failures? Should we game the system or improve our practices? Should we transform our image or train our staff? Should we imitate our successful neighbour or find our own way? Points of bifurcation that would otherwise not emerge now become subject to decision-making.

The fundamental mechanism behind quantification processes in accountability policies, we argue, is that the statistical realities thus produced allow for differentiating between the past and the future:⁹ what has been could become different. In the thus emerging ‘cosmology of contingency’, as Luhmann (2005, p. 29) dubbed it, we all become decision-makers. And, as we, or others, measure and observe ever more new aspects of our practices, they too become perceived as contingent, which further fuels the need for new decision-making. Building on a conclusion Luhmann (1992) formulated in the early 1990s, Heintz (2008) illustrates with her analysis of accountability policies in higher education how the new focus on quantifiable outputs and results transforms the way universities understand themselves. From *institutions* merely executing established scripts, the expectation to rationally decide and plan towards future goals turns them into (textbook) *organizations*.¹⁰ The issue is thus not an impending economic colonization of higher

education, as many critics of the so-called New Public Management lament, but unfolds at a different level of analysis: that of the self-understanding and self-steering of organizations.

We have linked this mutually reinforcing dynamic between numbers and decision-making to the changing shape of the political, underlining how accountability policies and the broader turn to governance amount primarily to the steering and restructuring of the political system itself. Be that as it may, such a dynamic, and the movement from institution to organization that we have sketched out, strongly echo an even deeper evolution, which Luhmann had already identified in the early 1970s, when he hypothesized that an increased preference for cognitive, rather than normative expectations would characterize the crystallizing world society (Luhmann 1971). This Luhmannian twist on what others have called the 'knowledge society' or 'globalization' is not so much based on shifting economic production relations or technological innovation. Although one could draw lines to such evolutions, the trend that Luhmann observes goes deeper. It observes how normative, counter-factual expectation structures gradually lose their grasp. As so often, such evolution is above all a matter of time: with the exhaustion of normative control, the stable future that norms project is also increasingly undermined. Quantification, then, gives both visibility and grip to the thus emerging cosmology of contingency, where our future increasingly appears indeterminate.

Notes

- 1 See Esposito (2008b) for an accessible introduction to the matter. Luhmann himself elaborates on the sociological relevance of memory in his two-volume magnum opus, *Die Gesellschaft der Gesellschaft* (1997/2012, pp. 348–358), published shortly before his death. As so often, the underlying intuition actually goes back to the field of cybernetics and in particular to Heinz von Foerster's (1948) mathematical phenomenology of forgetting, which described memory, the retaining of what we deem important, as the outcome of a forgetting process that increasingly clouds the remembered experience. Esposito (2001) later extended this line of thought into a stand-alone inquiry on social memory, featuring particular attention to the evolutionary path leading to the emergence of digital media.
- 2 As Sven Opitz and Uwe Tellman (2015, p. 110) concede, this Luhmannian "game of words might be confusing at first sight, but it turns out to be a disarmingly simple and yet effective conceptual pairing". The term "present past" refers to the present observation of the past, while the "past present" refers to the (today inaccessible) present as it occurred in the past. The "present future", for its part, denotes our present understanding of the future(s), while the "future present" points to the (as-yet inaccessible) present that will come when it comes.
- 3 The notion that people change their ways in reaction to being observed and compared is not new to the social sciences. Initially, it was considered a methodological problem: if mere observation changes the behaviour of the observed entity, how could scientific observation ever be valid? Campbell's (1957) seminal paper on the matter elaborates the notion of reactivity (later narrowed down and rebranded as "performativity") and distinguishes non-reactive observations from reactive ones. Accountability policies build on such reactivity to turn a methodological problem into a policy solution. For systems theory, however, the distinction between reactive and non-reactive observations is slightly misleading as it seems to attribute their difference to the nature of the observation, while it would be more accurate to attribute them to the observer: one does or does not observe that one is being observed.

- 4 Evaluation of performance can be geared to assess various criteria (equity, efficiency or inclusiveness, for example) and with regard to many different disciplines or competences. Some have therefore argued that such policies are void of any content and that their potential use relies on such 'emptiness': "their success as tools of regulation depends on their being empty of substantive content," Michael Power (2002, p. 195) writes. The theme is further explored in a special issue of *Soziale Systeme* (volume 8, issue 2), guest-edited by Dirk Baecker.
- 5 A great number of typologies have been produced, distinguishing many types of accountability policies according to various criteria (such as the actors involved, the presence/absence of sanctions/incentives, or the publicity of results). For a detailed review, see in particular the recent volume edited by Christian Maroy and Xavier Pons (2019).
- 6 "The observation of steering can, and typically will, use other distinctions than steering itself, for instance will carry out the imputation of successes and failures in a different manner than he to whom the steering is imputed as action" (Luhmann 1997, p. 45).
- 7 The already cited work by Corsi (1998) illustrates how such analysis proceeds when reform movements are observed as a strictly educational affair – and not as a policy or its mere effect.
- 8 In the original quotation Luhmann uses the notion of planning, not steering: "more intentional planning", he writes, "will lead to more (and more rapid) unintentional evolution". The point remains, however, that intentions take part in a much wider process of evolution which does not conform to them. Once an intention is put in the world, the argument goes, its very presence induces reactions and effects which escape its control, and eventually lead to its own disappointment. Reforms then do not shape the world as they intend to; instead, evolution does. In his book *Organization and Decision*, Luhmann (2019) dedicates a chapter (pp. 273–298) to the distinction between "the poetry of reform" and "the reality of evolution" so as to emphasize how reality never obeys intentions, but results instead from a non-governable, non-predictable process of becoming, which he refers to under the aforementioned Darwinian vocabulary of evolution. Obviously, steering attempts play their part in, but ultimately fail to control, evolution.
- 9 On how our changing understanding of time plays out in the field of education, see Vanden Broeck (2019, 2020); Mangez and Vanden Broeck (2020).
- 10 Raimund Hasse and Georg Krücken have developed a similar argument, even if they nuance that this evolution is well advanced in universities while schools remain "more profoundly imprinted by institutional factors" (2015, p. 209).

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