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# The Ironic Becomings of Reflexivity – The Case of Citation Theory in Bibliometrics

Stephan Gauch\*

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**Abstract:** »Das Ironisch-Werden von Reflexivität – Der Fall der Zitationstheorie in der Bibliometrie«. An attempt to capture the meaning of the term reflexivity is incomplete. Rather than thinking of reflexivity as something fixed, it may be more productive to think of reflexivity as a process of becoming. Based on a conceptual framework inspired by Deleuze, the following contribution addresses notions of reflexivity between sociology and bibliometrics from a perspective of reflexive bibliometrics by a partial reconstruction, or, more precisely, a reconstructive rereading of the history of citation theory. I argue that following the procedural heuristic I will propose may be productive by neither framing reflexivity as an issue of static being of a discipline by asking “How reflexive are we?”, nor an imperative of “We should be more reflexive!” but rather by asking “How and why do we want to become more reflexive by seeking connections to different perspectives?”. Finally, I will discuss the potential of irony as a distancing function complementary to objectivity when applying the framework to your own discipline.

**Keywords:** Reflexivity, bibliometrics, Deleuze, citation theory, becomings, sociology.

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## 1. Introduction

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Notions of reflexivity are, at least at first sight, not unlike mirrors. Unfortunately, those mirrors are not of the modest kind and symmetrical in nature, in that you could see yourself in them without too much effort. They also are not of the magical kind; in that they readily answer specific questions by themselves when, for instance, addressed by their name and in the correct fashion. Some researchers who want to engage in *reflexivity* may be afraid that not having a mirror might distort things. Others may rather not want to be part of the reflection. Some may ask questions of cause and effect, that is, if the mirror or the object of reflection are causal to the reflection. Some

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might think more complex. They want to build elaborate telescopes using mirrors to look at things far, far away. Others may want to build funhouses using as many mirrors as possible, in which others should get lost and have fun doing so. And yet others might want mirrors that help them to see what is behind them or use them to communicate in a very specific language, the morse code, by refracting the sun. Some like to break mirrors. Some do not like what they see. Some do not even want to have mirrors around. That surely looks like a lot of mirrors and for members of a scientific discipline that, for whatever reasons internal or external, want to engage in reflexivity, it may produce more problems than it solves. These mirrors may even produce contrary effects, namely that those who take them seriously are being framed as sticklers that hear the proverbial gras growing.

Against this metaphorical backdrop I argue that it is not inherently fruitful to debate what reflexivity *is*, as tempting as such a resolution might present itself, but rather promote the procedural nature of reflexivity as part of a process of *becoming of reflexivity*. In order to illustrate the potential of honoring the procedural nature of reflexivity I will demonstrate several acts of *becomings*, the becomings of the citation as a central object in bibliometrics, the recursive relationship between the becomings of territories of bibliometrics and this object, as well as the entangled positions of the author himself in this. In a first step, I will focus on what I consider problematizations that are related to the term reflexive. I will then propose a framework largely derived from the works by Deleuze and Guattari that allows to account for this procedural nature of reflexivity. From there, I will progress towards a very brief introduction of the territories of bibliometrics and recent issues that bear resemblance to such reflexive problematizations. I will then apply the derived framework by engaging in a *reconstructive rereading* of a prominent text entitled “What Do References and Citations Measure?” In the final part I will engage in a discussion on the problem of *self-oscillation* and objectivity and the potential of irony as a mode of distancing that complements the distancing function of objectivity in cases of self-objectivization, that is, when the framework is applied to the canon of knowledge, practices and concepts that those who want to use it adhere to.

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## 2. The Becomings of Reflexivity as Continuously Unresolvable Problematizations

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In general, when the term reflexivity is used, it is usually aimed at something that has the characteristic of a problem, maybe best being described as deep-seated, fundamental and in some sense even urgent. After all, what may be more problematic for a strand of sociology that tries to “explain”

relationships between phenomena than questioning the nature of cause and effect? Likewise, what may be more challenging to this discipline that aims for notions of objectivity than disentangling a disciplined observation from the subjectivity of the researcher? Overall, to reflect is to be willfully doubtful about something substantial and do so publicly in order to frame it as a problematic idea to others. Yet, problems of reflexivity may not be completely unsolvable problematic ideas in theory. To argue for reflexivity is to say that, even though a problem is addressing something substantial, it may, by the very means of reflexivity, be resolved eventually. Yet, most of this could be said about any challenging problem. What differentiates a deep-seated problem from a problem of reflexivity? Reflexivity relates a perspective to itself by framing aspects of itself in a problematic but productive way postponing amiable solutions. Reflexivity is therefore about moving on as a discipline problematizing itself through deep-seated problems and at the same time signaling commitment to a process of addressing these problems and thereby also and always itself. Problems of reflexivity seem to be problems that are not ultimately *resolved* but rather continually *addressed*. In this respect, reflexivity is always incomplete. This does not imply that reflexive issues are addressed by every proponent of a discipline. That would transform a problem of reflexivity into an issue of full-fledged crisis to core beliefs and concepts. Rather, problems of reflexivity become problems that have to be *taken into consideration* or perspectival traps to be careful *not falling into*.

All of the aspects of reflexivity share some notion of unfinishedness or incompleteness in the light of disciplinary pursuits, that is, reflexive problems as something being addressed in a constructive but imperfect way. Describing a problem as reflexive already is a testimony towards it not being completely solved from within. Operating from fixed identities, that is, how disciplines *are*, might overshadow the effects reflexive problems may have on them. Therefore, in order to address these reflexive problems procedurally without operating from a fixed understanding, I propose to follow an approach that stems from process philosophy. In the following I will propose a heuristic that focuses on such becomings of reflexivity, that is, how the potentiality of reflexive problematization and the disciplines addressing them are being actualized, inspired by the work of Deleuze (1968), as well as the works of Deleuze and Guattari (1977, 1987), namely the concept of difference, the idea of *desiring-production*, and the idea of *desiring-machines*.

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### 3. A Deleuzian Approach Towards the Issue of Reflexivity – From Being Reflexive to Becomings of Reflexivity

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A word of caution is in order. To understand the Deleuzian perspective of becoming, it is necessary to understand his views on the relationship between difference, repetition, and identity. His starting point on this issue is an extension of the Nietzschean idea of the eternal recurrence (Nietzsche 1974) and integrating it with ideas by Spinoza (1677) and Bergson (1988). From Spinoza he takes the notion of the negation of dualist perspectives of substance. For Spinoza, *being* is not to be understood as something captured in multiple substances such as a material versus a transcendent substance. Rather he transforms such multiplicities into one aspect of being. For Spinoza, substance is expressed by *modes*, which are the means that allow things and bodies to persist as themselves through change and grounds the attributes of them. He argues that “every mode, in which the human body is affected by external bodies, must involve the nature of the human body, and also the nature of the external body” (Spinoza 1677, 42). From Bergson (1988), Deleuze integrates the concepts of the virtual and the actual, that is, the idea of modes of substances not as linked to the concept of being but rather as framing existence as flows in time actualizing potentialities. This informs conceptual notions of reflexivity understood as recursivity when Bergson postulates that:

[t]here is no perception which is not prolonged into movement. [...] The training of the senses consists in just the sum of the connections established between the sensory impression and the movement which makes use of it. As the impression is repeated, the connection is consolidated [...] the performance of the movements which follow in the movements which precede, a performance whereby the part virtually contains the whole, as when each note of a tune learned by heart seems to lean over the next to watch its execution. (Bergson 1988, 94)

The connection to reflexivity becomes most apparent when Deleuze at the end of *Difference and Repetition* (Deleuze 1968) argues towards representations being the locus of “transcendental illusions,” which he categorizes into idea, thought, sensibility, and being:

The thinking subject brings to the concept its subjective concomitants: memory, recognition and self-consciousness. Nevertheless, it is the moral vision of the world which is thereby extended and represented in this subjective identity affirmed as a common sense [*Cogitatio natura universalis*]. When difference is subordinated by the thinking subject to the identity of a concept (even where this identity is synthetic), difference in thought disappears. (Deleuze 1968, 266)

In our context, this means that, rather than focusing on something like *being reflexive*, he allows us to focus on *becomings of reflexivity* by breaking up the notion of being and identity as fundamental categories from which all potential of becoming as change is derived. In our context, the identity of indicators or bibliometricians is less a function of some essential quality within the individuals or the numbers but rather the result of incorporation – not overcoming – of differences.

We now have a conceptual starting point that no longer is burdened by a specific notion of what reflexivity should be or what we, meaning us as observers, may think it is, that is, the identity we bring into the observation. Yet, this may be achieved by any kind of approach that angles on process philosophy. It is by far a specific quality of a Deleuzian approach. What sets it apart from other procedural approaches, that is, to account for reflexivity as a process, is how his notion of difference preceding identity can be extended to the realm of *problem-ideas*. To him, propositions like the problematizations described in section 2, have to be available as a stratum, a fertile ground for notions of reflexivity to unfold, and, this is of utmost importance in our context, it is the fact that propositions are available that recursively provide weight to the problematizations. In this sense it is the resounding echo of Nietzsche in Deleuze's work and the idea of eternal recurrence (see above) that helps us to differentiate between, in the most simple terms, issues that may be addressed and issues, or more precisely, differences that are believed to be unchangeable. In a nutshell: Propositions produce the problematicness of problems and attribute weight to them. Not vice versa. In our context, the numerous propositions to account for reflexivity are both giving weight to them but at the same time, as they cannot be finally resolved, provide weight without resolution.

To Deleuze, such problem-ideas are:

positive multiplicities, full and differentiated positivities described by the process of complete and reciprocal determination which relates problems to their conditions [, that is, to disparate series of difference]. The positivity of problems is constituted by the fact of being “posited” (thereby being related to their conditions and fully determined). It is true that, from this point of view, problems give rise to propositions which give effect to them [*sic*] in the form of answers or cases of solution. These propositions in turn represent affirmations, the objects of which are those differences which correspond to the relations and the singularities of the differential field [, that is, the stratum of disparate series as differences of differences]. (Deleuze 1968, 267)

He concludes from this that affirmations related to problem-ideas are not only different affirmations, that is, different solutions to what is available to solve a problem, but rather foremost affirmations of difference, that is, the solution being actualizable as a solution because of it becoming part of the relations and singularities in a given field of differences.

In our context, this provides a good heuristic starting point to empirically identify issues of reflexive problematizations as it now allows us to focus on differences in a field of different positions, that is, differences of differences. It may be short-sighted to fall below this viewpoint to account for reflexivity. After all, those that are proponents of reflexive problematizations may at any time just stop discussing it, thereby reducing the problem-ideas to unchangeable aspects of the *fate* of a discipline, unchanging and devoid of potentiality for change. It is the recurrence of differences and the view fact that reflexive problematizations become part of the relations in a field that makes them identifiable using this heuristic. We neither specifically need to use the term with all the linguistic troubles I addressed in the introduction, nor do we have to follow a position that places the substance of actors as dominating force over the issue itself.

Yet, two issues need to be addressed to arrive at a useful heuristic. The first relates to grounding why becomings of difference, or in our specific case becomings of reflexivity, actually happens in light of its potentialities as problem-ideas. The second relates to the question of how to procedurally organize the relations of differences in order to differentiate identities and their representations.

To address the first issue, we need to have a theoretical frame on how to account for potentiality of difference to happen and what it is grounded in. As argued above, difference as the potentiality of identity resides in substance and relations of substances within fields of differences in which these substances are recursively organized. Difference is not something that exists outside of those confines. Yet, an obnoxious and strict thinker may argue that multiplicities of potentialities does not imply realization of specific potentiality. We therefore need to develop an idea why and how potentialities may actualize change through and within substance – as becoming of relations of objects and as becoming of action – that may happen under the circumstances of a plethora of potentialities. The solution to Deleuze and Guattari lies in the concept of desiring-production and desiring-machines. In *Anti-Oedipus*, Deleuze and Guattari (1977) further develop the notions of difference preceding identity by proposing the concept of desiring-production subsuming the Freudian notion of desire and the Marxian notion of production. Regarding the Freudian notion of desire, they reformulate the direction of the force of desire. Rather than desire pointing inwards, as in the case of Freud, for whom desires predominantly point into the body, Deleuze and Guattari are interested in the desires that point outward, in the sense of an excess of desires flowing out of the body and becoming a productive force in the sense of Marx – hence also the title *Anti-Oedipus* (ibid.). For Deleuze and Guattari, desire is therefore first and foremost not a function of deficit, which would render desire a passive quality, but rather their instantiation by means of production. This desiring-producing force, finding its expression through action,

grounds existence vis-à-vis difference by seeking connections and organizing differences between desiring-machines. For Deleuze and Guattari, such desiring-machines are not to be confused with mundane notions of devices. Rather, they propose that “[e]verywhere it is machines – real ones, not figurative ones: machines driving other machines, machines being driven by other machines, with all the necessary couplings and connections. An organ-machine is plugged into an energy-source-machine: the one produces a flow that the other interrupts” (ibid., 8). For Deleuze and Guattari, desiring-machines may also not be confused with the idea of individuals or subjects. Rather, they want to sweep away with the category of subjectivity, when they argue that they “make no distinction between man and nature: the human essence of nature and the natural essence of man become one within nature in the form of production or industry, just as they do within the life of man as a species” (ibid., 32). Finally, desiring-produce is not standing in for a lack of existence of the desiring-machine but, at least to them, the grounded and most fundamental mode of its existence: “Desire and its object are one and the same thing: the machine, as a machine of a machine. Desire is a machine, and the object of desire is another machine connected to it” (ibid., 26). What they mean by this is that desires do not in a strict sense *belong* to the desiring-machines but rather are situated in the sociality of the desiring-machines and their linkages by actualizing the connections between the desiring-machines productively as desires. To them, there is “only desire and the social, and nothing else” (ibid., 29).

To address the issue of the relation of identity and representation in our context, we may again be inspired by Deleuze and his idea that the locus of the actualization of problem-ideas are themselves systems in which “different relates to different through difference” (Deleuze 1968, 277). He proposes describing such systems as simulacra by notions that are disentangled from categories of representation. These are:

- 1) the depth or spatium in which intensities [of ideas and affirmations] are organized, 2) the disparate series these form, and the fields of individuation that they outline (individuating factors), 3) the “dark precursor” which causes them to communicate, 4) the linkages, internal resources and forced movements that result, 5) the constitution of passive selves and “larvae subjects”, 6) the qualities and extensions, species and parts which form the double differentiation of the system and cover over the preceding factors, 7) the centers of envelopment which nevertheless testify to the persistence of these factors in the developed world of qualities and extensities. (Deleuze 1968, 277)

I argue that notions to describe the simulacra of representation in conjunction with the idea of desiring-production can be translated into a heuristic to address becomings of reflexivity. The first notion (depth or spatium) of description of representation of these systems points towards issues that are related to the in-betweenness of territory of differences, that is, a field of



difference that is characterized by different multiplicities of potentials similar to a gravitational field. The second notion (disparate series and fields of individuation) consequently points towards reconstructing the differences of potentiality of these territories as a means for identity formulation, that is, to continually producing the identity of a desiring-machine as the result of linking disparate series that are formulation of differences between its territories by acts of territorialization which are then contrasted by de-, and reterritorialization by the desiring-machines.<sup>1</sup> In our case, territories drawn up by the fields under analysis relate territories to their differences-in-itself of the desiring-machines partaking in the idea-problem complex. The third notion (dark precursors) aims at reconstructing the critical difference between the disparate series as an issue of immediate or sudden consequences of their disparity. Dark precursors are not autopoietic. Rather they are themselves related back to the disparate series and are in a way issues that are above a threshold of disparity. To illustrate this, Deleuze and Guattari use the metaphor of dark skies, which are precursors for thunderstrikes. The fourth notion (linkages, internal resources, and forced movements) points towards active change as an inherent quality of the former differences as linkages, that is, organizing the in-between vis-à-vis the territory (ad 1), the means employed by desiring-machines to actualize themselves within these territories (ad 2), and intensities of the differences as substantial differences (ad 3). It therefore points towards active realization of differences and at the same time a summation of the active forces at play. The fifth notion (larvae subjects) organizes the opposite, that is, desiring-machines having connections to territories but do not integrate new differences into their identity, i.e., desiring machines for which disparate series of difference are not actualized through continuation of desiring-production. The sixth notion (species and parts) organizes the relationship between virtual ideas and the actual desiring-machines as differentiating through difference. In our context, this may be seen as the formulation of identity as constituting commonalities of differences. The seventh notion (centers of envelopment and persistence of factors) points at moments of reaffirmation of identity and organizes the flowing

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<sup>1</sup> From a narrow Deleuzian perspective, *territories* are understood as places or spaces defined by borders or barriers that facilitate the notion of inside versus outside as areas of jurisdiction (Deleuze and Guattari 1987). I elaborate on this notion by arguing that this may be extended to other spatial metaphors such as a *Fachgebiet* (area of expertise, research area). In my reading of Deleuze, the issue is that differences are facilitated as borders. Something that, when crossed, produces the notion of *invasion* or *attack*. To extend or fight over the borders of such a territory is always a desiring-machine preventing or excluding other desiring-machines from making a difference part of their identity to facilitate their jurisdiction over this difference and thereby the confines of the territory they claim as theirs. It is the aim to block a flow of becoming. In this respect, nothing is lost from this extension beyond the mere physical realm but rather it allows us to extend it to other phenomena and relate those spatial notions to each other. To *reterritorialize* is to settle on or fill a gap that may have been the result of *detrterritorialization* by other desiring-machines.

together of disparate series emerging through becomings. Deleuze argues that “[t]he more the difference on which the system depends is interiorized in the phenomenon, the more repetition finds itself interior, the less it depends upon external conditions which are supposed to ensure the reproduction of the ‘same’ differences” (Deleuze 1968, 256).

Before diving into an exemplary case of how the heuristic developed in this section may be put to use, I will sketch out the territories of bibliometrics as they may present themselves to an informed observer or a member of the field.

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#### 4. The Territories of Bibliometrics

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To illustrate what may qualify as reflexive problematizations in bibliometrics, it may help to understand what bibliometricians usually attempt to do, most of which falls into the following lines of activity. First, bibliometricians produce numerical comparisons to evaluate – usually related to some units of analysis such as organizations, countries, regions, or authors – by calculating indicators of productivity or reception. Second, bibliometricians use bibliographic information as a means of exploration, for example, by mapping structures and networks that can be extracted from bibliographic information such as co-publication structures that indicate cooperation or citation structures that are seen as a means for mapping the history of a scientific field or topic. Third, bibliometricians may be engaged in something that remarkably looks like physics, for example, aiming at discovering “laws”<sup>2</sup> and identifying the nature of distributions of derivatives of bibliographic data. Finally, most bibliometricians are strongly inclined towards retaining a high level of data quality in the bibliographic data they use. Sometimes to an extent that may appear pedantic to the average user of these data sources.

Usually bibliometricians will, over the course of a professional career, at least dip their toes into these four flows. For instance, most professional bibliometricians will be able to recite the most prominent bibliometric laws, justify what means of normalization<sup>3</sup> of an indicator they deem most adequate to account for citation cultures when calculating citation-based indicators and why so-called *citation windows*<sup>4</sup> are necessary, argue how to best delineate fields that are not covered by a classification scheme to explore new topics, and complain how dirty available data is as well as the specificities and the applicability of different bibliographic data sources for different forms of

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<sup>2</sup> There are numerous examples of such laws. Prominent ones being Lotka’s *Law of Productivity* (1926) or Bradford’s *Law of Scattering* (1934).

<sup>3</sup> Normalization usually refers to calculating the ratio of a realized value to an expected value.

<sup>4</sup> A citation window is defined as the duration during which citations are summed up after publication of an article.

analysis. To be a bibliometrician is to account for differences in these respects. Some differences that they are sensitive to and that make up their identity have recently been (re)introduced as challenges to the bibliometric profession. One example is the critique that rests on notions of responsibility, that is, if the responsibility of bibliometricians should extend to the acts of evaluation rather than be limited to the means of its production, which led to the formulation of the *Leiden Manifesto* (Hicks et al. 2015). Another example is the recent debate on new data sources and indicators such as Altmetrics. These indicators are numeric representations of the acts of mentioning scientific publications in social media posts and spurred a discussion about what such mentions actually represent and what indicators derived from such mentions may signify.<sup>5</sup> In this respect, the goal of a *reflexive bibliometrics*, at least in the understanding of the author, is the attempt to address such problematizations, for example, how meaning and relevance of indicators are being produced and how these procedures interact in moments of using bibliometrics for evaluation or mapping of science and arrive at collaboratively designing indicators. In the following, I will present an example from the territory of bibliometrics and reconstruct the desiring-production and the deterritorialization and reterritorialization stemming from it by employing the heuristic introduced.

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## 5. The History of Citation Theory – A Rereading of a Bibliometricians Perspective on the Role of Sociology in a Reflexive Endeavor of Bibliometrics by a Sociologist (Who Is Also a Bibliometrician)

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The case to illustrate the reflexive relationship between bibliometrics and sociological understandings is based on a reconstructive rereading of a chapter from the book *Citation Analysis in Research Evaluation* (Moed 2005, 193ff) entitled “What Do References and Citations Measure?” using the heuristic

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<sup>5</sup> Within the bibliometric community, the most prominent way of addressing the latter issues of meaning are cross-correlation studies, in which new indicators are correlated with other established indicators studies as illustrated by a meta-analysis by Erdt et al. (2016). Yet, such methods may not support the bibliometric community in assessing difference in meaning of an indicator. A positive correlation in this sense is rather unproblematic. It produces a notion that a new indicator may represent the same underlying phenomena but has some advantages that may render it useful based on a characteristic of the new indicator, for example, availability, coverage, timeliness, and so on. Yet, in the case of no significant positive correlations being observed between the established and the new, bibliometricians may have to resort to different means that are outside of their strict quantification practices.

developed in section 3.6. The reconstructive task at hand is not intended to lecture information scientists and bibliometricians on how to correctly perform sociology or exercise other disciplinary logics for that matter. It is also surely not an exercise in condescension. It is a task of reconstructing the productive force of desiring-production floating between the disciplinary notions that make up the territories of bibliometrics. The chapter by Moed (*ibid.*) is structured as follows. After presentation of a table containing a number of individual authors and what, by their account, references and citations measure, the chapter is organized into sections describing disciplinary approaches, that is, physical, sociological, psychological, historical, and information- and communication-scientific related to the question of the chapter. The chapter progresses by fleshing out individual positions of a selection of authors presented in the introductory table.

The creation story of bibliometrics in Moed's (*ibid.*) chapter is unfolded as the connections between documents as references being part of the territory of the library (Garfield 1964). The linkage is not reversed as a means of citation but rather as an organizing principle of the library. The document is not connected to the author in any way but rather stands on its own and through its connections to others as the source of a principal effort of the library, that is, to organize what it contains. Yet, the territory of the library is always incomplete. Not just in a way of all the objects and places that exist in the scientific world such as laboratories or devices or concepts, but rather as organized knowledge flows between those, abstracted through the documents produced. If it is in any way a mirror, it is the mirror of the practice of careful acquisition of the librarian and the researcher seeking connections to each other to establish the library. Its incompleteness is also a dark precursor for discussions to arise, namely the difference between the imagined size of the *science citation index* (SCI), set to become the prime data source of bibliometricians at that time, as a disparate series of the potentiality of the always incomplete library. It is in this sense the precursor of thinking about *coverage*, that is, how much of "all there is" the SCI actually contains and what the repercussions of this may be – a discussion that prevails to this day.<sup>7</sup> Still, the incompleteness of the library and the contingency of the structure of knowledge is part of the desiring-production of the becoming of a librarian, that is, to organize a library both in terms of what it contains and what it does not contain. The libraries and the librarian and the researcher at that time seek connections to each other but these are in retrospect cumbersome and

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<sup>6</sup> The author has read this article a number of times over a couple of years prior to the analysis. Yet made it, for the first time, part of a further becoming of the part of his professional identity as *bibliometrician* via the proposed heuristic.

<sup>7</sup> A good example is the practice of bibliometricians to assess the differences of coverage between data sources. Concrete examples for this are discussions that came up when SCOPUS was established or the current discussion about the platform Dimensions.ai.

temporal in nature. Things have to physically move from one place to the other when they are not available and stretch the time of the researcher to wait for the arrival of the document in question. The citation only exists as reference, that is, as a flow from one document to the next but hardly reversible. To know about a document being referenced means to flow from one document referencing towards this document. A document has no way of telling the researcher who used it but only what is being used. With the establishment of the SCI this relationship is reversed. This reversal is realized by the new and revolutionary organizing principle of the SCI as an index: the citation. You may now explore by incoming citations rather than by the outgoing references of a text. Through the SCI, the library becomes a place of exploration that can now move freely back and forth in the history of a researcher's discipline through references and citations alike. This is crucial as it allows for the reference as citation to connect to the desire of the librarian-bibliometrician, not so much in organizing that which is available already, but that which is different from the territory to which it is the steward, namely what to buy or order next. The citation as a concept symbol allows for the document to be related to the territory of "utility" for others (Small 1978). To reflect for the historian-bibliometrician is to reflect upon the territory of the library as a place of the history of science to which resources of acquisition, the physical space of the library, the researchers using the library, and the communities of these researchers connect. The SCI, as one means of scientificization of the library, is a precursor to deterritorialize the library in the becoming of the historian-bibliometricians practices. Even though it occupies a minuscule physical space in a library, to the historian-bibliometrician the territory and the lines of flight the SCI produces open up a space way larger than the library that it contains. It is also no longer the case that the library has to be the focus of desiring-production as a derivate of the history of science.

The deterritorialization of the library for the historian-bibliometrician allowed for a reterritorialization of the SCI by a sociological desiring-production. In Moed's (2005) text, the territory of in-betweenness of sociology and bibliometrics is unfolded in a passage related to sociological approaches and is bifurcated in that it positions bibliometrics both into the canon of research techniques in sociology of science and at the same time discusses the in-flow of theoretical positions, which allow for referencing to be framed as *social acts*, by attesting that "within the sociology of science, distinct perspectives were developed upon science as a social activity" (ibid., 196). A brief discussion on sociological perspectives ensues, which centers on the "normative perspective" (ibid., 196) of Merton's (1968) view of scholars as "a disinterested seeker of scientific truth" (Moed 2005, 196) and Callon, Rip, and Law (1986), who "focused on the scientist as an entrepreneur" (Moed 2005, 196). The interpretation of the difference between the two perspectives is labeled as *internal* and *normative* for the case of Merton and *external* and a case of

embeddedness for the case of Callon, Rip, and Law (1986). These approaches are differentiated from micro-sociological approaches, which situate the act of citing into the everyday practices of researchers, which is then situated in a difference towards psychological approaches. Moed's (2005) subchapter reserved for sociological approaches also touches on post-modern and systems theory. Yet, neither are those part of the further discussion in the text, nor are they mentioned in the table that has the function of informing the reader from the outset what citations and references measure. They seem not to be essential to the desiring-production of meaning of citations. For the sociologist-bibliometrician, the Mertonian perspective becomes part of the desiring-production to *measure* social phenomena and to do so via citations. After all, the historical perspective, which operates from the idea of citations and references facilitating knowledge flows, may have to answer a critique regarding what driving force is governing the process of referencing. It may be governed by all kinds of forces – a fact that will become relevant when turning towards the critique of the normative Mertonian paradigm. The Mertonian perspective not just deterritorializes the library from the practice of sociologist-bibliometricians but rather reterritorializes this gap by the meaning of the act of referencing: The following of norms. It also reterritorializes the SCI. It now belongs to the territory shared by sociology of science, history of science, and bibliometrics. To the sociologist-bibliometrician it is not a mirror of history but a mirror of the honorable scientists following the norm of giving credit where credit is due. From the Mertonian perspective this claim is warranted not so much by the ethos of science, even though it provides a veritable starting ground, but rather also by his work *On the Shoulders of Giants* (Merton 1965) where he reconstructs the history of the bon mot “standing on the shoulders of giants” by tracing its use through history. The crucial point here is not so much the driving force of normative framework, but rather the consequences of deviance and publicity, that is, the agitation that is voiced by those who feel that the credit of priority to claim an idea has been taken from them. In the course of this, the citation becomes reterritorialized. References are now bound together by the normative framework of appraisal as a sign for intellectual influence. This further reterritorializes the SCI. It is not just a mirror of the collective norm of appraisal but also a network of these acts with specific endpoints, which may express a completeness of appraisal through quantification of these acts. It is also this normative element of appraisal-quantification that further deterritorializes the library from the sociologist-bibliometricians perspectives. The SCI, being a mirror of the normativity of appraisal, is reterritorialized as a mirror of the reward *system*. It becomes a mirror of a social structure. Disentangling such structures is to the sociologist-bibliometrician no longer the act of a historian-bibliometrician, but rather the act of disentangling these structures as systems of rewards and appraisal. The contribution as the status of the researcher, the act of

summation of the documents produced, is not inscribed in the space occupied by their contribution in the library or history modulating the awareness structure of its visitors. Affirmation of status is also no longer confined to the cumulative acts of producing publications, even though to be pointed to requires this act of bringing that to which may be pointed into existence. It is no longer the act of the author producing the document as such. It is a product of linking author-documents pointing towards each other. From this viewpoint, the citation becomes an unproblematic artefact to the endeavor of evaluation via bibliometrics. It is univocal by its relationship to the normative structure of science being invoked with reference to the Mertonian perspective. It is this – now rendered unproblematic – character of the citation that becomes part of the desiring-production of sociologist-bibliometricians to compare and to deterritorialize the use of classification systems as means to organize space in a library and reterritorialize them as normalization principles to inform acts of comparison and evaluation.<sup>8</sup> An act of sorting *like with like* in order to compare. It is exactly this connection between the normative and the numerical that establishes the notion of an indicator *representing* good research identified by a notion of collective-summative mode of appraisal.

The desiring-production of the *normative notion*, that is, the act of subsuming the summation of appraisal into the becomings of citation-based indicator, becomes part of desiring-production by the second sociological notion discussed in the chapter by Moed (2005). It is Cole and Cole (1967) that facilitate to stabilize the relationship between the SCI and the reward system of science by establishing an intricate typology of reputable positions and appraisal and correlate these with indicators of quantity and quality derived from the SCI. The results, mostly positive correlations, reterritorializes the SCI and the acts of evaluation. The SCI is no longer prone to the doubt related towards a notion of a perfect legitimate conduct in a normative structure, but rather a way of organizing the imperfection of “the normative” itself into a concept. A sociologist-bibliometrician no longer has to rely on a notion of perfection of the normative framework of science in order to perform evaluative bibliometrics. It is absolutely sufficient to believe in the positive and significant statistical correlation of the relationship between the collectivized act of appraisal and its consequences, that is, that *overall*, the normative reward system works and *overall*, the SCI covers that. It is not so much a paradox

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<sup>8</sup> Yet, the disparate series of the librarian-bibliometrician, the historian-bibliometrician, and the sociologist-bibliometrician coexist as territories. To normalize indicators, that is, to divide the number of citations by a normalizing derivate such as averages of citations within a field, is not unlike building a library. The fields of normalization have to be sufficiently large in order to warrant stable centrality values for the same reason as the documents and its pages have to warrant a separate section in the physical library. Half-filled shelves are not fulfilling their purpose, in the most literal sense being filled completely, as much as low absolute numbers of documents captured by a classification do not fulfill their purpose as a stable reference point from which to compare and assign relative utility.

but rather part of the logic of statistics that the imperfection of correlation stabilizes the SCI as a source for bibliometric analysis. Every individual case of renunciation from this normative imperative of collectivized appraisal and its relation to positions can be done away with by means of pointing at the statistical fact of the correlation and rendering the observation in everyday life, a negation of the concrete act of appraisal transforming to positions, as peculiarity or being that negation and that *overall* the SCI mirrors the reward system.<sup>9</sup> To the sociologist-bibliometrician this is unproblematic in light of their desiring-production to measure and speak about the measure in a consistent way. The difference realized by the act of correlation is actualizing the notion of randomness. As long as there is not enough randomness preventing it, and the positive significant correlation attests to that, they can speak with one voice about socially-defined quality.

It is from these disparate series, the notion of correlation and the notion of a univocal citation that is only limited by randomness of deviance, that the sociological perspective described in Moed's chapter can further realize their desiring-production to speak about everyday life of scientists in the context of references and citations. Rather than pointing at the difference of "randomness versus the normative" they point at both randomness and the correlation, and realize their critique, namely that both are submerged by the interplay of authority, rhetoric, and strategy of immunization against critique (Gilbert 1977). To a statistician-bibliometrician, this is blocking the desiring-production of speaking about socially-defined quality. Being cited is not a means of appraisal but of captivity to the purpose of rhetoric by the referencing author.<sup>10</sup> It is not so much a problem of causality that is addressed to reterritorialize the meaning of the citation; rather, rhetoric and the normative are set into competition with each other as independent variables laying the burden of disentangling these on the sociologist-bibliometricians shoulders. In this sense, the SCI is further reterritorialized. Not so much as a source of further data, even though it is one of the consequences arising from the perspective, but rather in terms of the individual citations that may be realized by either the rhetorical or the normative. It holds up the notion of univocal character of the citation in the light of critique of multiplicity. The citation is never both but either. Even if it may be both it has to be characterized by taking the side of this difference, for example, by means of threshold values, which may be part of stochastic operations of classifier algorithms related to the citation contexts.

Solving this ambivalence becomes a problem that is no longer solvable by the SCI as an assemblage of citations and descriptive elements. In order to retain its status as a central object to the territories of bibliometricians it has

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<sup>9</sup> It is in a way a precursor of the discussion on *gaming* currently salient in the bibliometric community.

<sup>10</sup> A notion similar to the one put forward by Latour (1987).



to be further reterritorialized. There are two strands that relate to this. One is the establishment of *citation context analysis* (Small 1982). The other is the contribution of Cozzens towards a “rhetoric-first model” (1989). The interesting aspect is that both facilitate this difference very differently. Small (1982) through the method of citation context analysis aims at ascribing the difference by deterritorializing parts of the science citation index and its descriptive elements, for example titles, abstracts, and so on, from the bibliometric territory and moving back to the full text of a publication and analyzing the textual information that surrounds the reference. Cozzens (1989) aims to capture the problem of ambivalence of citations differently when she writes

No wonder we have trouble choosing a term from one set or the other to interpret counts; choosing one neglects the other, when in reality both are present. No wonder analysts more often use bridging term like impact or visibility, even though they do not correspond as neatly to concepts from either sphere. (ibid., 441)

The way she resolves this is to facilitate the concept of rhetorical convenience. The more easily a claim is to become part of a rhetorical strategy, the more likely it is referenced. This sounds like it would be unproductive to the bibliometric enterprise. It may be a recipe for aporia to the bibliometrician to deal with multiplicity of meaning. Far from it! Rather, she offers two solutions to this. A theoretical framework to be tested, namely the *rhetoric-first model*, in which the rhetorical system takes precedence over the reward system and the notion of testability to “fine-grained techniques” of co-citation and co-word analysis, which maybe is even more relevant to the desiring-production of bibliometricians. The common denominator of both is that a conceptual problem of meaning and ambivalence is transformed into a methodological problem shifting the perspective from an ontological to an epistemological issue.

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## 6. What About Reflexivity? What About Positionality?

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What may this case, a reconstructive rereading of a chapter, tell us that is interesting about reflexivity? One aspect of the reconstruction is that the resilient critique of a “lack of theory” in bibliometrics is not fully warranted from this reconstruction. Rather, the theoretical in-flows are guided by constructing and reconstructing its central objects such as the data sources but also the meaning that can be infused into its objects. For the bibliometrician, these issues are so substantial and have been part of the disciplinary desiring-production that they become problem-ideas. Yet, how does the bibliometric profession proceduralize these in-flows? Most notably as methodological issues that may be resolved through great collective efforts and expressing them in a growing arsenal of methods. Evaluative bibliometricians did not operate

from a “lack of meaning” of citations after subscribing to the Mertonian perspective. Upholding the coherence of the methodological canon, their position within contexts of exploration and evaluation by bibliometric means, as well as the practices of bibliometrics, would have been considerably easier without musing about intentions of researchers when referencing or the notion of rhetoric as part of the multiplicity of meanings. Yet, they still engaged in efforts addressing these issues, not despite but because it is part of a very specific desiring-production: To produce indicators is to facilitate the becoming of meaning of numbers. Why should they listen to sociologists of science? Because the mutual desiring-production of sociologists and bibliometricians has fused them together in seeking connections of meaning. That sounds tautological. I argue it is not. Rather, it is an explicit aspect of becoming a bibliometrician as a continued act of seeking further connections.

Yet, is this contribution about reflexivity after all? Some proponents of notions of reflexivity might argue it is not. They might argue it is merely a story about inter-disciplinarity and how disciplines organize and reorganize their central research objects by means of reinterpretation, deterritorialization, and reterritorialization by branching out and integrating other sources of knowledge or viewpoints. They might even be inclined to argue that what and how it is described by the author is the opposite of reflexivity. Maybe even interpretative narcissism on the part of the author. Some might further argue that the reconstruction, as it follows a heuristic rather than a strict method, is just another isolated act of sensemaking (Weick, Sutcliffe, and Obstfeld 2005). Yet, would this narrative become a valid account when the author had been interviewed and presented these notions, that is, become the voice of the research object? There is after all, to the reader of this contribution, no warrant that the scientific community of bibliometricians would even agree to these interpretations. Deranged ramblings! No practical implications in sight! It would be missing the point within such a volume of contributions about reflexivity and positionality to not address this. Has all of this been a ruse? I argue it is not. The rereading has itself been an act of becoming reflexive, that is, to engage in a practice of letting a research object not just flow through a disciplined act of observing but actualize itself in and with the researcher who itself is aware of being in some consequential way part of the research object. Is it the author who spoke or the perspective? If it is an issue of such a morality of objectivity does it satisfy the moral of aperspectival objectivity, the “nobility in the abandonment of the personal, a sacrifice of the self for the collective” (Daston 1992)?

In a more cursory thinking about this contribution, the locus of reflexivity may be within the mode of perspective of the author as being part of the research object. Hence the responsibility as well as the locus of argument towards reflexivity rests on the authors’ shoulders. Reflexivity in this sense is a task to perform, rendering the object of research as a mixture of activity, that

which is being observed by the author, and passivity in their state of being observed. Yet, this argument leaves out relevant aspects of the relationship between the observing subject and the observed subject made object under the weight of the observing gaze. In a sense, this kind of situation is reminiscent to Baudrillard's observation of a TV show about the Louds, a Californian family that in the early 1970s became the model of the reality-TV-family. Baudrillard asks the question if what is being procedurally generated is "the truth of the family or the truth of TV" arriving at the conclusion that ultimately neither the gaze of the camera, that is, the "perspectival truth of the panoptic system" (Baudrillard 1983, 29) nor the performative nature of the life of the Louds itself, that is, the "reflexive truth of the mirror" (ibid., 29) but rather the "manipulative truth of the test that sounds out and interrogates" realizing effects.

Under this notion one may be inclined to question what warrants reserving a specific conceptual grounding towards notions of reflexivity besides actualizing a potentiality of difference. Naturally, the term is an element that produces and reproduces discursive positions. Yet, language too is a differential machine. Things acquire meaning by not meaning something else in the course of becoming objects. Critical voices may point at this very fact and argue that it is not productive for moving towards interesting understandings of the potentiality of disciplines. What is labeled as a precursor may be just the result of self-awareness and hence reigniting the discussion of reflexivity from where it started. Namely, the status of objectivity, the vocality of research objects, the actualization of the researcher in acts of perception and contemplation, the role of disciplinary thinking, and so on. Yet, when accepting the conceptual basis inspired by Deleuze of recursion of becomings and univocality of substance from which difference precedes identity, and when accepting a notion of desiring-production as source of change is stripped from the phenomena by turning the perspective, any perspective for that matter, against itself, what is then left? Either nothing, an eternal recurrence which would stack the deck against the concept making it consume itself, the *world as it is* devoid of any shape or form, or, more productively, other and different perspectives of desiring-production and acts of becoming!

Yet, how can a researcher that wants to engage in such an act of becoming through analysis of becomings not lose herself within the intricacies of her entanglement? How may a researcher escape the problem of self-oscillation of becomings while analyzing becomings that also related to herself? As the author progressed through the analysis, he became more and more aware of this problem and questioned himself what prevented him from being a larvae subject. After careful consideration and analyzing his notes he came to the conclusion that the distance function of objectivity, a luxury that comes easy to those that can uphold the difference of research object and research subject, required a complementary means of distancing. A self-distancing by

means of irony to perform the function of a catalyst of self-observation without self-oscillation. He found that similar thoughts are where Rorty (1989) starts from to rethink problems of solidarity in light of contingency of positions, when he criticizes dialectical and dualist perspectives and “[t]heir strategy [...] to insist that socialization, and thus historical circumstance, goes all the way down – that there is nothing ‘beneath’ socialization or prior to history which is definatory of the human” (ibid., xiii). Rorty, who just like Deleuze has been heavily influenced by Nietzsche, ultimately arrives at an idea of the productive force of irony. To Rorty, “irony is, if not intrinsically resentful, at least reactive. Ironists have to have something to have doubts about, something from which to be alienated” (ibid., 87f). To him, the ironist theoretician is somebody who is looking for “a redescription of that canon which will cause it to lose the power it has over him – to break the spell cast by reading the books which make up that canon” (ibid., 97). His advice is to “notice our similarities with them” (ibid., 196), “them” being the proponents of different perspectives. To account for similarities is what makes us again arrive at difference, namely that which, when stripping away the similarities, remains to account for and to be integrated in desiring-production and do so in an ironic fashion. Yet, irony may not be aimed at other disciplines. This would likely lead us to strategies of derogation and condescension for the sole purpose of immunizing disciplinary thinking and research objects. So is the strategy of those that see the world filled with idiots qua perspective. It may be more productive, in line of my above made argument, to be ironic in light of our own vocabulary, and, as an extension, our own disciplinary perspectives to prevent problems of reflexivity from spiraling into reflexive problems. This seems to be an antithesis of a discipline in the literal sense of the word. It may even be considered to dissolve the core of disciplinary rigor and lead us down a road where arriving at some idea of knowledge may be impossible. A road to the troubling interpretations of nihilism.

Such a view would fundamentally misplace the notion of irony Rorty (1989) had in mind. The ironic moment of Rorty is not a moment of misrepresenting ridicule, the strategy of those who see everything different as the product of idiots, but a moment that inadvertently lays the ground for self-critical capacity in light of reflexivity. A critique that is grounded in accounting for difference as being the result of satisfiability of similarities. Who or what is satisfiable then? To Rorty, this is probably self-evident. Everyone! That is the magic trick of his liberal perspective. Yet again, his perspective is geared towards concepts of contingency, opinion, participation, democracy, and liberalism. What about science then? How we want to deal with balancing similarity qua nature and similarity qua scientific satisfiability may become the long-term issue governing limits and potentiality of reflexivity. Yes, all of this has been an issue of intense discourse. It is an echo of the positivism dispute of the 1960s. Why point to irony then? To what characteristic of irony? This may be

easiest described by example. It is the irony that lies in the ethnologist moving towards the ontological turn, questioning the ontology of its research objects as a product of the researcher, leading it to reconstruction of ontologies of the world together with its research object. It is the irony that lies in the sociologist questioning the epistemic repercussions of being part of the upper class while aiming to criticize it. It is the irony that lies in recursive questioning the nature of cause and effect. It is the irony that lies in desiring-production. An irony of difference and an irony of the mirror. It allows to doubt differently and prevents paralysis of perspective turned on itself.

I argue that following the heuristic I proposed may be productive by neither framing reflexivity as an issue of static being of a discipline by asking “How reflexive are we?” nor an imperative of “We should be more reflexive!” but rather as an issue of its very desiring-production by asking “How and why do we want to become more reflexive by seeking connections to different perspectives?” After all, the issues that came to light in this attempt of reconstruction are far from settled. Current examples for it are numerous. The Leiden Manifesto (Hicks et al. 2015) addresses the problem of scrutiny towards indicators in its 10th principle of how to guide bibliometric research evaluation. The current discussion regarding what social media metrics contribute to the evaluation of science is a booming echo of the history of the theory of citation aiming to identify what place these new countable objects might have within the overall canon of bibliometric indicators (for example, Robinson-Garcia et al. 2017; Gumpenberger, Glänzel, and Gorraiz 2016; Sugimoto et al. 2017; Erdt et al. 2016). The increased availability of data and new technologies of data integration even fathoms a “metric tide” (Wilsdon et al. 2015). It may be time for more desiring-production. Not less! Maybe, even by reconstructing the seeking of connections and some disciplined yet ironic intro-extra-spection, channeling a discipline through its constituents.

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## 7. Epilogue

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Past is prologue and here we are. Your head might spin, and I may assure you that you, dear reader, might not be alone. In fact, even the editors of this volume could not help to be confused. I received very helpful comments that showed me that some of the things I presented must have unfolded more as a precession of thoughts rather than a clear-cut path. It even drove the very sympathetic editors to the point that they were convinced by the overall argument but that they had the impression that my argumentation was “a little bit clouded” and that I do not want to commit or be committed to a specific position. They also urged me to provide you, the reader, with more guidance to support you in processing this text. And I have to confess that I was indeed ruthless. I introduced a complex theoretical perspective and despite spiking

the path with quoting passages from the few texts I used to arrive at my heuristic, I left you with references to large volumes of text to plow through. As you may expect after reading this text, I searched for the irony in this in order to reflect. First and foremost, the irony that the exemplary case of this text, the becoming of the citation in a specific field, is consuming itself in this text by the references I provided. I could have extracted a small portion of Deleuze, connected it up with accessible everyday terms, and would probably have irritated you far less. I could have spared you and me the trouble of this complex section 3. Yet, I argue it was worth it. Imagine a bibliometrician that, maybe by recommendation or advice, were to visit a conference organized and executed by postmodern thinkers. Maybe the advertised topic sounded interesting: *sociology of numbers*, *sociology of evaluation*, *performativity of indicators*, *responsible metrics*, and so on. The sheer amount of new vocabulary this person may be confronted with at such a conference might be mind-numbing. Also, that person might find their own discipline to be obscenely misunderstood when bibliometrics is being analyzed “from the outside.” All in all, that person might not feel invited to the party. Is it a solution then to simplify a perspective in order to make it “accessible”? Make it “appear” simple without the necessity of muddling through the journey of arriving at the thoughts presented or produce new thoughts in that liking. My invitation was different. It was intended as an invitation to explore on your own, and yes, that might mean getting lost for some time, just as you may have been lost in this text. Yet, the editors made me see the irony of this and realize that the problem of self-oscillation may eventually extend to the text itself. For that reason, I included some further passages in the text. Most notably, the section on the territories of bibliometrics and explanatory passages within section 3. I built these dams interrupting the initially intended flow in order for the thoughts presented to accumulate and relate back to the topic of reflexivity.<sup>11</sup> Let me engage in a final act of self-ironization of this very text and provide some guidelines for exploring further. The proverbial gist, so to speak.

First, consider thinking of your (professional) identity not to be fixed but as a series of differences you embodied along the way. Second, extend this thought to the notion of the territory of your scientific community or discipline. Third, ask yourself what differences in your scientific community currently have to be continually reproduced in order to operate and at the same time are (or might become) problematic. Just to inspire you, as I consider these examples to be numerous: cause and effect, counting and measuring, the laboratory and the clinic, the object and its ontology, the observer and the observed. Fourth, consider a perspective that addresses the becoming of those differences. It may be the approach presented here, one of the other approaches presented in this volume or a completely different one. I do not

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<sup>11</sup> I also have built hidden goalposts for you along the way if you choose to raft the flow in its original way. Look for “in our context” and skip these passages.

claim to have *the* approach to deal with *your* reflexivity. As you may have guessed by now, my invitation is to use multiplicities of differences productively, not to win a war of perspectives.<sup>12</sup> Fifth, take a good look at these differences, the canon of beliefs, and the knowledge it relates to in your field. Sixth, I propose to find a distance function that complements your notion of objectivity. Maybe consider that your notion of “objectivity” is part of your canon. I proposed *self-ironization* because it allows processing your professional considerations without ignoring them and makes you receptive for other positions. This may be the hardest part. The more you know about your field, the more irony you might need. Finally, share your becoming of reflexivity with others in your scientific community, or with the non-scientific community, if that is the difference you problematized.

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<sup>12</sup> It would be highly inconsistent if I argued in such a competitive way. The perspective presented is not about what you “should do” but what you “might make part of your further becoming.”

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