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HOW DO THEORIES BECOME SELF-FULFILLING?

CLARIFYING THE PROCESS OF BARNESIAN PERFORMATIVITY

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To explore when theories become self-fulfilling in our original paper (Marti & Gond, 2018), we first had to develop a process model of how theories become self-fulfilling. We argued that this process involves three steps: (1) new theories lead to experimentation, (2) experimentation produces anomalies, and (3) anomalies convince initially unconvinced actors to shift their practices. Our critics (i.e., D'Adderio, Glaser, & Pollock, 2019; Garud & Gehman, 2019; Shadnam, 2019) raise important issues about our process model, which is why we use this response to clarify our argument about the process of Barnesian performativity. In Section 1, we lay the groundwork for our response by explaining why Barnesian performativity is relevant to organization and management theory. In Section 2, we show that our model is in line with important insights from our critics: we show why self-fulfilling theories can be part of an "ongoing journey" (Garud & Gehman, 2019: 1), how anomalies can lead to new theories (D'Adderio et al., 2019), and why our model matters for folk theories (D'Adderio et al., 2019). In Section 3, we reflect on our process model from a philosophy of science perspective by discussing the role that "reality" plays in each step of our process model. We thereby address concerns that our process model is "positivist" (Shadnam, 2019: 1), "representational" (Garud & Gehman, 2019: 3), and "essentialist" (D'Adderio et al., 2019: 3).

WHY BARNESIAN PERFORMATIVITY MATTERS

Our original paper focused on Barnesian performativity. This concept refers to situations in which theories become self-fulfilling by bringing social reality in line with the assumptions or predictions of the theory (Abrahamson, Berkowitz, & Dumez, 2016; Ferraro, Pfeffer, & Sutton, 2005; MacKenzie, 2006). Yet, some of our critics object to our focus on self-fulfilling theories. Garud and Gehman (2019: 5–9) criticize us for "reducing performativity to self-fulfilling prophecies" and argue that "an emphasis on the self-fulfillment of theories in shaping practices ends up truncating the ongoing dynamic relationship between theories and practices." The

negative views of self-fulfilling theories may have to do with the fact that our critics associate such theories with Merton's "hopelessly positivistic" (Cole, 2004: 841) approach, without, however, considering that Barnes (1983, 1988) later reclaimed Merton's ideas from a social-constructivist perspective.

The idea of self-fulfilling theories goes back to Merton's writing on self-fulfilling prophecies. Merton (1948: 195) noted that a "self-fulfilling prophecy is, in the beginning, a *false* definition of the situation evoking a new behavior which makes the originally false conception come *true*." Merton illustrated his idea with the following example: a solvent bank may become insolvent if enough depositors believe a rumor about its insolvency and start withdrawing money in response. Such a reaction would drive the bank to insolvency and thus make a false rumor become true. In the rest of his article, Merton (1948) focused mainly on how self-fulfilling prophecies perpetuate ethnic and racial prejudices. As a positivist, Merton was disconcerted by the possibility of self-fulfilling prophecies. Indeed, he studied self-fulfilling prophecies to end their "reign of error" and the "perversities" they create (Merton, 1948: 195–196).

Thirty-five years later, Barnes (1983) reclaimed self-fulfilling prophecies from the perspective of social constructivism. Barnes (1983: 534) argued that the inferences that actors draw about an entity can "become distinctive inputs" for the inferences that other actors draw subsequently about the same entity, thereby creating a "feedback loop" between how different actors understand a particular entity. Barnes (1983: 534) termed this feedback loop "bootstrapped induction." To showcase the "constructive possibilities" of self-fulfilling prophecies, Barnes (1983: 538) analyzed how the prophecy that "a new bank will open at such and such time and place" may facilitate the creation of a bank. This prophecy "may inspire a little tentative depositing," as a result of which the bank would become "safer" and "attract [further] deposits . . . Growing convictions of security are the basis for yet more conviction of security" (Barnes,

1983: 538). While Merton (as a positivist) saw the feedback loops involved in self-fulfilling prophecies as "pathological" (Barnes, 1983: 537), Barnes (as a social constructivist) perceived them as a social mechanism that plays a key role in "processes of institutionalization and processes whereby institutions are sustained" (Barnes, 1983: 538).

MacKenzie (2006: 19) integrated Barnes's ideas on feedback loops into research on performativity by distinguishing between generic, effective, and Barnesian performativity. Generic performativity, the broadest type of performativity, simply requires that actors use a theory. Effective performativity, as a subsect of generic performativity, emerges when using a theory affects social reality. Barnesian performativity, itself a subset of effective performativity, emerges when the effects of using a theory bring social reality in line with the assumptions or predictions of the theory; put differently, a theory produces feedback loops that make the theory become self-fulfilling. To avoid "theoretical confusion" (Gond, Cabantous, Harding, & Learmonth, 2016: 456), it is vital to distinguish between these three types of performativity. For example, Garud and Gehman (2019) claim that all theories are performative. This applies to generic performativity, which is "all-pervasive," but not to the "less universal but stronger" Barnesian performativity (MacKenzie, 2004: 305), on which we focused in our original paper. Similarly, D'Adderio et al. (2019: 4) object that our model is too "linear," because it does not capture the "different degrees of performative outcomes." However, in our paper we focused on cases where theories become self-fulfilling and discussed generic and effective performativity only insofar as they contribute to Barnesian performativity (see Figure 1 in Marti & Gond, 2018).

MacKenzie (2006: 18) described Barnesian performativity as the "most intriguing" of the three types of performativity. Barnesian performativity captures the "strongest sense" in which theories can become part of the "infrastructure" that regulates social life (MacKenzie, 2006: 19). In contrast to Garud and Gehman (2019) and D'Adderio et al. (2019), we share MacKenzie's

fascination with self-fulfilling theories as a key mechanism for the social construction of reality. Barnes (1983: 537) acknowledged that, although the idea of self-fulfillment is "extremely influential", it "has stimulated less theoretical development than might have been expected." Indeed, the lack of studies on the process through which theories become self-fulfilling led us to explore this process in our original paper (Marti & Gond, 2018).

WHY OUR MODEL IS IN LINE WITH INSIGHTS FROM OUR CRITICS

In our original paper, we argued that theories become self-fulfilling through a process that leads from experiments to anomalies and practice shifts. In what follows, we argue that with minor extensions (illustrated in Figure 1), our model can incorporate the idea that (1) self-fulfilling theories are part of an "ongoing journey" (Garud & Gehman, 2019: 1), (2) anomalies are an important source of new theories (D'Adderio et al., 2019), and (3) the role of folk theories is similar to that of academic theories (D'Adderio et al., 2019). While not adding to our original goal of explaining how and when theories become self-fulfilling (Marti & Gond, 2018), these extensions show that our model is in line with important insights from our critics.

------------Insert Figure 1 about here------------

Self-fulfilling Theories as Part of an "Ongoing Journey"

Garud and Gehman (2019) point out that theories often lose their influence after they have become self-fulfilling. For example, while the Black–Scholes model reshaped options trading and market prices after 1973, the "fit" between the theory and market prices "deteriorated markedly" (MacKenzie, 2006: 33) after the stock-market crash of 1987, as traders became more aware of the possibility of extreme events. As a consequence, the 1987 crash marked the end of over a decade that had been characterized by an almost perfect fit between the prices the Black–Scholes model predicted and actual market prices (MacKenzie, 2006). Garud and Gehman (2019) capture this important point by noting that performativity is not a "destination" but an "ongoing journey." We

agree. While our model does not explain what happens after a theory has become self-fulfilling, we do not assume that theories necessarily remain influential. Indeed, given that our model builds on Kuhn's idea of ongoing "scientific revolutions" (Kuhn, 1970), the idea of performativity as a "destination" would be inconsistent with the model's theoretical underpinnings.

We furthermore argue that our model, with a minor extension, can offer a theoretical account of performativity as an "ongoing journey." The process that our model describes ends when a theory has become self-fulfilling by shifting practices within a field. However, after such a shift, the new practice becomes the background against which actors perceive anomalies (see "Extension 1" in Figure 1). Crises induced by the use of theories constitute a type of anomaly that may spur the search for new theories. For example, the crash of 1987 led traders to rethink the Black–Scholes model and how it was used (MacKenzie & Millo, 2003: 131). New practices may also reveal possibilities that actors did not deem possible previously. These new possibilities can be perceived as anomalies that likewise may spur the search for new theories. For example, new practices may provide tentative evidence on how cooperation between employers and employees may be mutually beneficial. This evidence, in turn, may lead to new theories that focus squarely on this possibility (e.g., human relations theory).

Anomalies as a Source of New Theories

D'Adderio et al. (2019: 5) argue that our model treats "theories as objectified, standalone entities" that do not change over time. These critics suggest that the idea of "overflows" that Callon (1998) put forward could help explain how theories may change over time and remedy what they view as a shortcoming in our model. Overflows describe unintended and unexpected events that, according to the dominant worldview, should not occur (D'Adderio & Pollock, 2014). In the context of theories, overflows are possible because even the most dominant theories "do not completely map onto or control real-world outcomes" (D'Adderio et al., 2019: 4). For

example, during the crash of 1987, markets were not aligned with the Black–Scholes model, so market transactions "overflowed" the dominant model. Overflows raise questions about established theories and can thus prompt actors to develop new theories. For that reason, overflows can lead to "dynamic, non-linear processes of design and redesign [of theories] and the simultaneous production and consumption of theory" (D'Adderio et al., 2019: 5).

We agree that our model did not capture the dynamics described above. Explaining how new theories arise was outside the scope of our model: new theories were the starting point of our model, not an outcome we tried to explain. Nevertheless, we can extend our model to explore the interplay between overflows and the creation of new theories. Anomalies are a type of overflow insofar they "violate widely shared expectations about how certain actors or entities will behave" (Marti & Gond, 2018: 491). Anomalies thereby provide fresh material for creating new theories or refining existing theories (see "Extension 2" in Figure 1). For example, the anomalous events that marked the crash of 1987 led traders to rethink the Black–Scholes model and how they used it (MacKenzie & Millo, 2003). While existing research focuses on how theories change once they become embedded in material objects (Glaser, 2017; Glaser, Fiss, & Kennedy, 2016; Pollock & Williams, 2016), our model illuminates that theories may change because they produce anomalies that provide material for refining existing theories or creating new theories.

From Academic Theories to Folk Theories

D'Adderio et al. (2019: 6) also criticize that our model focused exclusively on academic theories, while overlooking the possibility that "folk theories" may also become self-fulfilling. We agree that folk theories are important for performativity. For example, technical analysts predict "future movements" in financial markets by "studying past regularities" (Preda, 2007: 42). Their "theory" successfully influenced markets even though it constitutes a folk theory that is at "ad odds with academic theories" (Preda, 2007: 41).

We can extend our model by taking folk theories, rather than academic theories, as the starting point of our feedback loop (see "Extension 3" in Figure 1). Folk theories are "more fragmentary and skeletal" than academic theories (Rozenblit & Keil, 2002: 522). However, these differences matter less for our model than a fundamental similarity between laypeople and academics; namely, that both laypeople and academics are open "to correction by awareness of the world" (Barnes, 1974: 23). This shared tendency means that both groups "will take note if more and more anomalies emerge" (Marti & Gond, 2018: 491). We therefore argue that the process that leads from experimentation to anomalies and, ultimately, practice shifts may apply to both academic theories and folk theories. We can thereby also explain how successful folk theories may turn into academic theories, as they often do (Carton & Dameron, 2017; Nicolai, 2004). Figure 1 illustrates this process: folk theories produce some anomalies (see P1 and P4 in Figure 1), these anomalies provide material for developing academic theories that cover the same ground as the folk theories (see Extension 2 in Figure 1), and, finally, the new academic theories may replace the folk theories from which they arose and start a feedback loop of their own.

"REALITY" AND THE PROCESS OF BARNESIAN PERFORMATIVITY

Apart from discussing specific parts of our model, our critics also raise concerns about the philosophical assumptions behind it. They describe our model as "positivist" (Shadnam, 2019: 1), "representational" (Garud & Gehman, 2019: 3), and "essentialist" (D'Adderio et al., 2019: 3). In this section, we explain why we disagree with these descriptions. More specifically, we reflect on our process model from a philosophy of science perspective to clarify the role that "reality" plays in each step of our process model. Below we discuss the three steps of our model in reverse order: we start with what anomalies tell us about reality, then explore how experiments transform reality, and lastly show why self-fulfilling theories still predict reality. We thereby offer a social-constructivist account of the role reality plays in the process of Barnesian performativity.

What Anomalies Tell Us about "Reality"

In the third step of our process model we focused on how anomalies may convince initially unconvinced actors that a new theory is valid (see P7 in Figure 1). We used anomalies to explain how reality "intervenes" in the process of performativity (Marti & Gond, 2018: 501). Our reference to anomalies and reality led our critics to conclude that in our model, actors can have "access to an untainted empirical world" (Shadnam, 2019: 2). If that were the case, this would indeed be a naïve assumption. We agree with our critics that reality "does not speak" and "cannot propose a language for us to speak" (Rorty, 1989: 6). Every language is a human creation and because all descriptions of reality are based on language, no description of reality can be "uninterpreted or direct" (Scherer, 2015: 499).

Yet, for most anti-realist philosophers of science, "reality" still matters for our theories because "reality" determines whether actions that are guided by a theory succeed or fail (Brandom, 2000; Putnam, 2002). Habermas (2003: 27) articulates this idea succinctly: "reality . . . makes itself known to us . . . in the constraints to which our problem-solving activities and learning processes are subject." Put in simpler terms, while reality never speaks to us, it can make our actions fail and thereby motivate us to reconsider how we speak about reality. We thus agree with Shadnam (2019: 1–3) that "unmediated access to external reality" is impossible (reality does not speak to us), but disagree with his claim that there is no "empirical reality out there that exists independently from our theories" (reality still constrains our actions). Ultimately, this comes back to Rorty's (1989: 4–5) point that we "need to make a distinction between the claim that the world is out there [yes] and the claim that truth is out there [no]."

We can now clarify the relationship between anomalies and reality. Actors who use theories care about whether theories actually "work." A working theory is a theory that helps actors succeed in their activities (Scherer & Steinmann, 1999). For example, a new asset-pricing model

"works" if it allows traders to generate profits. Anomalies, in turn, are a sign that something is not "working" as it should and can thus be seen as constrains that reality puts on actors (see Marti & Gond, 2018: 501). At the same time, like reality, "anomalies do not speak for themselves" (MacKenzie, 2006: 97), which means that actors still need to make sense of anomalies. We hope that this clarification shows that our model does not assume that taking into account anomalies makes "theories get closer to the truth" (Shadnam, 2019: 1). Our model simply assumes that reality constrains actions and that anomalies help actors make sense of these constraints.

How Experiments Transform "Reality"

The second step of our process model addressed how experimentation may produce anomalies (see P4 in Figure 1). Our discussion of experimentation helps move beyond an idea that goes back to Merton (1948) and that D'Adderio et al. (2019) and Garud and Gehman (2019) criticize for good reasons: that Barnesian performativity makes "false" theories become "true." The problem with this idea is that using a theory can make a theory "more [or less] true" (MacKenzie, 2006: 19), which calls into question a "binary lens that sees theories as either 'true' or 'false'" (D'Adderio et al., 2019: 3). Yet, D'Adderio et al. (2019) only go half the way: they criticize the idea of "false" theories that become "true," but do not offer an alternative way to think about how theories change as they become self-fulfilling. We thus propose to rethink Barnesian performativity as a process in which theories that initially worked only in few contexts transform social reality so that the theories start working in in more and more contexts. Our account shifts the focus from whether a theory is "true" to whether it "works," which is in line with Callon's (2007: 321) shift from "truth as a reference" to "truth as success or failure."

We argue that theories that become self-fulfilling go through a process of scope expansion. Every theory has a scope, which is the area in which a theory helps explain or understand phenomena (Bacharach, 1989). In our terms, the scope of a theory describes the

contexts in which a theory "works." Researchers traditionally assume that the scope of theories is fixed. Yet, performativity opens up the possibility that the scope of theories expands when actors start experimenting with new theories (Muniesa, 2014; Muniesa & Callon, 2007). Actors who experiment often try out theories outside of the context in which theories were developed. For example, while qualitative case studies often produce novel insights, it is difficult to know in advance whether these insights are transferable to cases other than the few cases studied (Lincoln & Guba, 1986). Experimenting with such theories thus means to use theories outside of their original scope. If such experiments produce anomalies that convince initially unconvinced actors, our model (see Figure 1) suggests that a new theory may shift practices within a field in line with the new theory. If experiments transform reality in that way, a theory that initially worked only in few contexts may now work in more contexts. Through such a process, the scope of a theory expands as the theory becomes self-fulfilling.

The idea of scope expansion helps rethink the running example from our original paper: theories that posit a positive link between corporate social performance (CSP) and corporate financial performance (CFP). Garud and Gehman (2019: 3) are right to note that these theories do not fit with the idea of false theories that become true because these theories do not offer "a false definition of the situation." Yet, while cases of successful companies with a strong CSP show that theories on the CSP-CFP link are not necessarily "false," these theories are also not "true" in all contexts (Bridoux & Stoelhorst, 2014; DesJardine, Bansal, & Yang, 2017). This is where the idea of scope expansion becomes useful. In this account, strong CSP will initially only "work" (pay out) for some companies and in some sectors. Academics and other actors then develop theories about these successful companies, often based on case studies (e.g., Porter & Kramer, 2006). Actors may then experiment with the new theories, which often means trying out whether the theories work in new contexts (new types of companies, sectors, etc.). If the experimentation

produces anomalies that convince initially unconvinced actors, practices within a field may shift. Specifically, theories on the CSP-CFP link may change the "rules of the game in the economy" by convincing investors and other stakeholders to "steer clear of companies that exhibit low CSP on the grounds that such companies are likely to fail" (Marti & Gond, 2018: 498). If this happens, theories on the CSP-CFP link will work in more contexts and their scope has expanded.

Why Self-fulfilling Theories still Predict "Reality"

The first step of our process model focused on how new theories may lead to experimentation (see P1 in Figure 1). From a philosophy of science perspective, this step raises questions about the purpose of theories. Garud and Gehman (2019: 9) argue that the purpose of theories is not to predict but to "bring about imagined worlds." Given the widespread assumption that predictions are a key aspect of theories (Bacharach, 1989), views such as those by Garud and Gehman (2019) have raised concerns that performativity undermines such "traditional scientific notions as explanation, prediction, description, understanding, and control" (Felin & Foss, 2009: 655). Indeed, Felin and Foss (2009: 655) go so far as to argue that self-fulfilling theories "threaten the fundamental definition of science and theory as an attempt to understand and predict objective reality." In what follows, we reconcile these opposing views on the purpose of theories by coming back to the idea that reality is not something "objective" that speaks to us, but a constraint that actors experience when acting (Habermas, 2003; Rorty, 1989).

Instead of assuming that the purpose of theories is to capture "objective reality," we can see theories as tools that help actors deal with constraints they face (Cabantous & Gond, 2011; Marti & Scherer, 2016). The purpose of theories would be to solve problems, rather than converging toward an absolute truth (see Kuhn, 1970: 170). From this perspective, if theories reshape social reality, the problems that actors face may shift over time, and researchers may need to develop new theories to help actors deal with the new problems. Yet, even if reality and

problems change, predictions, explanations, and other "traditional scientific notions" (Felin & Foss, 2009: 655) remain crucial as tools that help actors deal with problems.

The idea of Barnesian performativity as a process of scope expansion helps further clarify our approach. Predictions and explanations are only useful within the scope of a theory (Bacharach, 1989). Yet, as we have argued, the scope of a theory may change through the use of theories, which implies that initially useless predictions and explanations may become useful once the scope has expanded (the reverse holds for theories with a shrinking scope). That predictions and explanations may become more or less useful over time is thus closely related to the fact that the scope of theories may change. We thus reconcile the positions of Garud and Gehman (2019) and Felin and Foss (2009) by noting that simply because predictions and explanations may not capture "objective" reality does not mean that scholars and practitioners should not be interested in predicting and explaining social phenomena.

CONCLUSION

Our response clarifies the process of Barnesian performativity in three ways. First, we draw attention to Barnes's insights on feedback loops, which may be relevant for many areas of organization and management theory, such as research on theorization (Mena & Suddaby, 2016; Strang & Meyer, 1993) or experimental spaces (Cartel, Boxenbaum, & Aggeri, 2018; Furnari, 2014; Zietsma & Lawrence, 2010). Second, based on insights from our critics, we show why anomalies and feedback loops may play a key role for what happens after theories have become self-fulfilling, where new theories come from, and how folk theories may become self-fulfilling. Third, we show that performativity is in line with prominent approaches to philosophy of science. More broadly, in contrast with views of performativity as an "onto-epistemological" position (Garud, Gehman, & Tharchen, 2018: 502), we hope to outline the potential of a "social mechanism" approach to performativity (Marti & Gond, 2018: 501).

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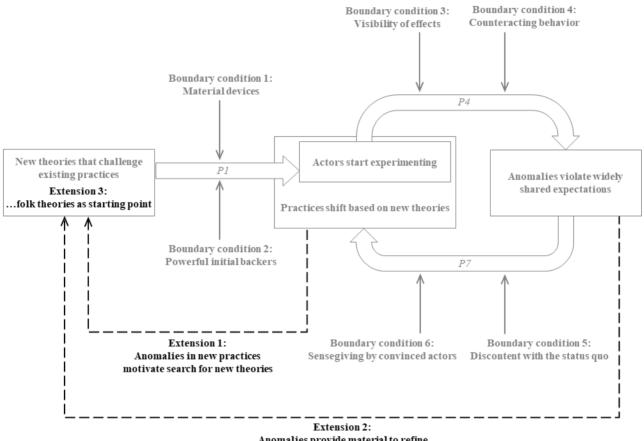Rorty, R. 1989. *Contingency, irony, and solidarity*. Cambridge: Cambridge University Press.

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FIGURES

FIGURE 1

Our Model with Possible Extensions Inspired by Our Critics

Note: Grey text, boxes, and arrows are from the original paper (Marti & Gond, 2018: 493)