

## DESIGN AND ROUTINE DYNAMICS

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### **Abstract:**

Organizational actors spend a tremendous amount of time and energy trying to intentionally change their routines. We conceptualize these intentional changes as routine design—*intentional efforts to change one or more aspects of a routine to create a preferred situation*. We review existing routines research on intentional change by showing how different perspectives on routines have generated different insights about the relationship between intentional change and design. We highlight a cognitive perspective, a practice perspective, and an ontological process perspective on routine design. We then draw on two perspectives inspired by design studies. Simon’s scientific perspective on design suggests that routines scholars study the effects and implications of designing artifacts. Schön’s reflective practice perspective on design suggests that routines scholars can examine how actors set the problem, engage in (re)framing, and in reflection-in-action. These design studies perspectives offer routines scholars a better understanding of efforts to intentionally change routines. Based on these insights from design studies, we develop a future research agenda for routine design.

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## 1 Introduction

Routine dynamics research seeks to explain how organizational routines change. Often, organizational actors intentionally try to “influence, design or manage [routines]” to achieve organizational goals (Pentland, 2005, p. 793). Organizational actors may import routine “templates” from other organizations to deal with challenges (e.g., Bertels, Howard-Grenville and Pek, 2016), create new artifacts to change routine performances (e.g., Bapuji, Hora and Saeed, 2012; Bapuji, Hora, Saeed and Turner, 2018; Glaser, 2017), and/or use different types of experiments to fundamentally change processes (e.g., Bucher and Langley, 2016). In this chapter, we suggest that such change initiatives can be understood using the label *routine design*, which we define as *intentional efforts to change one or more aspects of a routine to create a preferred situation*.<sup>1</sup> Such actions associated with the design and redesign of organizational routines are consequential to routine dynamics—even if these efforts to architect changes often stimulate unintended consequences that deviate from a designer’s initial intent (Pentland & Feldman, 2008).

We begin by reviewing routine dynamics research on intentional change. Early routines researchers (e.g., Nelson & Winter, 1982) adopted a cognitive perspective on change that conceptualized routines as entities and suggested that intentional change involves planning the transfer of abstract knowledge about the routine from one context to another. With the introduction of the routine dynamics perspective, scholars (e.g., Feldman & Pentland, 2003) critiqued this entitative notion, and conceptualized routines as generative systems with ostensive, performative, and artifactual aspects. They observed not only that routines change endogenously, but that planned changes often stimulate unintended consequences. Recently, routine dynamics scholars have adopted a stronger process perspective (e.g., Feldman, 2016; Feldman et al., 2016; Howard-Grenville & Rerup, 2016), highlighting the emergent nature of intentionality in routine change. Our review of the routine dynamics literature regarding routine design is structured around these three perspectives on routines that highlight specific elements of the design process and neglect others.

Following the review, we introduce two perspectives that draw on design studies and may enhance our understanding of the relationship between design and routine dynamics. Inspired by Simon’s (1969) scientific perspective on design, we suggest that routines scholars can advance their understanding of routine dynamics by studying the effects and implications of designing artifacts—particularly the effects engendered by the actions taken to develop representations during the construction of these artifacts. Inspired by Schön’s (1983) reflective practice perspective on design, we suggest that routines scholars can examine how actors define the problem’s setting, and engage in (re)framing, reflection-in-action, and reflective conversation with the situation in routine design. In summary, we believe that these design studies perspectives offer routines scholars opportunities to better understand efforts to intentionally change routines.

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<sup>1</sup> Our definition is inspired by Simon’s (1969, p. 129) observation that “to design is to devise courses of action aimed at changing existing situations into preferred ones.”

## 2 Review of Design in Routine Dynamics

### 2.1 Cognitive perspective

The cognitive perspective on routines builds on the Carnegie School's cognitive and information processing perspective of organizations (e.g., Simon, 1947, March & Simon, 1958, Cyert & March, 1963). Specifically, Nelson and Winter (1982) suggested that routines are a key unit of analysis in studying organizational behavior. They conceptualized routines as the “genes” of an organization and theorized that routines reflect tacit organizational knowledge. Although Nelson & Winter (1982) acknowledge that some variations in routines can occur through slippage, laxity and rule-breaking from within the routine, more substantial change in routines has to come from the outside: substantial change requires deeper ad hoc problem solving, thereby inspiring our interest in applying a design perspective to routines and their dynamics.

Because routines are conceptualized in terms of knowledge, intentional routine change involves identifying and implementing tacit knowledge of best practices for routine enactment (Szulanski, 1996, 2000). According to this research, tacit knowledge is inherently sticky and difficult to articulate due to challenges associated with the characteristics of knowledge, organizational actors, and the context of the routine. Consequently, intentionally changing a routine involves identifying its fundamental aspects—the “arrow core” (Winter & Szulanski, 2001, p. 731). New routines can be designed by finding and copying templates from elsewhere (e.g., Gupta et al., 2015), or by engaging in a process of vicarious learning (e.g., Bresman, 2012).

Gupta et al. (2015) illustrated the “find and copy” approach to intentional routine change, describing an eight-step process to help remove cognitive and motivational roadblocks, including finding a template to copy, decomposing the routine into elements, solving for the elements, and resolving conflicts between stakeholders and with existing routines by determining decision rights. Gupta et al. (2015) described three key problems underlying routine redesign efforts: information, incentives, and compatibility between existing routines and the redesigned routine, with corresponding solutions of aligning incentives with system-wide profits, codifying knowledge to make tradeoffs, and investigating interdependencies.

Bresman's (2012) study of vicarious group learning in a pharmaceutical organization provides an example of ad hoc learning (Nelson & Winter, 1982) in intentional routine change. The first step of the learning process is to identify a routine to learn from by engaging in an anticipatory and “broadcast” search, rather than a structured search driven by a simple, pre-defined problem. Learning continues through a process of extensive translation, whereby the seeker and source of the new routine engages in intense discussions to learn about the original routine and adapt it to the new context. This translation is followed by an adoption process with a variety of modalities depending on contextual differences, whereby knowledge from the original routine is embedded in the changed routine. Vicarious learning culminates in a process of continuation, whereby actors decide whether to continue use the changed routine or not. This decision is not only affected by the seeker's experience with the routine, but also the source's experience with outcomes of the routine. Bresman (2012) thus suggested that the learning process underlying change is less “copy and paste” and more a process of learning from others.

Overall, the cognitive perspective on routines suggests that the core problem of routine change is the tacit nature of knowledge and the effort required to explicitly represent it. From this perspective, actors can change routines through searching for alternative templates outside the existing routine by either (a) replicating an existing routine (e.g., Gupta et al., 2015), or (b) engaging in vicarious or ad hoc learning processes (Bresman, 2012). The change process then unfolds as planned and intended. The cognitive perspective thus assumes that once tacit knowledge has been articulated, implementing planned changes unfolds unproblematically. Put simply, in this perspective, the designers of routines assume that actors change the routine according to their pre-established plans and perform the routine in a manner specified by the template.

## **2.2 Practice theory perspective on routine dynamics**

By introducing a practice perspective, Feldman and Pentland (2003) opened the black box of routines and suggested that changes in routines are attributable to unplanned, “endogenous” actions generated from interactions between their ostensive, performative, and artifactual aspects. This approach differs significantly from the cognitive approach to routines, where intentional change revolves around the search for alternatives outside of the routine and unfolds according to exogenously preestablished plans. From a routine dynamics perspective, “knowledge” needs to be enacted within the routine (D’Adderio, 2003), but does not represent the “true” routine. Intentional changes are envisioned, but not conceptualized in terms of an idealized routine like the arrow core. Instead, an intention might be instantiated in an artifact such as a standard operating procedure (e.g., Lazaric & Denis, 2005) or a broad envisioning of a new cultural approach on organizing (e.g., Rerup & Feldman, 2011). By unpacking the black box of the routine, this practice-based perspective generates several insights about intentional routine change.

For instance, Feldman’s (2000) groundbreaking study on routines around student housing at a U.S. university shows how routine participants intentionally change the routine from within. One routine involved how building directors assessed student damages to the facilities to calculate reparations. On the surface, this routine did not need to be changed: assessed damages were collected by the university. However, the building directors were dissatisfied with the routine because students were not confronted with the damage they had done, and consequently never received a valuable learning opportunity. To address this issue, “one of the building directors developed a system for checking people out of their rooms that resolved this problem” (Feldman, 2000, pp. 616-617). This substantive change was not planned by a strategic manager, but initiated by actors who sought to redress outcomes that fell short of their ideal by exploring other ways to enact the routine.

Based on a study of a Danish government organization’s strategic efforts to enact a new organizational schema, Rerup and Feldman (2011) similarly show how the actions taken by participants to enact the newly designed schema are crucial to how change unfolds. A new research organization, Learning Lab Denmark (LLD), was mandated “to produc[e] cutting-edge, action-oriented research.” The challenge of enacting this new schema while continuing to operate within the existing bureaucratic environment became most apparent in the recruitment routine, as the salaries of applicants with the desired qualifications were not in line with the

existing compensation structure. A trial and error process revealed flaws in the routine, such the rejection of employment contracts because high salaries violated existing regulations. The LLD secretariat “generated several new performances to solve the problems with the recruiting routine” (Rerup and Feldman, 2011, p. 594), including a different contract structure. As a result of this trial and error process, the organizational schema adapted over time. Thus, a key mechanism for endogenous change to a routine is not only dissatisfaction with outcomes (e.g., Feldman, 2000), but also the action-based learning inherent in trying new performances and adopting those that are successful.

The practice perspective also has been used to analyze the effects of planned changes to routines. Research has shown that attempts to change a routine by incorporating outside practices often generate unintended consequences (Pentland & Feldman, 2008). For instance, Lazaric and Denis (2005) revealed how an organization attempted to introduce ISO norms, but certain actors chose to not implement the designed change. Importantly, they showed that ISO norms were an artifact that played a role in the routine, but did not constitute it (see also D’Adderio, 2008). By showing that routines have different components, it became clear that a designed change does not automatically transfer from the intent of a designer into practice (see also Reynaud, 2005). Similarly, by studying a new product design and development routine in a high technology company, Hales and Tidd (2009) showed that formal visualizations play a “dialectic” and “mediating” role rather than a representational one. D’Adderio (2008) theorized that because situated action can never be pre-specified (e.g., Suchman, 2007), formal representations frame a routine, but overflows occur when artifacts fail to account for the emergence of diverse contextual situations during routine enactment.

In contrast with the cognitive perspective, research in the routine dynamics tradition (Feldman & Pentland, 2003) has shown that intentional change not only unfolds as a process of searching for alternatives, but can occur without planning. Planned efforts to change routines often lead to unintentional outcomes, because intentions or plans cannot fully account for the exigencies of situated action (Pentland & Feldman, 2008). Notably, formal representations of routines created for routine change purposes often fail and generate unintended consequences due to the inability to plan for all the contingencies that arise as routines are performed (Bertels et al., 2016; D’Adderio, 2008; Hales & Tidd, 2009; Lazaric & Denis, 2005). Instead, routine dynamics research shows that routines can change endogenously without premeditation.

### **2.3 Ontological process perspective on routine dynamics**

Although process has always been part of the routine dynamics literature, we have observed a recent shift from an epistemological to an ontological process perspective driven by an increased focus on the relational (Emirbayer, 1997), processual (Chia & Tsoukas, 2002) and performative (see Feldman, 2016; Simpson & Lorino, 2016) nature of routines, most clearly observed as an increased focus on performing and patterning (Feldman, 2016). Reflecting the routine dynamics perspective post-2016, the processual perspective highlights the destabilization of routine ontologies (D’Adderio & Pollock, 2020). Going beyond the black box of action to study processual dynamics, routines researchers have highlighted the creativity of action itself (Feldman, 2016; Joas, 1996) and brought temporality to the fore (Emirbayer & Mische, 1998; Simpson & Lorino, 2016).

Feldman (2016) played a crucial role in strengthening the process perspective in the routines literature by introducing patterning as a complementary dynamic to performing. Drawing on “the creativity of action” theorized by Joas (1996), who drew on the pragmatism of Mead and Dewey, Feldman (2016, p. 32) highlighted that “action—not as an imagined construct but as enacted in time and space—tends to display a spectrum of intentionality, control over the body, and social autonomy.” She argued that an increased focus on action was a way forward to increase our understanding of routine dynamics. Routine dynamics scholars have highlighted the situated nature of action, depicting the roles of reflective talk (Dittrich et al., 2016) and reflective spaces (Bucher & Langley, 2016) for actors who intend to reorient routine dynamics. Dittrich and Seidl (2018) likewise drew on the creativity of action (Joas, 1996), highlighting that routine dynamics emerge from dynamics associated with situated action.

While previous perspectives on routine designs have emphasized the pre-established existence of goals, intentions, and purposes at the outset of routine design, more recent work from a process perspective highlights how new goals, intentions and ideas emerge during routine performances and require organizational actors to adapt goals and intentions during design activities. For example, drawing on Dewey’s (1922) notion of inquiry, Dittrich and Seidl (2018) introduced the concepts of ends-in-view, emergent intentionality, and the creativity of action (Joas, 1996) into routine dynamics. They showed how actors learn about new ends in light of existing means and how intentionality emerges during the inquiry process. According to Dittrich and Seidl (2018), actors foreground ends and means in action, thereby “develop[ing] a ‘purposive’ sense of what they ought to do ... through the flow of action itself” (p. 47), because “every action-situation presents an opportunity for discovering new ends-in-view” (p. 134). This research suggests that routines scholars should focus less on describing reflection-*on*-action and more on describing performance (see also Dionysiou, this volume) and reflection-*in*-action (see also Tsoukas, this volume).

For instance, Cohendet and Simon (2016) studied a crisis around creativity at a game developer that raised doubts about routines around the stage-gating process. The project manager of a previously successful game development team chose to stop his current project in light of growing frustrations. This moment was cathartic, as in the ensuing debate, the editorial team chose to give the project manager extra time to explore “what could or should be done to avoid such traps in the future” (p. 622). The project manager created new principles to redesign routines: “fail faster” and “follow the fun” (p. 622). Rather than planning changes to routines and implementing them, the experience of the team and other employees became central. For example, “no idea would be integrated in the work packages without being concretely experimented with and demonstrated” (p. 623); playable prototyping occurred where “some employees would play, some would just watch and discuss, and some would comment live on what was happening on the screens” (p. 623). In turn, the game developers “would do their own synthesis and get back to work on Monday with very clear goals and orientations” (p. 623).

Cohendet and Simon (2016) highlighted three central moves in this process: questioning existing routines, repurposing existing routines at the core of the organization’s culture, and opening up this process to others in the organization (i.e., through organizational tournaments). The authors described how the game developer shifted from a stage-gate process to the redesigned “always

playable” process by combining and experimenting with aspects of different existing routines. An important aspect of design seems to be the ability to deliberately recombine existing routines (Pentland & Jung, 2016). Similarly, Bucher and Langley (2016) revealed how establishing reflective and experimental spaces can help make design efforts more impactful.

Deken et al. (2016) also unpacked how actors intentionally change their routines by studying how routine interdependencies at an automotive firm affected efforts to develop novel information-based services which constituted a radical departure from the firm’s existing hardware products. Deken et al. (2016) identified that actors approached routine design through *flexing*, *stretching*, and *inventing*. Flexing is used when the routine itself is not novel, but its instantiation is. Stretching is used to extend a routine beyond its usual context to actors who may be unfamiliar with it. Inventing is used to develop novel routines. Thus, novelty increases from flexing to stretching to inventing. Different actors can have different perspectives on routine design depending on how they perceive the novelty associated with the new performances. In addition, the authors’ framework highlights how routine work generates consequences and surfaces differences that require more routine work, generating a cascading effect. A challenge for actors is to anticipate the consequences of routine work and address them proactively. This highlights the interplay of change and stability as complementary and sequential. Thus, the contribution of Deken et al. (2016) is two-fold: They show that, on the one hand, design processes need to be sensitive to the perspectives of people taking new actions and on the other hand, that due to unanticipated consequences, design is an ongoing and continuous process (see also Garud et al., 2008).

In summary, researchers who adopted the practice perspective of routine dynamics highlighted that designing routines often leads to unintended consequences due to interactions between their artifactual, ostensive, and performative aspects. That is, “managers design artifacts, not routines. When the participants actually start producing performances, it is not necessarily what the designers had in mind” (Pentland and Feldman, 2008, p. 249). More recent routine dynamics research destabilized the routine and action itself by highlighting the interplay of patterning and performing in routines. By considering relationality, becoming, and the emergent nature of intentionality, the work highlights how out of performances new goals and intentions emerge, how through that the preferred situation also keeps changing, and that this leads to a continuous design process where emerging consequences require additional design efforts.

### **3 Design Studies Insights to Advance Research on Design and Routines**

We now draw on the design studies literature to highlight important insights that can inform future research on routine dynamics. Design studies offer generative inspiration for the study of routine dynamics, because they focus on intentional change. An important difference between routine dynamics and design studies is the unit of analysis. Whereas in routine dynamics the unit of analysis is the routine, in design studies the core unit of analysis is the design process. Thus, while routine dynamics research highlights routine actions, design studies research highlights design actions. For example, *Design Studies*, the leading journal, is “focused on developing understanding of *design processes*” (emphasis in original).<sup>2</sup>

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<sup>2</sup> <https://www.journals.elsevier.com/design-studies>

We suggest that two traditions in design studies offer intriguing ideas for future research on routine dynamics: the scientific perspective advocated by Simon (1969), which highlights design as a process of addressing clearly defined problems and discovering optimal solutions; and the reflective perspective advocated by Schön (1983), which highlights the reflective nature of design processes. These two perspectives offer a starkly different look at design (see for a comparison Dorst & Dijkhuis, 1995). Simon (1969) highlighted the procedural rationality of design, as a positivist perspective on design. 14 years later, Schön (1983) offered a perspective on design that highlighted situated problem solving as reflection-in-action, with constructivist phenomenological influences (see e.g. Dorst & Dijkhuis, 1995; Yanow & Tsoukas, 2008) and pragmatist influences (see e.g. Schön, 1992; 1995). Instead of choosing one perspective, we reinterpret both perspectives on design from an overarching pragmatist design perspective, as pragmatism offers a unique approach to design (Garud et al., 2008; Romme, 2003) and the study of routines (see e.g. Dionysiou & Tsoukas, 2013; Dionysiou, this volume; Dittrich & Seidl, 2018; Simpson & Lorino, 2016) in the spirit of Schön's calls for a pragmatist epistemology for design (see Schön, 1984; 1992; 1995). Such a pragmatic approach to design, would build on the inherent strength of pragmatism to deal with complex, dynamic and interrelated phenomena (Farjoun et al., 2015).

### **3.1 The scientific perspective on design**

Simon (1969) described design as a science distinct from natural or social sciences, which are inherently interested in what nature and the social are. In contrast, design science is not about describing *what is*, but *what may be* through the design of something manmade and new (i.e., “artificial”). Simon suggested that any human's intent to design something involves the design of an artifact (which may imitate natural objects, but is still humanmade) that can be used to create a preferred situation. Although Simon has been viewed as providing a cognitive, representational perspective on design (e.g., Suchman, 2007), we suggest that Simon's description of artificial design provides routine dynamics scholars with a helpful orientation towards three different types of actions involved in design initiatives (for an analogous application of Simon's perspective on design in the entrepreneurship literature, see Berglund, Bousfiha, and Mansoori, forthcoming). We highlight three key insights from Simon's work on design that we think would be helpful for routine dynamics scholars: (a) a focus on designing actions to create preferred situations (Simon, 1969) ; (b) the creation of artefacts (e.g., Glaser, 2017); and (c) the role of representing the environment.

First, Simon's definition of design highlights the designing of actions to create preferred situations as central to design. These actions to be designed are situated and intended to change the situation. A consequence from this is that studies of routine dynamics need to broaden their scope, by including design actions outside of the routine, to understanding the dynamics of routines (see also Glaser, 2017).

Second, Simon (1969) highlights that designing often involves the creation of artifacts. Although actors often strive to create a preferred situation, to do so, they often need to design an artifact. For instance, to control the performances of a routine, a standard operating procedure might be created. Creating these artifacts—although they do not fully control an outcome, as the early routines dynamics research shows—engenders a variety of actions that may influence routine



dynamics. Put simply, Simon's observation that actors attempt to control their environment by designing artifacts highlights important varieties of action that scholars can investigate to enhance an understanding of routine dynamics.

Third, Simon (1969) calls for a variety of representations that have to be created in order to create artifacts. Specifically, creating artifacts requires a designing process to occur that forces designing actors to establish goals, identify organizational resources, specify potential courses of action, represent possible environment circumstances, and evaluate which courses of action are preferable (Simon, 1969). The process of creating these representations does not define future action (Suchman, 2007) but does result in the creation of something that frames future actions in a way that influences routine dynamics (D'Adderio, 2008).

To illustrate the potential of studying the types of designing actions Simon highlights, Glaser (2014) shows how actions of modeling and mapping take place when a law enforcement agency intentionally tries to randomize patrolling routines by creating a game-theoretic artifact. Specifically, they had to represent the types of security resources that existed and their capabilities such as plainclothes officers, officers armed with automatic weapons, or canine patrol units. For this, the actors had to represent the importance of possible patrolling locations by identifying the number of people who might be visiting a location or qualitatively assess the importance of a particular target. The design also used a game-theoretic algorithm to evaluate which possible patrol routine would generate the best outcome according to Bayesian-Stackelberg game theory. Glaser (2017) connects these activities to routine dynamics by showing how these designing actions cause organizational actors to expose underlying assumptions, redistribute agency between actants in a routine, and re-examine measures used to evaluate the performance of a routine.

To sum up, although practice perspectives have highlighted that artefacts fail to exert the type of direct cognitive control over organizational actors the way the cognitive perspective might suggest, using a scientific perspective of design can be helpful for routines scholars to identify and understand the actions associated with design. These actions stimulate other actions, and we believe that paying attention to the processes of designing artifacts may provide additional insights into studies of routine change, such as the interplay of design and routine actions or the role of representations during design.

### **3.2 The reflective practice perspective on design**

Schön (1983) criticized Simon's (1969) perspective on design and the cognitive perspective underlying the work and teaching of design professionals at that time (for a comparison of Schön and Simon, see Dorst and Dijkhuis, 1995). Studying professional practices, Schön observed that rather than cognitively navigating problems, design professionals engage in reflective practice. This critique of cognitivism and focus on actual practices aligns with the practice theory inherent to routine dynamics, albeit that practice theory as such was coined by Ortner (1984) the following year. We highlight three key insights from Schön's work on design that we think would be helpful for routine dynamics scholars: (a) shifting from reflection-*on*-action to reflection-*in*-action (see also Tsoukas, this volume; Dittrich & Seidl, 2018); (b) shifting from framing design as situated action to "conversation with the situation;" and (c) shifting from

defining *problems* to defining *problem settings*, thereby framing problems, situations, and possible solutions (Rein & Schön, 1977, 1996).

First, Schön (1983, p. 68) highlighted that the designer “does not keep means and ends separate, but defines them interactively as [s/]he frames the problematic situation. [S/]he does not separate thinking from doing, ratiocinating [her/]his way to the decision which [s/]he must later convert to action.” This was to point out that beyond reflection-on-action, reflection can take place in the midst of action as reflection-in-action, thereby enabling new ends to emerge. Thus, design itself is an emergent process, whereby problems and solutions co-evolve (Dorst & Cross, 2001). Teleological assumptions about design can be problematic, because “design processes are inherently ill-defined, and as such possess poorly specified initial conditions, allowable operations and goals” (Eckersley, 1988, p. 87; Joas & Beckert, 2002). These insights enable a better understanding of the creativity of action (Joas, 1996) by highlighting how intentions emerge and change through the routine design process.

Second, situated action (Suchman, 2007) has been a central concept to routine dynamics. Schön (1983) highlighted the relational nature of situation and action, where action itself changes the situation in a quasi-dialogical manner as a “reflective conversation with the materials of the design situation” (Schön, 1992, p. 131). Schön observed professionals engaged in actions, particularly “experts” teaching students. While not explicitly addressing the processual nature of design, Schön highlighted the unfolding of the design process through actions that generate a deeper understanding of the situation, and in turn lead to new actions. These insights highlight how actors engage with an unclear situation and begin to develop a better understanding through action. This is important for routine dynamics, as a situated action perspective can presuppose that actors already have an understanding of the situation. In contrast, Schön highlighted actors engage in a type of dialogue with the situation, where new insights and intentions emerge on the spot as reflection-in-action (see also Yanow & Tsoukas, 2009). A consequence for future research is that routine dynamics scholars might consider designers’ understandings of situations, and how those understandings change through action.

Third, Schön (1983) highlighted that rather than predefining problems as Simon (1969) advocated, actors need to take action before they are able to define the problem. A key insight here is that it is important to consider the framing of the situation and the underlying problem. Whereas Simon assumed pre-defined and structured problems, Schön realized that all too often problems cannot be neatly defined. In these situations, a designer could move ahead by hypothesizing a frame for the situation and testing it through experimentation (Schön, 1984a; 1984b). This might explain why routine dynamics scholars have shown how intentionality often fails to change routines. This finding is best understood by recognizing the intentionality that emerges through design actions (Joas, 1996; Joas & Beckert, 2002). The consequence of this is that routine dynamics scholars need to study framing, the role of problem-solution co-evolution (Cross & Dorst, 2001), how intentions interact with (understandings of) the situation (Paton & Dorst, 2011), and the role of experimentation in testing frames and potential solutions. For example, Dankfort (2018), Van Kuijk (2019), and Wegener et al. (2019) explored the role that design experiments can play in routine design by focusing on the role of reflective and experimental spaces (Bucher & Langley, 2016) and how one might create spaces for collective reflection-in-action (Yanow & Tsoukas, 2009). These studies suggest that we can better

understand routine dynamics by carefully examining the actions and assemblages involved in routine design and the role of experiments therein.

In summary, when competent actors engage in praxis, they draw on their existing habits and improvise on the spot (i.e., engage in reflection-in-action) when “the situation talks back” (Schön, 1983), which enables a new understanding for researchers of not only the potential solution in the form of a routine change, but also the underlying design process. Intention emerges out of dialogue with the situation (Schön, 1983). Defining the problem setting is an important element of the design process, as are the frames that designers use. The designer acts to change the situation until a preferred situation is created.

#### 4 Future Research

We propose adopting a more processual perspective on routine design in future research, in line with the focus on the design process in design studies. As of yet, such an ontological process perspective has not yet been adopted in research focused on the design process (Wegener & Cash, 2020) and therefore also not for routine design. Based on our review of both the routines literature and the design studies literature, we propose an agenda for future research.

A first step towards understanding routine design is to view the design process as the unit of analysis, in line with design studies perspectives offered by both Simon and Schön. For routine dynamics, this means going beyond the focus on routine actions to include design actions aimed at patterning a routine—both in terms of actions specifically associated with designing routine interfaces (e.g., Kremser & Schreyoegg, 2016) and artifacts to control routines (e.g., extending research from Bucher & Langley, 2016 or Glaser, 2017, see also Glaser, Valadao, & Hannigan, this volume and D’Adderio, this volume) and emergent actions that unfold during the enactment of a routine (e.g., extending research from Dittrich & Seidl, 2018). A potential research question could thus be: *How does the routine design process unfold along design actions and routine actions?*

Building on the analysis of design processes, future research could explore the performativity (D’Adderio, Glaser, & Pollock, 2019) of design theories. Different theories of design, such as Simon’s positivistic perspective highlighting planned approaches to design, Schön’s constructivist perspective highlighting situated problem solving (Dorst & Dijkhuis, 1995), and the emergent perspective around pragmatist theory of design (see e.g. Garud et al. 2008; Romme, 2003; Schön 1983; 1992; 1995), are likely to have a different impact on how participants enact the design process. Of specific interest here would be the theories-in-use of actors when they design situated actions. A potential research question could thus be: *How are performing and patterning of routines influenced by design theories-in-use?*

Researchers also should acknowledge the important role of emotions in design. Emotions such as surprise or doubt may instigate an inquiry (Cohen, 2007; Winter, 2013), emotional responses to characteristics such as aesthetics may guide an inquiry, and the elation of finding a preferable situation may end an inquiry (Baldessarelli, this volume). Considering the role of emotions requires understanding the teleological and affective perspective (see Baldessarelli, this volume; Dewey, 1934; Tsoukas, this volume), such as how surprises guide the design process (Schön,

1983). A potential research question could be: *How do emotions trigger, guide and end the routine design process?*

Based on Schön's understanding of design as a conversation with the situation, we also need to understand the role of deliberation, both as an individual process, and as a collective process of considering what actions to take next. The closer a researcher can get to actors' understandings of situations, problems, framings, and solutions, and how these change over time, the more we can develop a nuanced understanding of the creativity of action, (collective) reflection-in-action, and the role of experimentation. Potential research questions could be: *How does collective reflection-in-action unfold during routine design processes, particularly in contexts of innovation (see Deken & Sele, this volume)? How do deliberations inform experiments and how do experiments inform deliberations during routine design?*

Investigating these research questions also requires some methodological adaptations. Considering the role of emotions, actors' understanding of situations, problems, frames, and solutions, as well as reflection-in-action requires routine scholars to get closer to actors' lived experiences. Although ethnography is well-suited to this task (see Dittrich, this volume), it can be challenging to keep the prospective nature of the participants' lived experiences alive (Weick, 1999). One way here would be to bring more of the ethnographer's own lived experiences into the theorizing, which so far only few studies have done (Dittrich, this volume). Another way would be research approaches that build on a process ontology, thereby enabling researchers to get close to the lived experiences of actors and incorporate these lived experiences into written outputs (see e.g., Wegener & Lorino, in press). A potential research question could be: *How can researchers shift from reflection-on-action to reflection-in-action to accurately convey the lived experiences of actors engaged in routine design?*

## **5 Conclusion**

In this chapter, we have aimed to elucidate the role of design in routine dynamics. Design is an empirically important consideration when studying routines, and routines research and design studies have yielded key insights into the relationship between the two. By studying the entire routine design process (including the role of emotions in inquiry), considering emergent intentionality, exploring experiments as design-in-use, and exploring new methodological avenues to get closer to actors' lived experiences through reflection-in-action, scholars can generate new insights regarding how routines change and stay the same.

With these insights, our understanding of the definition of routine design is enriched. Complexifying the notion of intentionality as emergent, highlights a move away from "planned change" towards situated problem solving. Including a change in a routine aspect highlights the importance of design as redesign of existing routines, not just completely new routines. And the notion of the preferred situation acknowledges the important role of emotions, purposes and goals, while realizing that in the end design is not just about artefacts, but about transforming situations.

With these insights, we argue that an enhanced theoretical understanding of routine design would be supported by entwining existing strands of pragmatism in organization studies (Farjoun et al,

2015; Lorino, 2018; Simpson, 2009; 2017), design studies (Dalsgaard, 2014; Dixon, 2020; Schön, 1983) and specifically routine design. This would support the establishment of “live” routines (Cohen, 2007), explorations of more “pragmatist” theories of design (Garud et al., 2008; Lorino, 2018) and ultimately, the design of “healthier” organizations (Glaser, 2017). We hope that we have inspired scholars who study organizations to explore routine (re)design; likewise, we hope that design scholars welcome these insights on (designing) organizational processes from the organizational studies perspective.

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