Practice as a collective and knowledgeable doing

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The cover image shows the black and white version of a painting by Antonio Strati: Bridge, 2013. Courtesy of the Artist.

Practice as a collective and knowledgeable doing

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Abstract This paper explores the relationship between knowledge and practice, knowledgeable practices, knowing in practice and knowledge as a situated activity. It traces a tradition of sociological thought in practice theories that derives from studies of scientific knowledge and that challenges the conventional understanding of the 'social' as human-centred. The understanding of practice is grounded in an actor-network approach and in feminist Science and Technology Studies. In fact, the precursors of the empirical study of knowing *in situ* were the so-called laboratory studies, and section 1 presents their contributions to the study of knowledge practices. Later, section 2 proposes a post-humanist practice theory that joins other post-epistemologies in the project of de-centring the human subject as the main source of action and moving from a formulation of practice theory as 'humans and their practices' to a vision of practice as the entanglement of humans, materialities, discourses, knowledges and any other relevant element in the situated activities. The aim of the paper is to interpret practice as an empirical phenomenon; therefore, sections 3, 4 and 5 illustrate the core assumptions: i) the sensory and elusive knowledges embedded in knowing in practice; ii) realities as enacted in practices; and iii) interdependent practices as woven in a texture of practices.

Keywords *agencement*, epistemology of practice, multiplicity, sensory knowledge, sociomateriality, texture of practices.

Introduction

Practice theories have been rediscovered in the last few years and have been revitalized, moving them away from the classic sociological dilemma inherent in the tension between structure and agency.

Organization Studies has been one of the first disciplines to rediscover practice theories and to appropriate them in new ways. The number of special issues that appeared in major journals since 2000 indicates the impact and the vitality of this return to practice. In chronological order, we find special issues of *Organization* (Gherardi 2000), *Human Affairs* (Schatzki 2007), *Organization* (Gherardi, Nicolini and Strati 2007), *European Business Review* (Brownlie, Hewer, Wagner and Svensson 2008), *Management Learning* (Gherardi 2009a), *Organization Studies* (Miettinen, Samra-Fredericks and Ya-

now 2009), *The Learning Organization* (Gherardi 2009b), *Journal of Organizational Change Management* (Eikeland and Nicolini 2011), and *Nordic Journal of Working Life Studies* (Buch, Andersen and Klemsdal 2015).

In the study of practice, Sandberg and Tsoukas (2015) distinguish three approaches: commonsensical theories of practice, general theories of practice and domain-specific theories of practice. While a commonsensical approach to practice that regards 'practice' simply as 'what people do' is largely a-theoretical, the most extensive general theories of practice are those developed by Bourdieu, Giddens and, more lately, Schatzki. Nevertheless, the more recent debate, especially within organization studies, moves further to consider practice within domain-specific theories of practice. One domain is a practice-based view of organizational knowledge

and learning, within which I wish to explore a view of practices in their relationship with knowledge.

One way or another, practices have to do with activities, and I acknowledge that many practice scholars are concerned with what people *do* (e. g. Hui et al. 2017; Schatzki 2017; Shove et al. 2012). Nevertheless, I argue that *doing* is not enough for defining a practice and that the concept of practice is more useful for empirical research when it is conceived as a *'knowledgeable doing'* (Gherardi 2018).

In this essay, I explore the relationship between knowledge and practice, knowledgeable practices, knowing in practice and knowledge as a situated activity. I trace a tradition of sociological thought in practice theories that derives from studies of scientific knowledge, that challenges the conventional understanding of the 'social' as human-centred and that returns to practice within learning and knowing in organization. I anticipate that my understanding of practice is grounded in an actor-network approach, i. e. 'in a disparate family of material-semiotic tools, sensibilities, and methods of analysis that treat everything in the social and natural worlds as a continuously generated effect of the webs of relations within which they are located' (Law 2009: 141). Such a sensibility is important within the panorama of contemporary practice theories, because it offers a theoretical conception of the social that does not separate activities, thought, feelings, matter, discourses and their collective cultural-historical forms. Without a theoretical conception of the social, one cannot analyse activities *in situ* and report on how knowledge always undergoes construction and transformation in use.

The precursors of the empirical study of knowing *in situ* were the so-called laboratory studies; in section 1, I present their contributions to the study of knowledge practices. From those studies, we have learnt how the boundaries between 'scientific' and mundane knowledge practices can be blurred and similarly the boundaries between humans and nonhumans. Therefore, I can move on (in section 2) to a formulation of a posthumanist practice theory that joins other post-epistemologies in the project of decentring the human subject as the main source of action and moving from a formulation of practice theory as 'humans and their practices' to a vision of practice as the entanglement of humans, materialities, discourses, knowledges and any other relevant element in the situated activities. A posthumanist conception of practice enables a different conception of the 'social' in theories of social practice, since the social is not the 'other' of the 'natural'. The social is generated by material practices—as expressed in the term sociomateriality—and an empirical study of social practices focuses on how the social is done and holds together. My main interest is in practice as an empirical phenomenon and how to elaborate a methodological framework for studying practices

in organizational settings. Therefore, in sections 3, 4 and 5, I illustrate the core assumptions: i) the sensory and elusive knowledges embedded in knowing in practice; ii) realities as enacted in practices; and iii) interdependent practices as woven in a texture of practices.

1 Knowledge practices: the laboratory and everyday life

In the 1970s, the social construction of scientific facts and scientific knowledge was studied as a field of social practices like any other. The ethnographic methodologies were used in laboratory studies (Callon 1986; Clarke and Fujimura 1992; Collins 1985; Gieryn 1999; Knorr-Cetina 1981; Latour and Woolgar 1986; Lynch 1993; Pickering 1995; Rheinberger 1997; Traweek 1988), resulting in rich descriptions of the mundane practices related to science, scientists, technologies and innovations. Knowledge practices were regarded as paying attention to the unique relations between things that are brought together in laboratories' activities, following the ethnomethodological principle that science is what scientists do.

In *The Manufacture of Knowledge* (1981), Karin Knorr Cetina, who was studying a food lab in Berkeley, observed how scientific facts are constructed within the context of social life and are fabricated by social consensus and experimenters' expectation-based tinkering. Laboratories' practices were described as an opportunity directed at networks of scientists connected through resource relationships (either materials or tools) and the raw material of ideas. In her later book, *Epistemic Cultures: How the Sciences Make Knowledge* (1999), which studied high-energy physics and molecular biology labs as knowledge cultures, Knorr Cetina examined the way the machineries of knowledge construction are themselves constructed. Objects of knowledge are always in the process of being materially defined; they continually acquire new properties and change the ones they have. In this sense, she presents an ontology of the object of knowledge based on an open-ended becoming, rather than a fixed being.

From Knorr Cetina (2001), I shall borrow the term 'epistemic practice' to refer to the kind of practice that has knowledge as the object of inquiry, while with the term 'knowing in practice', I refer to a knowledgeable doing in accomplishing a practice. Knowing as a situated activity can be studied either in the context of a situated activity (a practicing) or as the object of practitioners' reflection on a practice, after practicing. Similarly, we can observe talking *in* practice and talking *about* practice.

With the progressive institutionalization of Science and Technology Studies (STS), the elusive boundaries between science and non-science, sci-

entific and non-scientific knowledge were taken for granted (Roosth and Silbey 2009), and we can say that the 'manufacture of knowledge' is work done within laboratory practices in a way not dissimilar to the way it is done in any other working practice. Moreover, in both cases the knowledgeable doing of the expert practitioners is open to the knowledgeable practices of non-experts. We saw this in the case of museums (Star and Griesemer 1989), where laypersons participated in the production of natural sciences, and gay activists contributed to the understanding of AIDS treatments (Epstein 1996). The so-called 'daughters of DES' expanded knowledge about the long-term consequences of oestrogen and became political activists (Bell 2009), and ordinary patients contributed to medical knowledge and to developing medical tools.

To convey a preliminary idea of the theoretical and methodological framework in which working practices may be analysed as knowing in practice, I summon its characteristics in the following way:

Laboratory studies and science and technology studies made visible how the concept of practice connects 'knowing' with 'doing'. It conveys the image of materiality, of fabrication, of handiwork and of the craftsman's skill in the medieval *bottega d'arte*. From the Latin verb *facere*, Knorr Cetina (1981) uses the term 'facticity' and Bruno Latour (1987) the 'fabrication' of scientific facts and technical artefacts. Knowledge, consequently, is fabricated by situated practices of knowledge production and reproduction, using the technologies of representation and mobilization employed by scientists. The term 'knowing in practice' (Gherardi 2001; Orlikowski 2002) sanctions the passage from the noun to the verb, suggesting how knowing is an enactment and an accomplishment, rather than a thing or a static property. What is known constitutes itself in knowledgeable doing, in purposeful activities, and it is 'situated in practice' (Suchman 2007). Knowing in practice becomes meaningful only in relation to a distinct social practice. Due to its embeddedness in social practice, knowing is necessarily in constant flux, and it entails a procedural understanding of the ability to act in the context of all the practice elements once connected and reconnected. In other words, knowledge emerges from the context of its production and is anchored by (and in) material supports in that context.

To convey a preliminary idea of the theoretical and methodological framework in which working practices may be analysed as knowing in practice, I summon its characteristics in the following way:

– *A pragmatic stance.* Practical knowledge is directed toward doing, to making decisions in situations, to solving problems, to maintaining and to reproducing a texture of practices;
– *A specific temporality.* Practical knowledge emerges from the situation and from situated activities;
– *An anchoring in materiality.* Practical knowledge uses fragments of knowledge embedded in knowledgeable bodies, objects and technology and the

material world that interacts with humans and interrogates them;
– *An anchoring in discursive practices.* Practical knowledge uses the discursive mobilization of cues for action and their positions within a narrative scheme that gives sense to what occurs in communication;
– *A historical-cultural anchoring.* Practical knowledge is also anchored by what has happened in the past and has been learned from experience and in experience. If we consider the setting in which practices are accomplished, we have to include its institutional context within it.

We can observe how practice is conceived here as a location in which practice elements are contained and are relationally linked to each other. Nevertheless, once we recognize that knowledge is an activity and an activity situated in working practices, we can move on and wonder whether materiality has agency and what effect is produced in knowing practices once agency is attributed to both human and nonhumans working together.

2 Humans and nonhumans working together: a posthumanist practice theory

For the moment, I keep the term nonhuman to acknowledge that for a long time within a practice theory—inspired by an actor-network sensibility—the nonhuman, including objects, tools, technologies and any other materiality involved in a practice, was used as the 'other' of human beings.

A concern with materials of different kinds, with language, with discourses, with humans and with their precarious relations was the foundation for conceiving a practice as a knowledgeable mode of ordering heterogeneous materials into a provisional and productive assembly.

Within a project of establishing a material-semiotic relationality in which all the practice elements define and shape each other, humans are not privileged over materials as the main (and the only) source of action. The demarcations between 'social' and 'natural', 'nature' and 'culture', 'structure' and 'agency', 'humans' and 'nonhumans' are the effect of epistemic practices, and 'material agency' is temporally emergent in relation to practice (Pickering 1995). Human and nonhuman, meaning and materiality, big and small, macro and micro, social and technical, these are just some of the dualisms undone by the relational epistemology of practice. Therefore, an epistemology of practice is not limited to connecting across dualisms; rather, it is a proposal to see how all the demarcations are effects of epistemic practices.

People are relational effects in the same way that objects are, and within a situated practice, humans,

discourses and materials achieve agency in their being entangled. In this sense, we can use the concept of sociomaterial practice (Orlikowski 2007). The purpose of this concept is to emphasize that 'materiality is integral to organizing, positing that the social and the material are *constitutively entangled* [emphasis in the original] in everyday life' (Orlikowski 2007, p. 1437). The term refers to the fact that within a practice, meaning and matter, the social and the technological are inseparable, and one cannot be defined without reference to the other. A position of constitutive entanglement privileges neither humans nor technologies, neither knowing nor doing; it does not even link them in a form of mutual interdependence (as in two-way interactions).

It was from Wanda Orlikowski and Susan Scott's (2008) and Karen Barad's (2003; 2007) work that terms such as entanglement, sociomateriality and intra-action were translated into organization studies. The humanist practice theory was criticized, and posthumanism, based on the relationalism between the social and the technical, joined other families of posthumanist epistemology (Braidotti 2013). Some examples of posthumanist epistemology are the feminist new materialism (Alaimo & Hekman 2008), the affect theories (Clough 2007), animal studies (Wolfe 2010) and other fields (Taylor 2016). The aim of a posthuman sociology is to identify and map distributed agency.

A posthumanist conception of practice enables a different conception of the 'social' in theories of social practice, since the social is not the 'other' of the 'natural'. The social is generated by material practices, and an empirical study of social practices focuses on how the social is done and holds together. The concept of sociomaterial practices implies not only that the social and the material are co-constituted, but also that nature and culture are entangled. This has a methodological corollary that entails studying how, within a practice, bodies (humans and more-than-humans), matter, and discourses are expressions of the same sociomaterial world. The term 'embodiment' expresses how the nature/culture division is blurred in the materiality of bodies encountering a material-semiotic environment. When we study working practices empirically, we should focus on how practical knowledge is embodied and how practitioners rely on sensible knowledge (Strati 2007) in order to take a practice forward (Gherardi 2017; 2019). The centrality of bodies—and sensible knowing—in approaching practices is self-evident, not only because humans 'are' bodies (Merleau-Ponty 1945), but also because bodies stand in between the dualism of persons and things (Esposito 2014). Nevertheless, the body has been overlooked, even when humans are considered the carriers of practices. Therefore, to the definition of practice as an array of 'doings' and 'sayings' (Schatzki 2001), I prefer to enlarge the focus to (knowledgeable) 'seeing, saying, and doing' (Gherardi 2006), where seeing is taken as the bodily activity representative of all sensible knowing. Our Western culture is mainly visual, and for this reason, with 'seeing', I locate within practice all other bodily knowing, like hearing, tasting and touching, in order to stress how activities and discourses are grounded in an embodied and pre-verbal presence and that, in becoming a practitioner, one learns knowledgeable bodily competences that are practice-specific.

3 Embodied, embedded and other elusive knowledges

Embodiment is a concept present in practice theories, and Reich and Hager (2014) consider it one of the six threads of the literature on practice (the others are: knowing in practice; the sociomateriality of practices; relationality; the historical and social shaping of practices; and the emergent nature of practices). In fact, it is now widely accepted within the social sciences that selfhood is not only social, but also materially embodied.

The idea that knowledge is embedded in situated practices is widespread, and I like to recall how the turn to practice within the literature on learning and knowing rediscovered the concept of practice as a way out from the two dominant conceptions of learning, either cognitivist or reified. Practice theories entered the debate on organizational learning and knowing, taking distance from an individualistic conception of knowledge as residing in the mind and supporting the claims of a social learning theory that views learning as legitimate participation within the practices of a community (see Gherardi 2009c).

At the same time, the turn to practice created a distance from the commodification of knowledge, which in the year 2000 dominated the literature on knowledge management, conceiving knowledge as a commodity like any other (Gherardi 2000). The focus in practice theory, within this debate, was on how knowledge was kept within the practices of a community, how it was transferred to new members and how it was changed by being in use. This debate is initially indebted to the formulation of learning as peripheral legitimate participation in a community of practice, but later the concept was turned upside down and the focus was on the practices whose accomplishment generates a community (Gherardi 2009).

The concern was with practices as sites of knowing (Nicolini 2011), with knowledge that was tacit, sticky, not translated into words, corporeal, haptic and generally aesthetic (Strati 1999; 2007). Within a sociology of learning:

> Knowledge is not what resides in a person's head or in a book or in data banks. To know is to be capable of participating with the requisite competence in the complex web of relationships among people and activities. On this definition it follows that learning is always a practical accomplishment. Its goal is to discover what to do; when and how to do it, using specific routines and artefacts; and how to give, finally, a reasonable account of why it was done. Learning, in short, takes place among and through other people (Gherardi et al. 1998: 274).

Embodiment and embodied knowledge are among the main reasons for the turn to practice in the years 2000–2010, leaving behind the classical practice theories of the first generation, such as Deweyan pragmatism and activity theory (Miettinen et al. 2009). Thus, organizational and working practices have been considered the locus of knowledge production, circulation and transformation. Tacit knowing, sensible knowledge and the knowing body are becoming the main elements for approaching practices as the containers of knowing subjects and known objects. From this perspective, embodied knowledge and embodied knowing have been studied as competence, mainly as individual but also as a learned collective competence. Embodied knowledge, as a type of knowledge in which the body knows how to act, leads to a skilful performance that emerges from and through reciprocal relations encompassing the body-in-the-world and the world-in-the-body (Dall'Alba et al. 2018). The body, the gendered body and embodied knowing are highly relevant for practice-based studies (Yakhlef 2010). And organizational aesthetics has greatly contributed to directing attention to knowing through the hands, the ears, the nose and all the human senses involved in working practices.

The knowledge that is kept, distributed, fragmented, used and transmitted while practicing is embodied, sensory and atmospheric. For an empirical study of practices, the problem becomes how to articulate in words embodied experiences (tacit, aesthetic, embodied), i.e. those 'elusive knowledges' (Toraldo et al. 2016) that are learnt but kept silent within a working practice. The term 'elusive knowledges' refers to 'those forms of knowledge that escape literal representation through discourse including alphanumeric symbols' (Toraldo et al. 2016: 3). Nevertheless, they may be made articulable by the use of video-based methods. In fact, the authors value video's ability, in conjunction with interviews or ethnography, to explore the interactions of humans with material settings that reveal facets of nonverbal communication. The authors suggest that video-based methods facilitate access to embodied practical knowledge not because they capture the objective reality of practical knowing, but because they promote cross-modal translations (visual/textual) productive of new knowledge that can prompt reflexivity on knowing in practice.

4 Knowing in practice: realities are enacted in practices

Focusing on practices rather than on persons or structures has an implicit methodological corollary: a practice can be seen as the locus of knowledgeable doing, learning and organizing (as we have proposed in the previous sections); at the same time, a practice can be seen as a way of knowledgeable doing (as in what follows). The second definition implies considering a practice a mode of ordering sociomaterial relations and thus inquiring into how practices generate an (unstable) order and how ordering becomes a relational and performative effect of practices.

To give a simple example of how different 'objects' are the product of different practices (this is a way of expressing the abstract term of empirical ontologies), I shall narrate an exemplar story that has been told several times in the literature on Science and Technology Studies (Joks and Law 2017; Law and Joks 2017; Law and Lien 2013; Law and Singleton 2013). In my narrative, I rely mainly on Law and Lien (2013: 365–369), and my plotline is developed around the question: what is a farmed Atlantic salmon if it is treated as an effect of relational practices?

The story comes from an extended ethnography of farming practices whose focus is on salmon-human enactments in which salmon become slippery and elusive and farming practices enact separations between humans and salmon. The texture of farming practices enacts what a salmon is, since they define the qualities of both salmon and humans.

Imagine that we observe a practitioner fishing salmon out of the water, a fish that is dead or alive or injured. If it is dead, it is also something to be put in a bucket and dumped in a tank filled with formic acid and other dead fish. In this case, a salmon (precisely a dead salmon) is an object that needs to be sifted out and removed.

Imagine now that we open a scientific book searching for a definition of salmon, and there we find a reference to Linnaean systematics and the physical characteristics of the salmon. Another salmon is enacted through scientific categories and another set of relations are described in which the salmon is located in a web of links that include a taxonomic system, particular genetic attributes and a specific lifecycle, geographical range and feeding characteristics. An Atlantic salmon is here a scientific object that is dealt with in the context of specific scientific practices, and it is different from the salmon dealt with by the practitioner at the farm.

If we imagine moving in the farm, we observe the practice of vaccinating young salmon (also known as

parr) that are pumped up through a pipe, arrive in batches in a gush of water and drop into a container filled with water and anaesthetics. Once they go limp, they are lifted in a metal basket and decanted onto a stainless-steel work surface behind a rapidly moving conveyer belt. What is the salmon here? Another set of relations are established between: i) the practitioner's hands that reach out, lift the fish and drop it onto the conveyer belt, ii) the embodied knowledge in the hands that have learnt how to do the sorting, iii) the red or green light of the machine processing the fish (in the right or wrong way) and iv) the wet, busy and noisy vaccination cabin surrounded by pipes and cable and filled with buckets, tables and machines. Here we see how the 'the salmon passive', or perhaps 'the salmon not passive enough', is enacted in a web of distributed agency, where salmon passivity and human or vaccination-machine agency are being carried out relationally and moment by moment, through continual effort, work and redoing, and this knowledgeable doing is more or less precarious. The object of this practice is fluid—a salmon may change in form between practices—and it is done within a choreography that should be sustained, since there is no 'salmon' outside the practices that enact it.

What we have observed within a practice (either cleaning the water tank or vaccinating the parr) can be observed in the texture of ordering practices that form the farming. Other practices measure the 'right' salmon, separating it from the rejected ones, the losers who grow too slowly and follow a different trajectory that I do not discuss here. The point is that in a relational world, control and ordering are impossible without lack of control and disordering. In conclusion, the story of the 'salmon multiple' of aquaculture is a story of fluidity and multiplicity, where the 'what is a salmon' is performed through overlapping practices from the moment of fertilization to its final trip to the slaughterhouse.

A practice approach operates a shift from what a thing is (and why) to how a thing is done within situated sociomaterial practices. Generally, describing a practice as 'situated' means considering the organization of the activities as emerging *in situ* from the dynamics of knowledgeable practicing. With reference to Suchman's (2007) distinction between plans (ex ante rationality) and situated action (contingency), we can say that a practice emerges (in time and space) as the effect of situated practicing. I illustrated it with the story of 'what a salmon is', and I wish to add and stress that the researchers' epistemic practices, too, contribute to the empirical ontology of the multiple salmon, and considering the researchers within the practice they study means that the researchers make the salmon while the salmon makes the researchers.

Not only can the salmon be described as a fluid entity that shifts its shape as it moves between practices

(de Laet and Mol 2000), other well-known examples of empirical ontologies may be found in Mol's (2002) work in relation to the multiple body in medicine with lower limb atherosclerosis or Alzheimer's disease (Moser 2008) or anaemia (Mol and Law 1994). For example, Annemarie Mol (2002) describes ethnographically a patient's body and its disease moving from one hospital ward to another to see how they become different objects. She argues, in material-semiotic mode, that each practice generates its own material reality, and not that there are different perspectives on a single disease.

Mol coined the label *praxiography*, which unfortunately did not find a wide following, for denoting 'a story about practices'. Praxiography is a method to 'stubbornly take notice of the techniques that make things visible, audible, tangible, knowable' (Mol 2002: 23). A similar concern is expressed by the term 'ethnography of the object' (Bruni 2005) that, in following the trajectory of a clinical health record in a hospital, incorporates Latour's (1987) methodological injunction to 'follow the actor' and translate it in respect to the agency of the material actants.

5   A story about *agencement* and the texture of practices

For an empirical study of a practice and its connection with other interdependent practices within a texture, the definition of practice as an *agencement* has proved simple and useful (Gherardi 2016). *Agencement* is a word that has the idea of agency in its root and is currently used in French as a synonym for 'arrangement', 'fitting' or 'fixing'. It has been used as a philosophical term by Deleuze and Guattari (1987) with the sense of 'in connection with' and has been recently re-introduced into the social science vocabulary by Callon and colleagues (2013) to speak about economic performativity. They clearly express the word-play of the term *agencement* since it is 'an actor' in the sense of a sociotechnical assemblage and at the same time it has *agence*, agency. Similarly, when we look at a practice, we can see how the sociomaterial relations that tie bodies, artefacts, discourses, technologies and rules together are performed within it and with other practices and how agency is its effect.

Within the unfolding of a practice, neither humans, nor nonhumans nor discourses have priority. If we describe the process of *agencement* as a process of heterogeneous engineering, we can say that all the resources necessary for practicing are the stuff of what is connected. It is difficult to enumerate the ingredients of a practice, since a resource for action becomes a resource only within an assemblage of relationships. In the language of actor-network theory, we should say that elements are performed in, by and

through the relations in which they are located, and if the relations do not hold fast by themselves, they need to be performed.

The concept of *agencement* can prove useful for a practice-based study, since in studying a practice the researcher may empirically follow and describe the process whereby humans, artefacts, rules, technologies, sensible knowledge, legitimacy and any other practice resource become connected thanks to a collective knowledgeable doing. It is not a final product (as the English translation in 'assemblage' suggests), but it calls for a process approach looking for temporality and becoming; *agencement* calls for 'agencing', as Cochoy (2014) prefers to name it.

What we call 'practice' is a heuristic move that de-territorializes and re-territorializes the unfolding of a flow of practicing. When we put boundaries around 'a' practice, trying to see when (and where) it begins and where (when) it ends, we are doing a heuristic operation (an agential cut in Barad's terms), since it is within practicing that connections are established and dissolved without a pre-defined order; and it is the process of *agencement* (of connecting with) that creates it. These connections are those of the rhizome, which has no beginning or end but is always in between, in motion.

Therefore, the passage from the noun 'practice' to the verb 'practicing' implies not only a move towards a process view, but also and especially a passage to temporality and to the situated activity of *agencement* as the activity of establishing connections. But what is connected within a practice and how are practices connected?

A story about the empirical study of safety in construction industry may illustrate how 'safety' is the sociomaterial object emergent from the *agencement* of a texture of practices (Gherardi and Nicolini 2000; Gherardi 2006). Like the salmon in the previous story about multiplicity, safety knowledge and organizational safety learning, too, are enacted in situated practices across a multiplicity of sites, and what we value as 'safety' within a society may be conceived as a collective competence developed alongside emergent practices within and across the boundaries of one organization, one industry, one organizational and institutional field. For describing empirically the agency that connects all the practices of 'doing safety' we can trace the sociomaterial enactments of knowing and learning at various points in time. For example, we can track a novice who enters a community of practices (Gherardi, Nicolini and Odella 1998a) and how he or she learns what is safe working and organizing and what is risky. At the same time, we trace how the community teaches through words, discourse and silences, and we follow how this knowledge is embodied, embedded in sociomaterial relations and is contingent and provisional, so that a practice is always practiced for an-

other first time (Garfinkel 1967). In a construction site, a specific working activity is performed more or less safely within the *agencement* that keeps a practice together. Learning safety means knowing how to behave as a competent member in a culture of safety practices. It means that, within a practice, learning is not separated from knowing in practice. Working practices are specific to different occupations and professions that are interdependent within the single construction site and that enter into conflicts and negotiations over the meaning and the multiple enactments of how to accomplish safe working and organizing practices. Moving along the connections among the working practices of one community and another interdependent one, we can explore how the culture of certain occupational practices is enacted when different communities of practice explain why accidents happen (Gherardi, Nicolini and Odella 1998b). Similarly, when a firm recovers after a major accident (Gherardi 2004), we can track how (and if) previous practices are challenged, changed or reinforced and who and what enter into a new *agencement*. Moving along the rhizomatic lines of connection within the texture of safety practices, we can inquire how an institutional field deals with safety regulations (Gherardi and Nicolini 2002) and how the regulative practices (at the national and international level) go back to the single construction site and to the individual novice learning the use of a risky tool. The end of this story about safety practices is that what counts as 'safety' within an historical context is the provisional and contested enactment of a texture of practices that acquires agency in their being connected and disconnected. In other words, when the researchers aim to inquire about the actual processes of organizing, they may trace how a flow of situated activities is connected into streams of action, and the researchers may move along the threads of a texture of practices, from activities within a practice to practices connected to other practices. In fact, practices have no boundaries except those that the heuristic operation of a researcher establishes. Practice does not 'exist' in nature, researchers do not 'find' it; rather, practice is always conceptually constructed.

Within the study of work and organization, one reason for a practice approach that leaves behind the assumption that actions spring from the intentionality and values of human beings is that the focus on 'a' practice situated in any point within a texture of practices enables the researchers to move along many lines of connections in any direction, following the connections in action. A texture of practices may be empirically explored and described either following the connections that move from one practice along radial lines, like in the web of a spider (as I prefer to say), or along the two moves of zooming in and zooming out that Nicolini (2010) suggests.

Conclusion

The empirical study of practices may be approached from different angles and with different knowledge interests, and consequently practice as a knowledge object is multiple and fluid. Knowledge objects are characterized by their question-generating character, and they can never be fully attained since—as Knorr Cetina (2001: 190) writes—'epistemic objects are always in the process of being materially defined, they continually acquire new properties and change the ones they have'. In this essay, I have assumed the relation between practice and knowledge as my compass for arguing that knowing is a generative social activity.

In the literature on organizational learning and knowing, the knowledge object 'practice' has been modelled following the desire to avoid the cognitive formulation of knowledge as residing in people's heads and, at the same time, to avoid the image of a commodified knowledge valued in economic terms. Therefore, practice can be considered a figure of the discourse on knowing, learning and organizing, where learning is understood as competent sociomaterial participation in situated practices, knowing is embodied and entangled with doing, and practice takes the form of a mode of ordering heterogeneous materials that achieve agency through their performative connections. Therefore, in saying that practices are situated modes of ordering and 'agencing', it is said that they are always emerging from practicing and, in their recursiveness, they become stabilized, institutionalized and objects of attachments.

The question-generating power of formulating practice as the locus of learning and knowing is related to inquiring how knowing in practice is accomplished and how the heterogeneous elements are stitched together. One impetus for looking into the practice realm comes from conceiving practice as the container of elusive knowledges, embodied ways of knowing, pre-verbal and pre-individual forces that operate beyond the speaking subject and its presumed centrality.

These kinds of questions are grounded in an actor-network sensibility that harbours an onto-epistemology informed by relationality and performativity. Thus, the object of knowledge 'practice' is displaced from a humanistic sociology in which actors are the main source of action (in the view of 'actors and their practices') to a posthumanistic formulation of practice theory as sociomateriality in which humans, materials, more-than-humans, discourses and knowledges are entangled within a practice, and practices are woven in a texture of practices. What keeps a practice or a texture of practices (temporally) connected or disconnected within an *agencement*? The glue may come from the power of association, communication and affect, when matter matters (in Barad's words).

The knowledge object 'practice' is constructed differently within different disciplinary traditions and different knowledge interests, and there is no point in engaging in a war of epistemologies when we can learn to switch lenses and appreciate the dynamics of difference and differing. Practice is multifaceted, with a theoretical starting point and an empirical focus for organizational inquiry. Practice as epistemology contributes to the empirical study of how we come to know what we know and how, in knowing, the object is always indeterminate and changing.

On practice and on being in between

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Roughly twenty years ago, Silvia Gherardi introduced a special issue of *Organization* on the relations of knowledge, organisation and practice by drawing on the mythical monsters Scylla and Charybdis known from the Odyssey (Gherardi 2000). She argued that: "In the relationship between knowledge and organizations, Scylla and Charybdis can be represented, respectively, by a *mentalistic* vision of knowledge in organizations and by a *commodification* of knowledge" (ibid., p. 211). Akin to the heroic figure of Ulysses, organisation studies would have to steer a delicate course so as not to fall prey to a reduced understanding of knowledge on either side. The course to steer would be guided by the concept of practice. This is by no means to say that organisation studies should be understood as a heroic mythical adventure; it is rather, as Gherardi points out, a metaphor for "a dilemma in which both options are equally undesirable" (ibid.). If we look at the con-

cept of practice in organisation studies and beyond as it has become prominent in the last twenty years, it decidedly marks a position *in between* polar opposites: in between structure and agency, in between continuity and change, in between the social and the material, in between idealism and materialism, in between process and substance, and in between empirical and theoretical endeavours. It seems that practice as a concept now sits snugly in the middle between the undesirable dichotomies of modern thought, avoiding the essentialisms and reductionisms found in many other theoretical conceptions.

This new contribution by Gherardi comes back to the relations of knowledge, organisation and practice, albeit with a different twist. It does not argue for practice as a concept in organisation studies per se for avoiding the reductionisms of cognitivism or commodificationism, but wants to push practice theory forward by focussing on processes of organisational knowledge and learning. Instead of trying to find the locus of practice in concepts of knowledge, she now spells out the locus of knowledge in concepts of practice. And again, practice becomes prominent in its fundamental in-betweenness. But this time, its in-betweenness does not plot a clear course to follow; rather, it shows that it is itself laden with problematic tensions and fluctuations, constantly shifting out of focus or simply refusing to stand still. This is what could be called the methodological crux of practice and practice theory. On the one hand, practice is always on the move, never standing still. This is why it is difficult to pin down in abstract concepts that do not allow for the tensions and fluctuations. On the other hand, theory tends to dissolve practice into abstractions by disregarding the materiality of bodies or technologies (cf. Button 1993 for technology). Dewey elaborated on this uneasiness of classic philosophy with practice in *The Quest for Certainty*: "There is also the age-long association of knowing and thinking with immaterial and spiritual principles, and of the arts, of all practical activity in doing and making, with matter. For work is done with the body, by means of mechanical appliances and is directed upon material things. The disrepute which has attended the thought of material things in comparison with immaterial thought has been transferred to everything associated with practice." (Dewey 1929: 5). Classic philosophy, in its quest for final, fixed, pure, immutable and invariant knowledge chose to disregard the contingencies and dynamic changes of practice. But how are we to account for the uneasy in-betweenness that practice holds for knowledge and theory and how are we to move this from a philosophical debate towards an empirical program for studying knowledge, learning and practice in organisations? Gherardi's answer is that practice must remain elusive, but that we can approach it along two lines of inquiry; namely, that we study *specific domains of practice* and that we observe *how practices enact reality*.

With respect to organisations, Gherardi's paper addresses the domain of knowledge and learning as well as the emergence of material-semiotic orders from situated activities. In both cases, the uneasy in-betweenness of practice requires the analysis to refrain from searching for substances or essences, but to fully acknowledge the inherently situated and distributed nature of practices. The methodological crux of studying practices is thus accompanied by a methodological manufacturing process that teases out the constitutive associations in which they reside. In the remainder of this comment, I will go into Gherardi's arguments in more detail in order to sketch out how the uneasy in-betweenness of practice is resolved with regard to empirical studies.

Let me start with her concept of practical knowledge or knowing. Gherardi's main point is that the practice approach largely dissolves concrete boundaries or containers images of knowledge. Instead, knowledge is conceived as a situated and distributed process that spans bodies, technologies, discourses and social structures. In other words, organisational knowledge and learning must be understood as both collaborative and mediated. Collaboration and mediation therefore point to the practical activities that enact the in-betweenness of *knowing in practice*. What needs to be teased out, for instance, are the largely invisible forms of sensually embodied knowledge. They way to tease it out is to observe practices closely and *in situ*. I think one aspect that warrants closer inspection along this line is the situated couplings of bodies and technologies in action. Emphasising embodiment is a core tenet of the practice turn, yet the term tends to favour the somatic embodiment of knowledge in and across human beings. But of course, knowledge is also embodied (built in, materialised) in artefacts. Such relations of bodies and artefacts are not only interesting for philosophical or anthropological debates, but also offer a productive entry point into the sociomaterial constitution of organisations and organisational knowledge. Whereas bodies and technologies were long considered to provide the stability and durability of practice, e. g. in the concept of habitus, they have recently come under scrutiny concerning their potential to disrupt and transform established forms of order in the sociology of repair (Jackson 2014). Next to the skilful embodiments of knowing in practice by competent members, this would add to our understanding how practice enacts reality out of small and everyday disruptions.

This brings me to the second line of inquiry as the enactment of reality through practice. Here, Gherardi underscores that practices do not merely happen *in situ*, but that they produce enduring forms of sociomaterial order. If we go back to collaboration

and mediation, this entails that collaboration turns into a more rigid form of concerted actions or social organisation and mediation likewise takes on more structural moments. The methodological difficulty lies in teasing out the *agencements* that produce forms of order without prioritising order per se. Again, I think that a closer empirical and conceptual look at the concrete relations of bodies and technologies, especially at their more durable constellations in and across organisations would provide fruitful access to the in-betweenness of practice, here also in between structure and agency and in between continuity and change. This could question some established insights into the relation of the material and the social. Because bodies and technologies are material and social at the same time, privileging technology as a driver for change or bodies as sources of inertia does not seem plausible from a practice perspective.

I conclude my comment by suggesting that in the practice turn, the theories of practice may have gotten a head start compared with the empirical analysis of practice. This is by no means to devalue all the insightful empirical studies that have been put forth. But there does seem to be a misbalance between theory and practice in practice-based studies. I see Gherardi's paper as an attempt to steer us in the direction of more empirical work and to engage in carefully teasing out the in-betweenness of practice. Practice, I take from this, is not an ineluctable given, but a moving target that requires constant conceptual and empirical adjustments.

Do practices have no boundaries?

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Silvia Gherardi's approach to practice theory is challenging us. It takes some properties and problems into account that are not a common theme in theories of practice—or of action, for that matter. So while the terrain of "Practice as a collective and knowledgeable doing" seems familiar, its actual trajectories follow their own pathways. What is at stake here is the collective nature of practice, in its co-constitution with 'knowledge' as 'practical knowledge'. This not only implies notions of work and of practice as a phenomenon to be studied in organisations. It also entails distributed and collective aesthetic practices that are part of knowledge as an activity. Gherardi's approach thus does not need to reframe notions of "tacit knowledge" like Harry Collins (2010) in his modification of Polanyi's term by dividing it into several categories.

Rather, practice here already always goes beyond doings and sayings to include the dimension of perception and the senses right away.

Yet paradoxically, while Gherardi insists on the aesthetic qualities of practice, she does so in the context of a posthumanist practice theory. If all knowledge is bodily sensible knowing, how does it go beyond the body? Or how does it become intercorporeal, co-operative knowledge (Meyer, Streeck and Jordan 2018; Goodwin 2018)? Sure, embodiment has not been a mere privilege of humans and other animals in social theory and anthropology for quite a while now. Yet within the modalities of a posthumanist practice theory that actually includes the senses and practices of seeing, listening and touching, I wonder what the *post* in posthuman is signifying? It might be said that Gherardi's approach oscillates between the posthuman—whatever that is—and the "more than human". So we are following more than the classical ANT 'human and non-human actors in webs of relationships' notion here. The social is generated by material practices and their constant entanglement of humans, materialities, discourses and knowledges, writes Gherardi. It is hard to disagree—everyone who dislikes simplistic understandings of 'humans and their practices' is going to join the chorus. Making a decision between the posthuman and the "more than human" might be a more precarious decision, though.

So where is the agency, if perceptual and sensory practices are taken into account? It might be said that it is distributed and rhizomatic right from the beginning. There is a clear Deleuzian influence in here that is unusual (but not unheard of) for ANT scholars.[1] Most Germanophone approaches to practice theory—and organisation studies, for that matter—rarely include French Poststructuralism in their genealogy now. In Media Studies, people who opt for ANT and STS approaches to mediation do not mix with Deleuzians a lot, yet Deleuze is still highly popular. Nonetheless, a shared interest in identifying and mapping distributed agency transcends the peculiarities of different strands of social theory and some niches of the humanities. Gherardi emphasizes the original praxeological meaning of what Deleuze and Guattari have been calling an *agencement* and contrasts it with the seemingly ready-made and stable understanding of "assemblages" in English translations of the word. From practice to practicing, from *agencement* to agencing—the emphasis on verbs instead of nouns is something that is not only characteristic of Gherardi's hybrid approach, it has also inspired Germanophone research on cultural techniques from the start (Krämer and Bredekamp 2013).

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[1] Remember Bruno Latour's retrofuturistic quotation: "As Mike Lynch said some time ago, ANT should really be called 'actant-rhizome ontology'." (Law/Hassard 1999: 19)

For Gherardi, agencement or agencing privileges "a passage to temporality and to the situated activity of *agencement* as the activity of establishing connections" (p. 11). Interestingly, the ANT trademark of connectionism makes its appearance here and is only counterbalanced in short remarks about disconnective agency. Gherardi's take on practice theory even radicalizes the situated connective accomplishment of practice or, as she puts it, a connective texture of practices. The textile metaphor corresponds to a methodological challenge for any theoretician of practice. "In fact, practices have no boundaries except those that the heuristic operation of a researcher establishes" (p. 12). This empirical *horror vacui* can be met only in actual ethnographic work, by following the connections made in practice, taking into account knowing and doing at the same time, and also their historical dimension. Could we raise the methodological stakes and increase the responsibility of the human researcher any higher?

Researching practicing from the bottom up and in the midst of situations, creates an imposition for everyone willing to do it. In Gherardi's text, we do not really encounter the challenges of doing this kind of messy fieldwork and relating it to theoretical assumptions concerning 'practice', 'situatedness' and 'agencement'.[2] Rather, she invites us to scale up from the local to the social, as Susan Leigh Star and Geoffrey C. Bowker (1999: 317) once put it. How does Gherardi do that? She answers the recurring question of the in/stability of practices and situations rather elegantly. Practices become situated modes of ordering and agencing that are stabilized by their recursivity, institutional arrangements and habitual attachments. In our Siegen *Lecture and Workshop Series on Practice Theory*, we proceed in a similar manner, highlighting media practices of coordination, delegation and registration/identification as reflexive and recursive modes of co-operative mediation (Gießmann 2018).

While Gherardi makes some nods to ethnomethodology, she can actually presuppose that practice is instructed and realized by elusive knowledges. Where ethnomethodologists have to rely on the "each next first time" of practicing a practice, Gherardi emphasizes the relationality of a texture of practice that is (temporally) connected or disconnected within an *agencement*. To the best of my knowledge, this balanced yet dynamic approach, with its feminist and aesthetic twists, stands out both in practice theory and ANT/STS. It also serves as an epistemological anchor against some of the impositions that come with practice-oriented research that has to make up

the rules as it goes along—with whatever kind of mediation that practices actually accomplish.

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2 I am perfectly aware that this is also a question of genre—"Practice as a collective and knowledgeable doing" is a theoretical text, not something that is based on specific notes from the field.

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