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Towards a Practice-orientated Digital Sociology

Introduction

Examining people's engagement with digital maps, or rather, the ways in which digital maps feature in people's day to day lives and its relation to social order, requires an appropriate framework. This chapter develops such a framework by drawing on a lineage of practice theory derived from Giddens' structuration theory and incorporating concepts taken from digital geographies, digital sociology, experimental psychology, and various sub-disciplines that overlap within Internet studies (i.e., critical data studies, platform capitalism, mobile media studies). The next section explains why practice theory makes such a suitable base for exploring the social consequences of digital media, and how it differs from other approaches in science and technology studies (STS) and media studies before outlining its central tenets. The chapter then charts the main theories and concepts of first- and second-wave practice theories before discussing their shared ontological base. On the latter, the chapter considers how new practices are formed and stabilised, and how new technologies (such as digital maps) become integrated into everyday ways of doing and knowing. In its penultimate section, the chapter explains how a

M. Hanchard, *Engaging with Digital Maps*, Geographies of Media,
https://doi.org/10.1007/978-981-99-8972-0_4

practice-orientated digital sociology framework could be adapted to study a broad range of digital media. The chronological structure of the chapter provides an understanding of how practice theory concepts have emerged over time, during which the approach has matured. Doing so provides consistency with the previous two chapters, where digital maps have been theorised as both social and technological objects grounded in the Internet and web—more so than in paper-based maps—and where cartographic thought has shifted from map design to map use. As key themes, the chapter maintains a focus on access, agency, inequality, power, and the (re)enactment of social positions throughout—all of which have been core topics of concern in cartographic thought.

Practice Theory as an Appropriate Lens for Studying Digital Media

There have been two waves of practice theory, the first of which 'laid the foundations [of what] we now regard as practice theory' (Postill, 2010, p. 6) between the 1970s and 1980s. The second has been extending those foundations since the early 2000s. Despite a lively body of literature evolving over both waves, there is no unified practice theory approach. Instead, it encompasses a disparate set of theories that coalesce around a shared philosophical concern to deny primacy to either structure or agency (Schatzki, 2001; Couldry, 2004; Postill, 2010). In drawing together this diverse array of competing and complemntary theories, Schatzki (2001) provided the first landmark text for practice theory, an edited collection that suitably typified practice theories as either: philosophies that focus on knowledge and intelligibility; approaches to STS that examine relative roles of humans and non-humans; or social and cultural theories that revolve around a discussion of social order. As a shared point of coalescence, Schatzki argues they all stem from an underlying ontological base, whereby:

> knowledge, meaning, human activity, science, power, language, social institutions, and historical transformation occur within and are aspects or components of the field of practices. (Schatzki, 2001, p. 11)

He connects this to an epistemology (discussed in the next chapter) in which practices are 'embodied, materially mediated arrays of human activity centrally organized around shared practical understanding' (ibid.). By extension, Reckwitz (2002) contends that this is what differentiates practice theory from other, equally praxeological, cultural theories. For example, where performative gender studies 'highlight the significance of shared or collective symbolic structures of knowledge in order to grasp both action and social order' (Reckwitz, 2002, p. 246), they locate discourse, not bodies or material arrangements, as the central unit of analysis—despite focussing on practised performances. Similarly, in Actor-Network Theory (ANT), 'bodies are not the site of the social, but are rather epiphenomena or instruments' (Reckwitz, 2002, p. 251). In ANT, a flattened social ontology is constructed, maintained, and transformed (assembled and translated) with 'no distinction [made] between human and non-human actors' (Gonzalez, 2013, p. 52); objects and subjects (people and things) are accorded an equal agency in generalised symmetry (Callon, 1986; Preda, 1999). By contrast, what Schatzki and Reckwitz both argue (as practice theorists) is that we ought to focus specifically on human (and at times animal) activities as mediated by or through objects. As such, the uptake of ANT by map theorists working within a cultures of map use mode of thought (see previous chapter) sees the combined work in constructing and circulating maps as an array of activity involving humans and non-humans, with each accorded equal weight. Practice theory, by contrast, would look at how maps (as one specific cultural form) feed into the actions and knowledge of humans specifically.

Within STS technologies are often treated as 'knots of socially sanctioned and active knowledge' (Preda, 1999, p. 352). That is, as socially constructed (Pinch & Bijker, 1987) or socially shaped (MacKenzie & Wajcman, 1999). Thus, despite understanding that 'technology always involves interaction between human beings and the material world' (MacKenzie & Wajcman, 1999, p. 39) adherents of both the social construction of technology (SCOT) and social shaping of technology (SST) strands of STS consider technologies to be black-boxed, arriving 'at the ordinary user already "stabilized"—its form, uses and even meanings fixed' (Bell, 2007, p. 39). In this, SCOT and SST are unable to fully

account for how technologies are practised *after* the moment of production and adoption (uptake). Other STS approaches (i.e., the domestication approach) address this to an extent, studying consumption and the diffusion of technologies by focussing specifically on:

> how that shaping process [is] continued once ICTs started to be consumed… individually and especially in households… working out how exactly to fit them into their everyday routine. (Haddon, 2011, p. 312)

By building on SCOT and SST, domestication theory adherents to hone in on integration; how 'wild' technologies are 'tamed' or domesticated within local contexts (Haddon, 2007, p. 26). They also account for the incorporation of new technologies into existing routines, and address how they are made meaningful by users who are active, rather than passive (Haddon & Silverstone, 2000, p. 278). However, such an approach does not provide analytical purchase on the wider sociological implications of engaging with technology beyond its immediate context of use, e.g., how engagement with one technology (such as digital maps) might anchor or order wider sets of practice that extend and connect it with other practices beyond the local context (cf. Berker et al., 2006, p. 8). That is, the approach would leave any connection between digital map use and choice of route within countryside leisure-walking, or choice of home bought drastically under-theorised. The domestication approach also tends to concentrate on individuated usage, often at home or at work, and from a 'single actor' perspective too—albeit with 'some concern regarding interaction between users' (Ask & Sørensen, 2017, p. 4). This limits its applicability for exploring shared or collaborative practices—a key facet in understanding how web-based technologies (such as digital maps) are engaged collectively and collaboratively in everyday life (Beer & Burrows, 2010; John, 2012). In contrast, practice theorists view technologies as material resources that are entangled within recursively organised sets of embodied activity; a position that opposes the generalised symmetry of ANT and/or any notion of individuated uptake. Thus, it requires a focus on participants' own accounts of past actions, rather than on discourse itself, and on how several actors' practices correlate with one another around the same technology within a given context.

In developing a framework for analysis later in the book, this chapter treats digital maps as slippy, spreadable, and emergent media resources that are made meaningful through people's engagement with them amidst a plethora of other practices and technologies. Thus, it contrasts with many other STS approaches where technologies, once constructed and stabilised, are seen to somehow teleologically script future practices. Instead, practice theorists argue that technologies are recursively 'constructed by actors working in a given social context, and…the different meanings they attach to it' (Orlikowski, 1992, p. 406). They also maintain that subversive and affective practices are equally important for the ongoing reinterpretation (and reconstitution) of technologies—a point consonant with Lammes' (2015, 2016) turn to the ludic for understanding how urban space can be engaged with in new and unexpected ways through playful map use (see previous chapter). Here, practice theory adherents argue that:

> When users do not use the technology as it was intended, they may undermine and sometimes transform the embedded rules and resources, and hence the institutional context and strategic objectives of the technology's creators, sponsors, and implementors. (Orlikowski, 1992, p. 412)

As a theoretical approach then, practice theory provides a way to connect digital map use with wider debates about society beyond the local context, and to go beyond a sole focus on the situated domestication of a specific technology. It enables entry into examining how people's engagement with digital maps connects to wider bundles of social practices (i.e., volunteering geographic information or home-buying), how that relates to the performance of social positions, and how the web-based affordances for collaboration and sharing are engaged within the process. In short, it offers a way to access meaningful insights about how engagement with digital maps can anchor the constitution of everyday life.

Early Practice Theory: Giddens, Bourdieu, de Certeau, and Lefebvre

This section provides an overview of first-wave practice theory, focussing on the theorists and conceptual frameworks that are most relevant to the research presented in later chapters. It starts with an outline of Giddens' 'structuration theory' (1984), before comparing it with Bourdieu's work around the logic and theory of practices (1977, 1992, 2010), de Certeau's (1988) dialectic between strategies and tactics, and Lefebvre's (1991) spatial triad.

Giddens' Structuration Theory as a Practice-based Lens

For Giddens, structure and agency are reconciled in duality whereby the 'structural properties of social systems are both the medium and outcome of the practices they recursively organise' (1984, p. 25). He provides varying definitions of structure (1984, pp. 376–377), for which his work has been criticised (Bryant & Jary, 2001), strengthened (Stones, 2005), adapted (DeSanctis and Poole, 1994), and redressed (Sewell Jr., 1992). Put simply, Giddens (1984, p. 25) defines structure as a 'recursively organised sets of rules and resources' which may be further separated into constituent 'cognitive and moral rules and to allocative and authoritative resources' (Bryant & Jary, 2001, p. 16). He also describes structure as 'a property of social systems, "carried" in reproduced practices embedded in time and space' (Giddens, 1984, p. 170). While introducing spatiality and temporality, Giddens also asserts that structures (rules and resources) are practically reproduced to constitute wider social systems. Here, social systems are treated as macro-scale 'self-subsistent entities: social classes, discourses, the market, the state, etc.' (Nicolini, 2017, p. 100). In further refining the notion of 'structure', Giddens assigns resources as being either: 'allocative, or material, and authoritative, or non-material; the former derive from dominion over things, the latter from dominion of people' (Bryant & Jary, 2001, p. 13). Meanwhile, rules (cognitive and moral), which constitute structure are understood as '(codes, norms)

methodologically applied, generalizable procedures of action implicated in the practical activities of daily life' (Schatzki, 1997, pp. 290–291). This differs, however, from:

> Formulated rules—those that are given verbal expression as canons of law, bureaucratic rules, rules of games and so on—are thus codified interpretations of rules rather than rules as such. (Giddens, 1984, p. 21)

In addition, Giddens is concerned not to view individuals 'as cultural dopes, but rather [as] knowledgeable and capable agents who reflexively monitor their action' (Bryant & Jary, 2001, p. 12). By arguing that technologies do not script practices, Giddens rejects rational motivation and free-floating individualism. Instead, he treats individuals as reflexive and self-monitoring by drawing an analytical—albeit permeable (Mathieu, 2009)—separation between discursive consciousness as 'knowledge the actors are able to articulate' (Orlikowski, 1992, p. 63) and practical consciousness as knowledge people 'draw on in action but are unable to express' (ibid.), adding that:

> While competent actors can nearly always report discursively about their intentions in, and actions for, acting as they do, they cannot necessarily do so of their motives. Unconscious motivation is a significant feature of human conduct. (Giddens, 1984, p. 6)

In short, Giddens treats people as knowledgeably competent actors who skilfully negotiate various rules and resources in the durée of everyday life—even if they cannot always verbalise or rationalise exactly how or why. Extending this further, he introduces memory traces and ontological security as concepts to deal with how people negotiate structures and social systems. He asserts that structure only exists in memory traces (Bryant & Jary, 2001, p. 16), with memory held as the mechanism through which rules are drawn on and resources comprehended:

> '[p]resent' cannot be said or written without its fading into the past. If time is not a succession of presents but 'presencing'… then memory is an aspect of presencing. (Giddens, 1984, p. 45)

That is, structure is not *just* benignly enacted, nor is it reified to 'emerge' of its own accord. It is actively brought-into-being by knowledgeable actors drawing on previous biographical experience (in practical consciousness) to negotiate rules and resources. Thus, structures and the social systems they constitute are always emergent and aligned to individualised personal histories (raising the question of how structures might be shared). However, this does not explain why some rules or resources structure action while others do not, or how structure is brought into being amidst a plethora of competing memories? Here, the notion of ontological security is useful, referring to:

> the confidence that most human beings have in the continuity of their self-identity and in the constancy of the surrounding social and material environments of action. (Giddens, 1990, p. 92)

Drawing on Freudian psychoanalytical theorists such as Erikson, and Laing (Kort & Gharbi, 2013; Hiscock et al., 2001) Giddens argues that participants' early socialisation is generative of feelings of trust (or mistrust) as 'the deepest lying element of the basic security system' (Giddens, 1984, p. 50). When ontological security emerges during early socialisation, its genesis matches an individual's memory traces. However, individuals' 'relationship[s] to [their] caretakers is emotional rather than cognitive, and is grounded in the unconscious' (Tucker, 1998, p. 83). This centres on interaction and affect, inferring that people are not only knowledgeable, but also hold affective links to one another (and to their social and material environment). In turn, it raises questions about how (individualised) ontological security might be shared, for which Giddens asserts that it does not just rest on a sense of reliability in others. It also involves 'people having confidence in the social order, in their place in society, in their own right to be themselves, and a belief that their self-realisation can be achieved' (Hiscock et al., 2001, p. 50). In short, it is an existential security (Giddens, 1991, chap. 2) orientated towards the shared structures, set social positions, and material arrangements of everyday life.

Bourdieu's Field Theory: Habitus, Doxa, and Social Fields as Heuristic Tools

Unlike Giddens' relatively abstract scheme, Bourdieu advocates a far more empirically grounded and politically motivated one (King, 2004, p. 39) based on three central concepts: *habitus* as internalised 'systems of durable, transposable dispositions' (Bourdieu, 1992, p. 53); *doxa* as 'the process through which socially and culturally constituted ways of perceiving, evaluating and behaving become accepted as unquestioned, self-evident and taken for granted' (Throop & Murphy, 2002, p. 188); and (social) *fields* as the 'places of power relations where practices of agents are not arbitrary' (Walther & Walther, 2014, p. 9). Within this, habitus is the unifying concept (Bennett, 2010, p. xix), conceived of as:

> a deeply buried structure that shapes people's dispositions to act in such ways that they wind up in accepting the dominance of others, or 'the system', without being made to do so… (Ortner, 2006, p. 5)

Within this, structure is internalised through doxa into habitus as a set of 'dispositions' embodied by individuals (Bourdieu, 2010, p. 170). Here, people are both reflexive performers and carriers of shared practices, accounting for how structural differentiations (such as class, and gender) are collectively internalised and enacted. While this aligns with Giddens' separation of structures and social systems, it differs in how rules and resources are negotiated. For Giddens, individuals are reflexive and self-monitoring when they draw on memory traces, however, he leaves 'structural differentiation' poorly conceived (Thompson, 1994, p. 65). For Bourdieu individuals draw on transposable (changeable and shareable) schemes embedded in habitus (and therefore structured by structural differentiation). As with Giddens' notion of 'ontological security', Bourdieu's 'transposable schemes' rely on an ongoing process of socialisation, with habitus formed most firmly during early childhood:

> the relationship of immediate adherence that is established in practice between a habitus and the field to which it is attuned, the pre-verbal taken for granted of the world that flows from practical sense. Enacted belief,

> instilled by the childhood learning that treats the body as a living memory pad…. (Bourdieu, 1992, p. 68)

However, he considers practices to be more rigidly structured through habitus than Giddens, and rules somewhat more obdurate/less ephemeral. This is a key limitation in Bourdieu's work for understanding people' engaging with digital maps as far as it leaves the framework unable to account for how individuals might modify their behaviour, act emotionally (affectively), or make mistakes:

> The actor is portrayed as necessarily or mostly in control of herself… Only Giddens's acknowledgement of wants hints that human activity is sometimes ill-aligned with circumstances and regularly determined by phenomena (e.g., emotions/moods) that do not always contribute to people masterfully getting about. (Schatzki, 1997, p. 301)

In this, Giddens provides a better basis for understanding how people engage with digital maps, and how they engage with the web-based affordances they offer. However, Bourdieu's habitus and doxa are useful as heuristic tools to 'speak to' when discussing shared practices and collective forms of digital map use.

de Certeau's Tactics, Strategies, and Everyday Life

Alongside Bourdieu, de Certeau (1988) offers a further set of concepts for the framework, to use as equally heuristic tools. He argues that *strategies* and *tactics* are constitutive of *space* and *place*. That is, for de Certeau 'place is the empty grid over which practice occurs, while space is that created by practice' (Cresswell, 2006, pp. 38–39). Put simply, 'space is a practised place… the street geometrically defined by urban planning is transformed into a space by walkers' (de Certeau, 1988, p. 117). For de Certeau, *strategies* represent the practices that (re)produce a structuring logic, and which are recursively enacted and/or challenged through *tactical* practices (de Certeau et al., 1980, p. 6; Barassi & Trere, 2012). By extension, *tactics* are often subversive (Ahearne, 1995). Thus, the strategy

of digital map-makers such as Microsoft or Bing to provide a specific map of the world could feasibly be seen to be contested by the tactics of users engaging with them through map mashups and map-hacks as means of adaptation and reappropriation.

For de Certeau (1988, p. 201), *places* hold subtle traces of history too—memories of past strategies and tactics (and their conflicts) are inscribed in their material form—for instance, within the built urban environment:

> beneath the fabricating and universal writing of technology, opaque and stubborn places remain. The revolutions of history, economic mutations, demographic mixtures lie in layers within it, and remain there, hidden in customs, rites, and spatial practices

Here, materials carry meaning and memory traces and therefore structure practices (as allocative resources). In turn, the approach suggests micro-scale interactions situated within local contexts as the most appropriate site for studying practices in relations to people's engagement with technologies like digital maps; in part, owing to the capacity they offer for attending to how practices are enacted within the context of local material environments. Thus, the approach resonates with the underlying methodological approach of other contemporary digital map theorists, such as Wilmott's (2020) concern for the in-situ and live study of participants' mobile map use.

Lefebvre's Spatial Triad and the Practical Production of Space

Whilst not traditionally considered a practice theorist per se, concepts within Giddens, Bourdieu, and de Certeau's all speak to Lefebvre's thought in particular ways. For Lefebvre (1991; also Watkins, 2005) there is a threefold duality (triality) between: (1) the abstract conceptualisation of place, such as those found in maps—which he labels *spaces of representation*; (2) the perceptions/senses of space that people hold, i.e., the geographical imaginary of places gained by engaging with digital

maps—labelled *representational space*; and (3) the lived experience of going about everyday life within particular places—which he labels *spatial practices*. He contends that all three are mutually constitutional (or productive) of lived social space (akin to de Certeau's *place*) as experienced in everyday life. Thus, it is the memory traces gained from both past spaces of representations of space and spaces of representation that inform the way spatial practices are carried out—albeit lacking a comparable concept to match doxa/habitus or rules/resources. What Lefebvre does provide, however, is an understanding that material places and the social activities carried out within them are enacted through repeated practices, each informed by particular understandings of space—both as set out in abstract representations (such as the map) and as internalised by people (as geographical imaginaries and mappings). By extension, abstract schemes map space as a material form that has been adapted through practices, and traces of past practices are inscribed in material form—and then interpreted in relation to past memories and experiences to form particular perceptions of space.

Second-wave Practice Theory: Materials, Competencies, and Meanings

Having outlined and compared concepts from first-wave practice theory above, this section turns to its contemporary second wave. To do so, it sets out the framework developed by Shove et al. (2012), as a core strand of second-wave practice theory, drawing out its connection to Giddens, Bourdieu, de Certeau, Lefebvre, and the underlying social ontology they collectively rest upon.

Practices as Both Performances and Entities

There are various definitions of 'practice' (Schatzki, 1997; Rouse, 2001; Hui, 2017), with Reckwitz (2002) using it as both an abstract description of everything humans do (*Praxis*) and as a singular term for specifically reproduced ways of doing (*Praktik*). In this book, the focus sits on the

latter, where the terms 'practice' (singular) and 'practices' (plural) refer to various everyday life activities carried out by people (the humans that make use of digital maps to wayfind, geolocate, view place, and to carry out various activities). This does not presume practices to be solely individualised ways of doing (c.f. Giddens, 1984, chap. 1); rather it relates to a separation Shove et al. (2012) make between practices as *performances* and practices as *entities*, that is, between:

> performances, undertaken by multiple practitioners in diverse spaces and times [which] can be conceptually brought together in considering a practice-as-entity (Hui, 2017, p. 55)

This affords two discrete (but connected) levels of analysis, each operating at a different scale. A focus on *performances* provides access to empirically observable behaviours within locally situated contexts (much as de Certeau would). Meanwhile, *entities* are constituted through multiple performances carried out in more or less the same way, by either the same or different people (potentially at different times) across local contexts (as would a study aligned with Giddens' notion of 'structure'). Therefore, a focus on practice entities provides access to how different practice performances anchor, entangle with, and contradict one another; a useful starting point for understanding how engagement with digital maps might serve to anchor or order wider sets of social practices. In the next chapter, these terms are connected to a wider practice theory ontology, in which practices are argued to 'bundle' together within 'complexes' as distinct and repeated groupings, e.g., the use of a SatNav is often bundled with car-driving as part of a complex of travelling practices. There, the totality of all ongoing practices, bundles, and complexes are argued to constitute an emergent 'plenum' as the base social ontology underpinning everyday life.

Element 1: Materials as Co-constitutional of Practices

While Shove et al. (2012) present performances and entities as separable levels of analysis, they argue that practices at both levels are constituted through an interplay between three interrelated *elements* (materials,

competencies, and meanings). Interestingly, their focus on materials foregrounds the historical influence of STS on the development of practice theory between its first and second waves:

> [although] things barely feature in the writings of Bourdieu and Giddens, science and technology scholars have demonstrated that physical objects and technologies are mobilised in the doing of practices. (Blue & Spurling, 2017, p. 32)

However, when Shove, Pantzar, and Watson claim that material 'things' (objects and technologies) are 'integral to the conduct of a practice' (Shove, 2017, p. 157; also Shove et al., 2012), they locate materials as internal (intrinsic) elements *of* practice. Thus, an onus is placed on 'the roles that materials play in the enactment of any one practice' (Shove, 2017, p. 157). By contrast, Schatzki contends that 'practices transpire amid particular arrangements and are moulded by them in various ways' (Schatzki, 2010, p. 73). He urges instead for a focus on the continually emergent 'material arrangements amidst which practices transpire' (Shove, 2017, p. 157). The latter argument assumes that materials structure practices from outside (Schatzki, 2001, p. 11) rather than being constitutional *of* them—in equality with other elements. For Schatzki materials externally mediate and therefore should be central to analysis. This opposes Shove and her collaborators (2012, 2017) who argue that Schatzki's scheme cannot 'distinguish between things which are directly, routinely, and/or only distantly and occasionally implicated in the conduct of practice' (Shove, 2017, p. 157). Similarly, viewing material 'things' as internal elements of practice entities requires an understanding of *how* those 'things' have been accessed and used within performances—or negotiated as allocative resources—and not just an understanding of how they are 'arranged', contra Schatzki (2010). In turn, the position that Shove, Pantzar, and Watson take leads to a looser definition of materials as the 'things, technologies, tangible physical entities, and the stuff [of] which objects are made' (Shove et al., 2012, p. 14). Here, Spurling et al. (2013) even define infrastructures as materials (equal to objects and tools), a point Shove et al. (2015, p. 10) extend further, arguing that:

> infrastructures like road networks and electricity grids constitute forms of materiality… [they are] multiple in the sense that they are implicated in the conduct of several practices at once, collective and obdurate… Such arrangements do not occur at random, hence our interest in planners' and designers' roles in shaping the material elements and arrangements of which multiple practices are constituted.

This line of reasoning subtly shifts analytical focus away from practices being constituted *within* arrangements of materials (materially mediated practices), to consider how materials (and arrangements of materials) travel across practices and how they might serve to constitute infrastructures. In this, however, materials remain co-constitutional as far as they are not the central factor around which practices are structured, but are instead equal to competence and meaning.

Extending this latter definition of materials to maps avoids any a priori assumption that they *do* mediate practices—a stark contrast with Power et al. (2012) and Shapiro (2017) discussed in the previous chapter—whilst remaining sensitive to their anchoring potential as internal elements of practice that *might* mediate. That is, Schatzki's approach would risk media-centricism on starting a priori with the assumption that practices are arranged around maps. Following Shove at al., a deeper query can be raised on how to treat virtual materials (such as digital maps, films, software applications, or more broadly data). That is, what degree of knowledgeability should be afforded to people in their engagement with digital media? On the latter point, it is worth adding that Shove, Pantzar, and Watson do not assume that materials are drawn on unconditionally or passively. Instead, they acknowledge that materials require access, expertise, know-how, willingness, and skill. Also, that materials must be meaningful to people in some way to be taken up. Thus, they require sensitivity to structural differentiation during data analysis.

Element 2: Competence as Transferrable and Latent Skill

People must possess prerequisite knowledge or skill to be able to engage with a *material* in the performance of particular practice, i.e., one must know how to hold a knife and fork, and comprehend their designed

purpose in order to utilise them as implements at a dinner table. The same goes for digital maps. Thus, a lack of competence can present just as much a barrier as a lack of material access, opening a second avenue for inequality. Likewise, 'bodies also offer a range of sensory capabilities that enable' (Maller, 2017, p. 73) or impair a participant's ability to perform a practice or to do so at a specific time/place. To simplify this notion, Shove et al. (2012, p. 23) conflate 'multiple forms of knowledgeability and practical knowledgeability' into the single term '*competence*'. To describe how competence operates, they argue that 'knowledge must be "abstracted" from a local situation before it can travel [and be] reversed when it arrives in some new destination' (Shove et al., 2012, p. 48). Addressing questions about *how* such abstractions and reversals take place, and how competences 'travel' both across practice entities and between participants, Shove et al. (2012, p. 51) avoid simple or linear encoding/decoding models of communication—such as those found in functionalist inspired map-communication models (see previous chapter). Instead, they introduce the concept of *transferability*, asserting that:

> …competences like those of controlling a ball or speaking in public can be carried over and reproduced in others… [s]pecific competences are transferrable because they are common, or at least common enough to a number of practices.

While this explains how some 'common' competences may be transferred, it requires pre-existing overlap between practices, rendering the concept useful only when practices are 'common enough' for competences to be transferrable, i.e., the skills required to read a paper-based topological map are similar to those required to read the same map digitised on-screen. When they are not particularly common, then 'commonality ha[s] to be actively built at the level of ideas and discourses before related forms of know-how could be transferred' (Shove et al., 2012, p. 53)—a process which would account for new knowledge generation or creation. This notion of an enacted commonality resonates with Collins' assertion that competence is 'gained by prolonged social interaction with members of the culture that embeds the practice' (2001, p. 116). Thus, it locates competence within sociality, repetition, and the building up of

commonality through the normative sanctions of a locally enacted structure (Barnes, 2001, p. 34; Blue et al., 2014, p. 7). In turn, it also connects competence with meaning-making whilst addressing how competencies can be distributed and shared.

Shove et al. (2012) conceptualise abstraction, reversal, and transference to take place within ongoing practice performances carried out by knowledgeable and reflexive participants. This connects both with Giddens' memory traces and Bourdieu's habitus, where '…the capacity to decode is unequally distributed… born of previous practice-based experience…' (Shove et al., 2012, p. 53). Here, they use the term 'decode' in a different way than in earlier cartographic theorists' functionalist and/or semiotics inspired notion of cartographer's encoding and map-users' decoding map content. Instead, Shove, Pantzar, and Watson use the term to account for why different participants' individualised performances of a shared practice entity might vary. In their scheme, decoding requires individuals to draw on (continually updated) personal memory traces of past practices to locate, abstract, and reverse the relevant competencies to carry out a practice. Furthermore, they assert that competencies are '… modified, reconfigured and adapted as they move from one situation or person to another and as they circulate between practices' (ibid.). To extend this dynamism, they add that all three practice elements '…have lives that extend before and after those moments of integration' (Shove et al., 2012, p. 40). Thus, there is a separation between competence (as a practice element) from the moment of integration (in performance)—without assuming that competence is drawn on or enacted in discursive consciousness. In addition, Shove, Pantzar, and Watson assert that '…competences can lie dormant, persisting in memory for years without being activated, or… preserved in written forms…' (2012, p. 34). That is, competence may be stored in an individual's memory traces and can travel through time in latent form, ready to be drawn on in memory traces and applied/transferred to other practices at any time. Alternatively, competence may be mediated via (material) allocative resources, such as books and other media. In other words, objects may store and mobilise competence across practice entities (Watson & Shove, 2008). This latter point connects with a central theme of the book—a suggestion that media (such as digital maps) should be treated as more than simply

instrumental materials, but as resources that store competence and enable it to be abstracted, reversed, and transferred across contexts, i.e., that being able to wayfind via a mobile phone digital map application in the countryside should translate quite easily to doing so with a city map on a 5G smart kiosk within an urban environment.

Element 3: Meaning as Classifications and Associations

For Pantzar and Shove (2010, p. 450), 'meanings' refer to the symbolic 'image' of a practice entity, whereby they introduce the terms *association* and *classification* to account for how materials and competences are made meaningful (how images are constructed). Here, their work redresses a limitation in Lefebvre's spatial triad in accounting for how representational spaces are formed. For example, where Shove et al. (2012, pp. 53–56) describe the emergence of Nordic walking practices, they follow Pantzar and Shove (2010) to describe walking sticks as materials that were initially symbolically *associated* with frailty and thus *classified* as medical aids. They then describe subsequent successful attempts by experimental walkers (with the competence and will to do so) and manufacturers (multiple participants) to *disassociate* walking sticks from that specific meaning. Next, they chart their *reclassification* and recursive *association* with a new image—as materials that are symbolically representative of health and outdoor activity. In doing this, Pantzar and Shove (2010) discuss the practice performances that led to the emergence of a new image for walking sticks, being undertaken by multiple participants to generate a practice entity that is collectively labelled Nordic walking.

However, their conceptualisation foregrounds meaning at the level of practice entities, leaving an important question about how meanings are enacted through shared performances unaddressed; a limitation for which their practice theory has been rightly criticised (Hui et al., 2017, p. 2). It *is* partly addressed when the notion of meaning is employed to:

> …collapse what Reckwitz describes as mental activities, emotion and motivational knowledge… to represent the social and symbolic significance of participation in any one moment… (Shove et al., 2012, p. 23)

Thus, their underlying epistemic stance follows that '…as soon as a person is competent to perform a practice and is "carried" away by it, she incorporates and actualises its mood' (Reckwitz, 2017, p. 119); a position that connects with a secondary argument that practice performances are only meaningful in relation to the entities they constitute and reproduce (Schatzki, 2001)—and in which they are constituted. But how are such relational meanings stabilised or modified? Addressing this, albeit via different analytical route, Orlikowski (1992, p. 406) argues that:

> …if agents changed the technology—physically or interpretively—every time they used it, it would not assume the stability and taken-for-grantedness that is necessary for institutionalization.

She views interpretation as something that *can* be rational (inside people's heads)—and carried out in discursive consciousness. Moreover, she introduces the concept of 'interpretive flexibility' (Orlikowski, 1992, p. 407) to argue that individuals *may* understand and use technology as instructed/designed (scripted)—opening potential for error, misinterpretation, and unintentionally subversive practices. Alternatively, to borrow de Certeau's terms, people may 'tactically' modify their understanding or use of a technology in ways that differ from its 'strategically' scripted design. In this, individuals are understood to be interpretive (reflexive) in their understanding of practices (if not always knowledgeable), both in their conceptualisation of materials, in the competencies they apply, and in the meanings that they ascribe (through classifications and association).

To flesh the above out further, the experimental psychological concept of a Bayesian brain (Clark, 2018; Spiegelhalter, 2020) proves useful here. In this approach, individuals are seen to typically apprehend and make sense of the world iteratively, based on both past experience (memory traces) and through real-time in situ lived experience, i.e., at the moment of applying competence to materials; or in Lefebvre's terms, at the juncture between representational space and spatial practices. Digital maps, for instance, are comprehended by drawing on past experiences of using web-based resources and paper-based maps, as well as memories of using a digital map in the past, all in combination with physically making use

of a map (as material form) in situ as resource to cross-check with the surrounding environment e.g., for wayfinding directions before, during, or after a walk. They may also be combined with other practices relevant to the context, i.e., traces of past practices inscribed within place. Here, for example, a digital map may show a path around the perimeter of a field, but a footworn natural pathway may have eroded grass diagonally across it. A person using a digital map as material must draw on memory traces and meaning to make sense of, and to decide which route to follow—the map or the traces inscribed into the material form of place by others' past performances. However, for meanings to become stabilised, even within a Bayesian logic, they must first be brought into being (emerged and enacted) *through* repeated (and shared) performance. In the example above, the digital map-user must have experienced a pathway before, and others must have previously walked diagonally across the field to erode the grass. With digital media, the above discussion underlines the importance of remaining sensitive (throughout analysis) to the processes by which materials become 'taken-for-granted' (Throop & Murphy, 2002, p. 196; Ling, 2012, p. 14). For instance, how ubiquitous media (such as smartphones) become embedded within people's everyday routines (Featherstone, 2009), and how meanings operate within that process of embedding.

Integrating Media Studies and Sociologies of the Internet

Earlier, the chapter drew on Shove et al. (2012) to argue that media resources can store latent competence. This raised questions about the role of media (digital or otherwise) as material elements of practice. Likewise, Shove, Pantzar, and Watson argue that people often hold '…limited first-hand experience of how a practice is reproduced by others, it is nearly always the case that elements of meaning are quite literally mediated' (2012, p. 55). However, they provide no direct account of *how* mediation operates. Couldry (2014) finds a similar limitation in other praxeological STS approaches. For example, he notes there is '…no

account of how representational contents and interpretations get embedded in the world…' (Couldry, 2014, p. 31) in ANT or non-representational theory (NRT), leaving both short of addressing how media operate. Thus, practice theories are limited in their capacity to explain how media are engaged in the development, maintenance, and circulation of associations and classifications (meanings). They are also limited in their consideration of connections between and across media, such as between the digital maps and external datasets entangled within practices, and the bundles and complexes they constitute and are constituted within, or their relation to the wider plenum of practices. This section incorporates concepts from media studies and sociologies of the Internet into the framework to redress some of these limitations, supplementing practice theory with digital sociology. Doing so connects the chapter with a wider set of debates on the social implications of digital technologies.

Integrating Media Studies: Remediation, Hypermediation, Immediacy

To describe the way media operate, Couldry (2014, p. 137) refers to *mediatisation* as a process:

> …comparable to globalization and individualisation… any overarching concept not identifiable with any single logic… [that] points to the changed dimensionality of the social world in a media age…

By contrast, when other theorists describe *mediation* (Couldry, 2014, p. 135), they refer to either: (1) micro-processes of mediatisation (Livingstone, 2009, p. 8), i.e., where studies of media consumption are used to bridge a conceptual gap between individual performances and larger bundles and complexes of practices, such as the impact of viewing Google Earth for humanitarian interventions (Parks, 2009); (2) a duality between individualised media consumption and the classification and association of a new media at the point of its integration within society, i.e., domestication of the technology (Haddon & Silverstone, 2000; Webster, 2011); (3) the '…cultural processes by which power is

negotiated between dominant institutions and popular or resistant movements' (Livingstone, 2009, p. 10), whereby materials are de-centred, e.g., viewing neogeography as an emancipatory set of mediations that subvert hierarchical power structures (Turner, 2006); or (4) the processes by which media—as instrumental material artefacts (objects, devices, things) are used to '…overcome (or transform) distance, both physical and symbolic, in time and space' (Livingstone, 2009, p. 10).

All four definitions are valid. However, there is another twofold understanding of mediation that pairs better with practice theory. It follows Webster (2011) and Haddon and Silverstone (2000) to treat mediation as a duality between the use of media (understood as a material element within practice performances), and the performance of classifications and associations (ascription of meaning). It also follows Livingstone (2009) to hold mediation as the process by which media enable practices to extend beyond a local context. Thus, the approach leads to a twofold definition of media: (1) as the overarching combination of information and communication technologies (ICTs) that permeate the plenum of practices and carry meanings; and (2) as a plural term for medium (an instrumental material artefact). To that end, understanding how media circulate and interact requires some unpacking. It is also complicated by the entanglement of digital maps with other resources, i.e., external datasets embedded within digital maps, the affordances to engage with digital maps across various physical devices, and the ability for embedded digital maps within other media (i.e., using AJAX/JSON). In turn, understanding how media operate requires appropriation of a few terms and concepts from media studies. For example, when Bolter and Grusin explained how (then) new media '…oscillate between immediacy and hypermediacy, between transparency and opacity…' (1999, p. 21), they argued that as media artefacts develop. In doing so, they moved towards a 'transparent immediacy' where user experience extends:

> …beyond the medium to the objects of representation themselves… linear-perspective painting and film may keep the viewer distant from what he views, in virtual reality the viewer steps through Alberti's window and is placed among the objects of representation. (Bolter & Grusin, 1999, p. 83)

Relating this to digital maps and their ability to provide 'views' that shift cartographic representation from primarily topographic static representation of paper-based maps to the slippy, spreadable, and dynamically navigable photo-realist (indexical) street-level imagery that veraciously mimics the visual aesthetic of lived experience, e.g., Google's Street View or Bing's StreetSide, could be labelled 'immediacy' (Bolter & Grusin, 1999). Likewise, when Power et al. (2012) and Shapiro (2017) express concern over Google Street View's potential to stigmatise place identities, they both rely on an underlying assumption of digital maps' immediacy. In this, Bolter and Grusin (1999) and Power et al. (2012) reify media by marginalising users as passive, locating media effects as an attribute of the medium itself, and thus imbue media with agency. Both lean towards media-centricism in that respect to examine the impact of a medium on social actions. By contrast, practice theorists view media as co-constitutional material elements of practice; specific media (such as smartphones and digital maps) are artefacts engaged with in practical consciousness, according to memory traces, body limits, specific competencies, and according to the meanings ascribed to them. Hence, the framework for this book reappropriates Bolter and Grusin's (1999) term 'immediacy', using it instead as a term to refer to scripted transparency in the design and development of a medium, rather than in its conceptualisation by end-users or a facet of use. In turn, this raises an interesting question about how the immediacy of a specific medium is accepted or rejected throughout engagement—an especially pertinent question amidst debates about the ubiquity of media devices (Featherstone, 2009).

In theorising connections between media, Bolter and Grusin argue that '…[w]henever one medium seems to have convinced viewers of its immediacy, other media try to appropriate that conviction' (Bolter & Grusin, 1999, p. 9). For example, Google's Street View and Bing's StreetSide offer immediacy as standalone media resources while incorporating various datasets from elsewhere, such as public transport routes and business address listings. This provides a rich and 'immersive' user experience, or '…a feeling of fullness, a satiety of experience, which can be taken as reality' (Bolter & Grusin, 1999, p. 53). In this, digital maps invest their entangled datasets with the same immediacy (and legitimacy) they offer as standalone technologies.

Alongside *immediacy*, Bolter and Grusin present connections between media as *remediation* and *hypermediation*. They argue that 'remediation' refers to '…the representation of one medium in another… [as] a defining characteristic of the new digital media' (Bolter & Grusin, 1999, p. 53). For example, a digital map can be said to be remediated when it is embedded within a HTML webpage frame via AJAX/JSON.

Bolter and Grusin add that remediation also entails '…a process of cultural competition between or among technologies' (Bolter, 2010, p. 23). In other words, '…old and new media [are] cyclic and dynamic whereby older media and practices always infuse the new' (Hjorth, 2016, p. 175). This offers a non-teleological understanding of technical development, which is congruent with practice theory in as far as it accounts for use—and not just design. For example, when Shove et al. (2012) discuss the change to calligraphic consumption patterns that occurred when ballpoint and biro pens were first introduced and normalised in the 1960s (Shove et al., 2012, p. 59) they do not hold their technical development or increased use to be necessarily destructive to practices that involved older media. Ballpoint and biro pens did not entirely replace fountain pens; instead, fountain pens were (re)conceptualised (classified and associated) as normative materials for different sets of practices. Ballpoints and biros became 'normalised' in terms of the way they were recursively stabilised through repeated performances as writing materials for most everyday writing tasks. Meanwhile, fountain pens were reconceptualised (classified and associated) as 'normal' materials for important legal documents and specialist calligraphy (Shove et al., 2012, pp. 59–60). Similarly, for Bolter and Grusin (1999) the latest format or version of a medium does not necessarily replace previous ones. Instead, differing media formats co-exist alongside one another with users often drawing on both in creative ways to develop new and novel configurations. Here, for example, a user may choose to print a digital map on paper or hand-draw one seen on-screen or build their own mashup.

If remediation explains competition *between* media, 'hypermediation' explains their entanglement. For Bolter and Grusin (1999) the development of graphical user interfaces (GUIs) at Xerox PARC in the 1960s and 1970s began with remediation, where affordances for 'windowing' content '…replaced the command-line interface, which was wholly

textual' (Bolter & Grusin, 1999, p. 32). This undoubtedly helped them with their HTML map usability as a precursor to digital maps (see Chap. 2). However, they also note that the '…multiplicity of windows and the heterogeneity of their contents mean that the user is repeatedly brought back into contact with the interface…' (Bolter & Grusin, 1999, p. 33). In this, Bolter and Grusin treat GUIs as centring media (a term defined in later chapters) that anchor other media, acting as a central point of convergence, e.g., they would hold Google Maps as centring of bus timetable datasets, much akin to Bush's (1945) initial vision of memex.

Integrating Sociologies of the Internet: Networked Individualism

The previous section provided three key terms: (1) immediacy—the direction towards which media are designed—as increasingly transparent interfaces; (2) remediation—the competition between older and newer media formats and their combination in new hybrid forms; and (3) hypermediation—as entanglements of media, with one centred in another. While these terms describe how material elements (as objects) are entangled within practice performances, they do not address media as a wider set of intangible technologies that connect with any social transformation across the plenum of practices, leaving the framework developed so far short of being able to address digital maps as slippy and spreadable. To address this, this section discusses media practices in the enactment of social organisation.

Jenkins asserts that the development of 'new' (web-based) media initially brought about a shift towards a 'convergence culture', where mass participation replaced mass distribution, and in which '…consumers [were] encouraged to seek out new information and make connections among dispersed media content' (Jenkins, 2006, p. 3). This suggests (new) media technologies offer emancipatory potential through their affordances for remediation and hypermediation—commensurable with a similar sentiment in public participatory GIS (P/PGIS) and neogeography. However, Jenkins later extended his conceptualisation of (new) media into the concept of media being 'spreadable', whereby:

> …technical resources that make it easier to circulate some kinds of content than others, the economic structures that support or restrict circulation, the attributes of a media text that might appeal to a community's motivation for sharing material, and the social networks that link people through the exchange of meaningful bytes. (Jenkins et al., 2013, p. 4)

In this approach, media are seen as material elements that offer emancipatory potential, but that also connect to wider societal change at an ontological level, raising serious questions about the extent to which media constitute everyday life. What Jenkins, Ford, and Green suggest is that content carried across new media (such as digital maps) serves to structure practices. In turn, their position leans towards a soft media-centrism (and soft structuralism) in as far as it elevates the status of media into holding greater weight in the constitution of practices than other elements (pace Schatzki, 2001). However, the concept of new media being 'spreadable' provides a useful term for understanding of how materials entangled in practice performances carry across to the wider plenum of practices, raising an interesting set of questions about how media engagement relates to social organisation—and thus to the ordering of social practices at a macro-scale.

One way to address those questions is to draw on the work of Castells, who claims that the development of web-based technologies has not only brought about a cultural shift in the way meanings are circulated, but that they have also radically transformed politics, economies, and modes of social organisation. He argues that a 'Network Society' (Castells, 2010) has emerged as a result, where '…social structure is made around networks and microelectronics-based, digitally processed information and communication technologies…' (Castells, 2009, p. 24). Furthermore, he argues that:

> …we have entered not only a new technological paradigm, but a new form of organizational structure for everything we do… from the vertically organized, standardized, rationally structured, hierarchically structured forms of activity to networking forms of activity… (Castells, 2000, p. 152)

This network metaphor matches Berners-Lee's (1999) original vision of the web as a structure of 'nodes' that would organically connect people, fostering greater collaboration and equality. However, Castells (2010) goes further in assuming that new media have led to an ontological shift—away from vertical and hierarchical societal structures and towards horizontal networks whereby:

> Increasingly people are organized not just in social networks, but in computer-communicated social networks… the Internet provides an appropriate material support for the diffusion of Networked Individualism as the dominant form of sociability. (Castells, 2003, pp. 130–131)

In this, he argues that not only has the Internet led to a change in the way societies are organised (through computer-mediated social networks), but that micro-social interactions have changed as a result. That is, Castells argues that the Internet mediates interaction between people to the extent that sociability (and by extension social positions) have radically changed, marking a shift towards 'networked individualism'; a term Rainie and Wellman further extend by arguing that people:

> …have become increasingly networked as individuals… it is the person who is the focus: not the family, not the work unit, not the neighbourhood, and not the social group… (Rainie & Wellman, 2012, p. 6)

In this, Rainie and Wellman follow Castells to argue that a radical ontological shift in the plenum of practices is underway, whereby individuals' interactions are performed through dispersed networks, rather than amongst local groups. In contrast, Webster contends that, while ICTs (including the Internet) often do mediate interaction, they have not (yet) begun to constitute an entirely new form of social organisation:

> …the movement of products, peoples, and information has expanded and accelerated to become a defining feature of life today… Information and Communication Technologies are important to this, but they should not be thought the determining factor. (Webster, 2014, p. 136)

In short, Webster opposes Castells' notion that a network society is emerging. Instead, he argues that, although ICTs offer greater affordances to connect individuals and practices across contexts, they should not be assumed to be responsible for any wider structural transformations to society *a priori*. Instead, Webster suggests that a turn to the mobilities paradigm could help to address such complexity without falling foul of the technological determinism that he locates in Castells' approach (Webster, 2014, chap. 7). The latter shifts from a social science of static institutions (i.e., family life, religions, nation-states etc.) to instead focus on how 'various objects and technologies, people move…[and] how images and communications are also intermittently on the move [also how] those actual and potential movements organise and structure social life' (Sheller & Urry, 2006, p. 212). Thus, it places focus on how people and things traverse space and time, and how both serve to constitute everyday life. In doing so, the approach is fully commensurable with practice theory. Returning to Webster's main point, however, he does not directly dispute the emergence of networked individualism, or any change to modes of social organisation. Instead, he simply observes that media may not be the sole catalyst for social change and argues that they should not be assumed upfront to be central. In examining how digital maps feature in everyday life, this book remains sensitive and open to the possibility of an emerging networked individualism. However, its analyses are guided by Webster's rejection of any a priori assumption that the plenum of practices has already been radically altered.

Defining the Framework: Practice-orientated Digital Sociology

So far, the chapter has integrated concepts from media studies and sociologies of the Internet with practice theory to develop an analytical framework. However, it is not the first attempt at doing so. Nick Couldry took a similar approach almost two decades ago—shortly before the advent and proliferation of digital maps—calling for:

> …a new paradigm of media research…[that] take[s] in the whole range of practices in which media consumption and media-related talk is embedded… as practices *oriented* to media. (Couldry, 2004, p. 120, emphasis added)

His attempt to de-centralise media (as text and content) followed in his argument for a socially orientated approach to media studies which understood media use as part of a wider set of social practices, and not necessarily central to them (Couldry, 2014, pp. 6–8). In appropriating his term, the framework developed in this chapter can best be described as being 'practice-orientated' rather than socially orientated per se; it seeks to uncover the social consequences of how people engage with a particular digital media technology rather than the implications on society for people's engagement with media in general. Similarly, where the framework incorporates concepts from sociologies of the Internet, it becomes tailored towards examining the social implications of people's practices (performances and entities) of engaging with digital media, and thus to other hypermediated resources—not just to digital maps alone. This latter point connects the framework with debates in mobile media studies, where various devices and platforms are included. It also connects with debates in critical data studies, over the politics of data entangled with digital maps. As such, the framework connects with Lupton's (2015) assertion that we are amidst a broader 'digital turn' (see also Ash et al., 2019) in social theory, where an emerging theoretical concern rests with understanding people's:

> …[m]ovement in public space… [and their] interactions with government and commercial institutions are organisations [that] are now mediated via digital technologies in ways of which we are not always fully aware. (Lupton, 2015, p. 3)

Lupton locates four distinct approaches for contemporary sociological research on digital technologies (Lupton, 2015, pp. 15–16), collectively labelling them 'digital sociology'. The first, *professional digital practice*, concerns the changing role of sociologists in embracing digital public life, and the ethics and involved with becoming visible as figureheads for key

debates—often via social media platforms, e.g. (Carrigan, 2016). The second approach, which is more relevant to this book concerns the *sociological analysis of digital technology use*. For example, Marres' (2012, 2017) call for a more 'technology-aware' approach to understanding social life. The approach will connect with a burgeoning body of work around digital geographies (e.g., Ash et al., 2019) too, where an understanding of how digital technologies are reshaping our relation to lived space becomes the main focal point. Lupton's third approach, *digital data analysis*, involves novel methods of dealing with big data (e.g., Savage & Burrows, 2007; Ruppert et al., 2013), which has been expanded within social data science, computational social science, and critical data studies by using tools such as machine learning and complex statistical modelling. Here, research has largely been powered by the rapid growth of libraries for scripting languages such as R and Python. In a fourth approach, *critical digital sociologies* focus on understanding political economies and the circulation of power within digital technologies for instance, examining the structuring potential of algorithms (e.g., Kitchin & Dodge, 2011; Beer & Burrows, 2010). While the four themes overlap in various ways, they each present a particular facet of digital sociology for Lupton.

Similarly, when Orton-Johnson and Prior (2013) draw together various sociologies of digital technology under the rubric 'digital sociology', they separate the field into research on: *relationships* and the complexity of understanding mediated sociality; studies of the constitution of *spaces* (virtual and physical space and place) in the context of increased surveillance and mediated negations of trust and risk; *structures*, from macro-scale social systems to enactment through practised engagement with digital technologies—including a discussion of a network society (van Dijk, 2013). Orton-Johnson and Prior also locate a focus on *mediations*, directed towards the changing '*…role of social actors in new forms of digital mediation…*' (2013, p. 7); and another on *practices,* in a subfield that centres on the impact of technological change and innovation on existing practices—primarily in education and healthcare (albeit with little connection to practice theory). As such, the research within this book touches on all these aspects at points.

By drawing on the terms and concepts above, the framework developed in this chapter could be considered a practice theory. However, by

drawing on media studies and sociologies of the Internet to redress some of the limitations of practice theory (i.e., in its treatment of media as materials) the framework might be better described as being practice-orientated (following Couldry's use of the term). The framework can also be described as digital sociology in its focus on developing a 'sociological analysis of digital technology use' (Lupton, 2012, 2015) steeped in 'mediation' and 'practices' (Orton-Johnson & Prior, 2013)—albeit overlapping with digital geography. To that end, the framework developed in this chapter can be labelled a 'practice-orientated digital sociology'.

Conclusion

This chapter has developed a practice-orientated digital sociological analytical framework. Its base stems from distinctions Shove et al. (2012) make: (1) between practices performances and practices entities as separate levels of analysis; and (2) between materials, competencies, and meanings as the three elements that constitute all practices at both levels. The chapter has detailed each of these elements, with materials understood to encompass both physical and virtual objects, i.e., media devices (artefacts) and intangible software. Competencies are understood as the skills people draw on to make use of materials, either in situ or as latent resources stored either in memory traces or media. They are transferable (to varying degrees) across practices. Meanwhile, meanings are understood to be steeped in shared classifications and associations, requiring interpretation (decoding). Integrating concepts from first-wave practice theory provides additional purchase. For example, Giddens' structuration theory provides an understanding that latent competencies often exist within memory traces, and that individuals draw on their competences in practical consciousness. Also, that individuals may not always be able to articulate the classifications and associations they draw on to ascribe meanings. Likewise, drawing on Bourdieu's doxa and habitus provides an additional level of understanding about how practices can be internalised and shared. Meanwhile, de Certeau's notions of tactics and strategies explain how power operates in shaping practices, and in their relationship the constitution of place and social space. By extension, Lefebvre's spatial

triad provides a language for explaining how the abstract scheme of a map relates to sense of place and lived spatial practices. Together, the practice-orientated framework provides useful entry how digital technologies (such as digital maps) can be engaged with over time and embedded into everyday life.

One limitation of the framework, however, is that it does not offer a direct way to analyse whether or when structural transformation to modes of social organisation have taken place (c.f. Castells, 2010; Wellman et al., 2006). The analysis in this book, however, is not directed towards macro-scale phenomena; instead, it focuses on micro-scale engagement with digital media (practice performances) and the extent to which that engagement contributes towards the anchoring or ordering of macro-scale phenomena, aligning itself with constructivism. Another limitation of the framework above, and of this chapter, is that the epistemic and ontological basis of practice theory have not been comprehensively set out, nor has the chapter provided any explanation of how practice-orientated digital sociology framework might be operationalised. Doing so in the next chapter shifts the framework away from being purely conceptual, and instead extends it to being empirically applicable.

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