SOCIAL CHANGE IN A MATERIAL WORLD

THEODORE R. SCHATZKI

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Social Change in a Material World offers a new, practice theoretical account of social change and its explanation. Extending the author's earlier account of social life, and drawing on general ideas about events, processes, and change, the book conceptualizes social changes as configurations of significant differences in bundles of practices and material arrangements. Illustrated with examples from the history of bourbon distillation and the formation and evolution of digitally-mediated associations in contemporary life, the book argues that chains of activity combine with material events and processes to cause social changes. The book thereby stresses the significance of the material dimension of society for the constitution, determination, and explanation of social phenomena, as well as the types of space needed to understand them. The book also challenges the explanatory significance of such key phenomena as power, dependence, relations, mechanisms, and individual behavior. As such, it will appeal to sociologists, geographers, organization studies scholars, and others interested in social life and social change.

Theodore R. Schatzki is Professor of Geography, and of Philosophy and Sociology, at the University of Kentucky, USA. He is the author of *Social Practices, The Site of the Social, Martin Heidegger: Theorist of Space*, and *The Timespace of Human Activity*. He is also co-editor of, among other works, *The Practice Turn in Contemporary Theory, The Nexus of Practices*, and *Questions of Practice in Philosophy and Social Theory*.

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For my family

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SOCIAL DYNAMICS II

Material events and processes

Chapter three spelled out the breadth and depth of the material dimension of society. Material entities, events, and processes localize actions and practices, track social events, anchor existential spaces, support practices and bundles, channel activity, damage and pass through social phenomena, and induce as well as prefigure activities and practices. They are also used, coped with, and set up as well as fabricated in bundles and themselves mediate, tune, and connect bundles. Given the extensive presence and bearing of materiality on social life, it is no surprise that material events and processes form a second important general type of generator of significant differences in social phenomena. As noted in chapter three, however, although social theory has increasingly attended to materiality over the past thirty years, it still routinely underestimates the contribution of the material world to social change. I should state at the start that events and processes of sorts other than material ones contribute to social change. Biological events and processes rank high on any list of these, though many theorists categorize biological entities, events, and processes as "material" phenomena (see chapter three). The present chapter, however, will concentrate on material events and processes alone. Their significance for social life and change is great but still underappreciated.

I remind the reader that the account in this book works with two conceptions of process: integrated whole nexuses of continuous events (Rescher) and unfolding advancings (Bergson). Examples are, respectively, the process of bourbon distillation and certain components of this process such as heating or condensing. Sotto voce, these two conceptions of process have governed to this point in the book my identification of particular occurrences as processes as opposed to events or series of events. They will continue to do so in what follows.

Chains of action constitute or effect differences and changes of all the sorts that befall bundles: in activities, in what organizes practices, in arrangements, in relations between practices and arrangements, in relations among bundles, and in space and time. The direct contributions of material things, events, and processes to difference and change are narrower in scope, embracing differences and changes in activities, arrangements, and relations. As discussed, for example, material events and states of affairs can induce activity. Material events and processes can also directly effect differences and changes in material entities, arrangements thereof, and material connections between arrangements. Material events and processes regularly effect differences and changes in bundles and constellations in these ways. In addition, material events and processes are crucial to the operations of all manner of bodies and artifacts, including machines and electronic devices. And, as discussed in chapter three, the material world extends deeper and farther than the plenum of practices, thereby opening up social life to inner and broader nature and decaying and forsaken artifacts. A rain-swollen river can reorder arrangements by altering its course, solar flares can knock out communications systems, and tornados can collapse buildings, just as biological infection can attack bodies and affect practices and bundles, and informational processes can overload and cause computer system malfunction.

In the end, practices and bundles mediate most of the effects that material events and processes have on social life, that is, the differences and changes in practices, arrangements, and bundles that arise from captured, created, and exploited material processes, the material entities and flows thereof that course through social life, the material conditions and processes that suffuse or cut into the plenum, material connections among arrangements, and, of course, material things and events mediating chains of action. For instance, the ability of a new chemical energy storage process or a new electronic data transmission process to effectuate differences and changes in what organizes practices of, respectively, battery production or digital communication is mediated by activities composing these practices: for changes in the organizations of these practices are effected by activities that react to these processes. The same holds of the differences that weather conditions such as drought, heavy rainfall, and wind make to social life. Practices and bundles mediate most effects of material events and processes on social life in part because people, in carrying out their practices, often seek to capture, utilize, transform, create, anticipate, or counteract such events and processes, usually in or through the material entities and setups thereof that they design and construct. Think of the bundles at a distillery or server—or, for that matter, agricultural—farm. Indeed, the construction of the built environment (like the fabrication and use of technology) is partly, in effect, an attempt by humans to capture, transform, create, counteract, link, and utilize material (and biological) events and processes; it is also, of course, an attempt to create spaces and places for human practices.

The material relations and processes that are captured etc. in technology and the built environment can contribute to social changes. Consider changes that

ensued in the formation of social associations consequent on the introduction of new ICTs and the cascade of software that immediately followed. Exploitation of material properties of electronic media and of the electronic processes bound up with these enabled new practices, new forms and means of interaction, and the development of new ways for personal ties, emotional attachments, "we" conditions (see chapter seven), and common orientations toward ends to come about. None of these changes would have come about as they did in the absence of the capture, creation, and exploitation of certain material processes.

Similarly, significant changes in the bourbon industry have stemmed from changes in the material processes captured, created, and exploited in the distilling and aging processes. No better and more significant example exists than the use of charred barrels to age distilled spirits, whereby the resulting whiskey obtains the amber colors and distinctive tastes that mark it as bourbon (this technique has been used since the 15th century in France to age brandy). Because alcohol is a solvent, it breaks down substances in the interior wood walls of the barrels in which it is stored. Charring barrels before filling them with distilled spirits creates a toasted layer just underneath the charred layer where the natural sugars in the wood are caramelized and baked. During warm weather, barreled whiskey pushes through the charred layer into the caramelized layer underneath, and later in the year when temperatures cool the liquid retreats, retaining flavors and colorings that it has absorbed. Successive cycles of warming and cooling, mingling and retreat, age the whiskey and give it a flavor and coloring distinctive of bourbon. This is a fine example of specific natural processes that are captured or set up in a technological arrangement—in this case, processes of caramelization, absorption, warming, cooling, and the expansion and contraction of liquid—contributing to social change, in this case, the development of the form of whiskey called bourbon in the early-mid 1800s. This example also shows how material processes can mediate relations between social life and the wider realm of natural phenomena, in this case, the cycles of the seasons and the temperature swings that accompany them.

Another material phenomenon that is connected to arrangements and crucial to the bourbon industry, indeed, to all businesses involved with consumable alcohol, is the effects of alcohol on human behavior and the human body. These effects are essential to the very existence of the industry. They have also proven to be the cause of many detrimental situations in social life, and, among other things, have motivated the various temperance and prohibition movements that have accompanied the consumption of alcohol in modern societies. Whether ICTs have effects on the body of this direct causal sort is a matter of controversy. As any reader of this book knows, articles and reports periodically appear claiming that the use of monitors or cell phones has this or that deleterious effect on the body. If these claims prove meritorious, there is a slight chance that ICTs will follow alcohol in inducing social movements against them. These two examples illustrate, moreover, a broader point, namely, that <u>material and biological processes in the human body not just underlie people's participation in practices, but</u>

are directly engaged, exploited, and altered by practices and bundles. Practices of food consumption and of drug and perfume/cologne use are only three of a multitude of practices that accomplish this. Although a vast array of practices and bundles are directly dialed into bodily processes, the interfaces between these processes and practices are understudied (see Roepstorff et al. 2010, Niewöhner and Beck 2017, and Maller 2017).

Material structures, events, and processes also enable and bring about changes in bundles and constellations by connecting arrangements to one another. A fine example of a natural connection is the flowing of the Mississippi River, down which early sellers of Kentucky whiskey—beginning in the late 1790s and continuing as Kentucky whiskey evolved into the product known as bourbon—sent their products to the city of New Orleans. Prior to the arrival of railroads in Kentucky in the 1840s, 95% of exported Kentucky whiskey was sent to this metropolis for consumption and for distribution by boat to the Eastern seaboard (though most whiskey made in Kentucky stayed in Kentucky for consumption by locals and use as currency). Railroads, meanwhile, like canals and roads, were important artifactual material connections that linked distillers, so-called rectifying firms that mix whiskeys with other ingredients, middlemen and distributors, taverns and stores, and, inevitably, state and national governments agencies. In fact, as railroad systems became more extensive, distilleries began to relocate from the banks of streams and springs to railroad sidings and spurs (Raitz forthcoming: chapt. 3). Beginning in the 1810s, the advent of a succession of better transportation networks—steamboats, canals, railroads—contributed to the transformation of the whiskey industry in the "Western" states (Kentucky, western Pennsylvania, Illinois, Tennessee) from a largely agrarian pursuit of farmers and millers for local consumption to one involving commercial distilleries producing whiskey for wider markets (Mitenbuler, 2015: 87–8, Carson 1963: 83). Each of these kinds of material connection also opened, or further opened, social life to wider phenomena of nature, for example, freezing, buoyancy, aquatic life, and chemical bonding.

Electronic transmissions between devices such as computers, tablets, and cell phones form an important sort of material connection among bundles today. These transmissions have important natural properties, which are reflected in the construction of ICTs and the effectuation of transmissions. The transmissions, however, are created through human activity. An important ramification of contemporary ICTs is that they shuffle the relative importance of different material connections among arrangements in social life. Fixed natural or artifactual transportation connections such as rivers or road systems cede significance to the sometimes omnipresent electronic communications systems that link ICTs. With the advent of locational technology, moreover, material spaces acquire new significance, enabling the surveyable localization of people (via their bodies) and thereby facilitating new possibilities of human encounter, relation, and association. Contrary to what some enthusiasts have mused, ICTs hold out little prospect of allowing humans to conquer materiality or of making material space irrelevant.

As broached in chapter three, microbes, wind, and flows of energy, including heat, suffuse or course through the plenum. Their effects on social life are partly tied to the material composition of practices, bundles, and their components. This is reflected in the susceptibility of humans and other organisms to heat overload, hypothermia, and infection, of built structures to infestation and deterioration, and of electronic systems to solar failure and overheating. Vulnerability to material flows has also affected the production of bourbon. Mashes, for example, are subject to infestations that can ruin them, and water sources, like whiskeys aging in barrels, have often become contaminated. Energy also courses through the distilling industry, and also through digital environments, as captured and organized in distilleries, still operations, barreled and bottled bourbons, batteries, and electronic devices; as conveyed by water wheels, fire, electricity, infrastructures, and electronic transmissions; and as generally expended in all the material and biological processes that befall the bundles composing individual distilleries, the distillation industry, consumer practices, government regulation and supervision, electronic communication and association, online massive gaming, and personal mobility.

As indicated in chapter four, material things, events, and processes are crucial components of the action chains through which social life evolves. For example, it was the presence of biological infection in "sweet mash" that led to the development of "sour mash" in the 1820s, which being more acidic than its predecessor was much more immune to infection (Mitenbuler 2015: 89). Sour mash subsequently became the germ of practically all bourbons. As likewise noted in chapter four, moreover, around 1830 James Crow invented, or introduced to the United States, the continuous still (the secondary sources do not agree about the relation of Crow's device to ones developed in Europe, above all, the stills of the same sort patented by the Scottish inventor Robert Stein in 1828 and the Irish inventor Aeneas Coffey in 1830 or 1831). Prior to the advent of the continuous still, distillers cooked the fermented mash-beer in a pot and conducted the resulting vapor to a tube immersed in water where alcohol condensed from the cooled vapor. In contrast, a continuous still continuously pumps the fermented mash into the still, where it drips through a series of vertically stacked perforated plates while being steamed and giving up its alcohol as vapor, which is then conducted to the coiled condensation tube called "the worm." The invention of the continuous still allowed distillers to produce quantities of whiskey previously not dreamed of. It also required less labor. As a result, distilleries produced more whisky while being able to sell it at a lower price and still cover their costs. At roughly the same time, the construction of new transportation networks (canals and steamboat travel) allowed distillers to sell their products at a greater geographical distance through middle men. The result was elevated production and consumption, the first wave of consolidation in the history of the still nascent "bourbon" "industry," and the initial emergence of larger firms focused primarily on distilling (on all this, see Mitenbuler 2015: 87–8). The complex of action chains that effected this consolidation resulted from changes in material

arrangements (stills, canals, and steamboat technology). In turn, these material changes directly resulted from human interventions in the world.

I stated in the previous chapter that chains of action form causal threads in the practice plenum. Material events and processes fill the plenum with endless additional causal relations and processes of the bringing about sort. These relations and processes typically collect around or transpire as or as part of action chains, technological setups, built environments, and incursions of broader nature into social life. This acknowledgement of the pervasiveness of material causality does not follow from a philosophical preference for physicalism or a theoretical belief in material determinism. It instead reflects the extensive presence of material entities, events, and processes in the practice plenum and the fact that they bear responsibility for all sorts of differences and changes there.

As discussed in chapter three, however, material things, events, and processes do not just shape the plenum causally. They also profoundly prefigure people's courses of action there. How they do this is always tied to what people are up to, the practices they carry on, and the bundles in which they participate, as well as other states of the material world. Consider this example. Concurrent with the first wave of consolidations in the whiskey-bourbon industry in the 1830s and 1840s, the first "brand" names appeared. This development was preceded by the emergence of higher quality products, which in turn was enabled by Crow's efforts to regularize distillation practices scientifically. The aim of branding was to distinguish high quality products from others and to identify the provenance of the whiskeys people consumed. At first, the two primary ways of advertising a brand were branding the distillery's name on the barrels in which its product was sold (Mitenbuler 2015: 90) and placing advertisements in newspapers and magazines. Advertising disseminated brand names and offered manufacturers of quality products a way both to assure customers of this quality and to set their products off from the hordes of more cheaply produced inferior whiskeys. Although it would have been possible to festoon barrels, too, with images and texts, doing this would have been difficult. Then, in the middle of the century, bourbon began to be sold in bottles. For many years bottles were handmade and expensive, and it was not until decades later that mass production of bottles would come about. But the appearance of bottles led manufacturers to design and affix labels to them on which identifying text and guarantees of quality were proffered. The advent of smooth, hard glass bottles thus made a path of action that previously had been difficult and not considered—namely, advertising by placing images and texts on the product—easy, obvious, and insistent. In this way, the advent of the bottle prefigured the emergence of the elaborate labels that were soon proudly adorning expensive bottles of whiskey.

Material spaces—relationally defined by the legions of material entities involved in social life—also, in conjunction with practices and bundles, make significant differences to social change. For example, propinquity in material space enables associations that are initially formed through electronic digital media subsequently to incorporate face-to-face interactions among physically copresent

people. The introduction of such interactions can palpably change the character of associations: it can abet the development of deeper emotional ties or of a greater capacity to act collectively, thereby advancing the metamorphosis of the association into a community, strengthening the power of a teleological organization, or hastening the association's demise. Another example is the power of material spaces to underwrite and be incorporated into mass location-based mass games such as Dodgeball or, more recently, Pokémon Go (see chapter seven). Such spaces underwrite new game practices and the formation of associations of a novel sort that Rheingold (2002) calls "smart mobs." A final example was broached above, namely, material spaces effecting new ways of encountering, relating to, and associating with others via digital displays that show the physical locations of people and places.

Material spaces were partially responsible for various large changes over the history of the bourbon industry. Indeed, material spaces contributed to at least most significant economic changes in human history up until the present millennium. I wrote above that the development of transportation networks in the early-mid 1830s (also telegraph systems in the 1840s) facilitated the transformation of whiskey distilling from a largely agrarian pursuit to an industrial business producing for a wider market. Prior to this development, the larger sizes of the Western states had helped establish the association of whiskey with them (see Mitenbuler 2015: 73–4). Eastern farmers, living in smaller and more densely populated territories, could easily sell their entire grain harvests to millers, traders, and wholesalers. In contrast, Western farmers, living in larger and more sparsely populated lands, sold less on the market and needed to convert grain into whiskey in order to avoid spoilage. In addition, corn, the bulk ingredient in bourbon and some other whiskeys, grew much more prodigiously in Western than in Eastern states (Minnick 2016: 15–16, Carson 1963: 26). As a result, considerably more whiskey per farmer or inhabitant was produced in the West than in the East, whiskey became a form of currency in Western states (also for trade with Eastern ones), and people nationwide came to associate whiskey with the Western lands. The role material space plays in this example was tied, of course, to the transportation bundles available at the time. But this connection does not negate the difference that material space made; parallel scenarios have played out endlessly in human history.

Another example of space at work occurred after the Repeal of Prohibition in the 1930s when the bourbon industry was emerging from the distortions wrought by the Prohibition and again becoming a regular industry (Mitenbuler 2015: 197). Distilleries in the still relatively rural state of Kentucky had often been located away from cities, whereas distilleries in other states which had developed strong reputations for whiskey such as Pennsylvania and Maryland had been located around cities. The greater value of land in proximity to cities meant that during Prohibition the land that shuttered distilleries had stood on in the latter states was converted to other uses and the distilleries destroyed, whereas the distilleries in Kentucky simply sat empty. After Prohibition ended, distillers

in Kentucky could reopen shuttered but basically intact facilities, unlike competitors elsewhere who had to begin from scratch. This space-derived advantage in an industry whose products take years to mature, together with the location in Kentucky of four of the six major manufacturers that survived Prohibition by making and selling so-called "medicinal whiskey," strengthened the national identification of bourbon with Kentucky. It also eventually led both to bourbon conquering the whiskey market and to the state, in the 1930s, becoming the biggest producer of whiskey by volume.

More generally, the association of bourbon with Kentucky bespeaks the enduring effects that material phenomena can exert on social life. Over the years, many commentators (e.g., Carson 1963, Veach 2013) have claimed that the water in central Kentucky is ideal for the production of whiskey and that its use is at least partly responsible for the association of bourbon with the state. This claim cannot be true as stated since distilleries in different locations in central Kentucky used water from different sources with quite different chemical signatures (Raitz forthcoming: chapt. 3). Kentucky distilleries located along the Ohio River even used river water until it became too polluted. What might be true, however, is that the spring or groundwater used by many of the distilleries located in the so-called "inner Bluegrass region" close to Lexington was good for bourbon because it had been filtered by the limestone-rich soils abundant there (this would not be true of stream water, which quickly became polluted after settlement). Such water allegedly keeps whiskey alkaline (cf. Carson 1963: 43). The 19th-century distilleries that used this water never became large industrial operations, unlike their brethren in Louisville and Covington. They instead specialized in the production of "authentic" straight bourbons of higher quality (straight bourbon is composed purely of bourbon, whereas blended bourbon mixes bourbon with spirits distilled from grains other than corn and other colorings and flavorings). Hence, even though other 19th-century Kentucky producers of "authentic" higher quality whiskey were located in the Eastern Pennyroyal region instead of the inner Bluegrass, to the extent that the association of bourbon with Kentucky rests on the production of fine bourbon in the state (see chapter seven), it might have something to do with limestone-filtered water.

As noted, what, by contrast, was definitely true is that corn, the central ingredient in bourbon, grew prodigiously in central Kentucky. Because of this, one distinctive feature of Kentucky whiskey—the use of corn—was set in place when whiskey was first distilled in the state (elsewhere in the US, whiskey was distilled from rye). Plus, it so happens, the kinds of trees prevalent in the region in the early-mid 1800s (e.g., white oak) were ideal, once charred and made into barrels, for flavoring whiskey in the aging process. Material conditions thus favored the inception of a successful bourbon industry in Kentucky (see Veach 2013). Of course, much more than the mere existence of these conditions was required for the development of bourbon, the bourbon industry, and Kentucky's place in the industry and for the often strong, though historically fluctuating, popularity of the spirit. These conditions, however, contributed to the production of

distinctive, high quality products. And the distinctive, high quality of Kentucky bourbons—notwithstanding the vagaries of quality (and taste)—repeatedly redounded to the advantage of the distilleries producing them. Surprisingly often, it enabled Kentucky bourbon producers, in times of cut-throat competition (after the Civil War), changing tastes and metamorphosing cultural practices (in the 1980s and 1990s), severe governmental scrutiny (in the final third of the 19th century), or bootlegging (after Prohibition), to successfully fall back on claims of quality to defend or reinvigorate sales.

As a consequence of the Whiskey Rebellion of 1794, a number of individuals of Scots-Irish heritage who were skilled distillers or familiar with distilling practices from their homeland fled Pennsylvania and settled in Kentucky. This Rebellion had arisen in Pennsylvania in opposition to the tax that President Washington, at the urging of James Madison, had put on whiskey to pay off the new nation's debt from the Revolutionary War; it was put down by threat of force after Washington sent troops to the state. This migration of skilled distillers was not, as legend and the bourbon industry have often had it (Veach 2013: 15, 21), the origin of the Kentucky whiskey and later bourbon industry. But it was not accidental that they fled to Kentucky. Kentucky's favorable natural conditions were already becoming manifest (Minnick 2016: 15, Carson 1963: 25), and the State's distance from the capital city of Washington and the Federal military and tax authorities located there made it even more attractive. After settling, these distillers remained in Kentucky, and the advantageous natural conditions combined with, among other things, their skills, contributed to the emergence of the extensive whiskey business there. The same relative remoteness again proved advantageous after the Civil War (see Mitenbuler 2015: chapt. 6) when whiskey (i.e., bourbon) production resumed more quickly in Kentucky than elsewhere in part due to the lesser destruction that the war had rained on the state, which is at least partly attributable to Kentucky's location. Of course, Kentucky's reputation and prominence, once established, had to be maintained. Such matters do not automatically perpetuate themselves, and the effects that material conditions have on social phenomena can disappear or be lost. But from the pre-Civil War era onwards the task was to maintain advantage and prominence, not to create them, and the latter becomes that much harder once someone else possesses them.

Another material phenomenon that is crucial to social persistence and change is the mobility of material entities. The mobility of, above all, human bodies, but also of other material entities, underlies everything written above. If humans were not mobile, there could be no practices, for the successful enactment of practices requires that doings and sayings be performed at different locations in relational material space. Human mobility is obviously key, moreover, to all sorts of social affairs. Transportation and trade, meetings and encounters, business negotiations and deals, migrations of rebellious farmers, gaming guilds, and location-based social networks etc., all involve or depend on mobility. The mobility of other material entities is likewise critical to social life, including bourbon, bottled bourbon, coal, cash, cell phones, tablets, pets, and digital information

(see Dourish 2017 for a propitious account of the materiality of information): the circulation, or threading through, of such entities in social life connects bundles and effects manifold events, processes, differences, and changes. As Latour (1987) particularly well explained, moreover, "action at a distance" takes place in social life through the circulation of material entities. People's activities in one setting are able to make a difference to others' activities in other settings through the movement between the settings of material entities such as documents, sound waves, visible displays, coins, and digital information-encoding transmissions. The mobility of material entities is also an important aspect of how "power" is exercised across settings of action (see chapter eight). The mobility of organisms, especially of prey, domesticates, and infectious agents, is another important aspect of social life, as is the mobility, i.e., suffusive flow of such phenomena as weather, air, heat, and light.

More generally, all social phenomena come into being at a certain point in time, even if this time is obscure, diffuse, or not discoverable. All social phenomena also cease to exist at some such point. In between origin and demise, a social phenomenon by definition persists, regardless of how much or little evolution it undergoes during this time. Because any social phenomenon consists in slices or features of bundles and constellations, its course over time embraces an evolving set of doings and sayings, organizing elements, arrangements, and relations both between practices and arrangements and among bundles. Its course thereby embraces a shifting amalgam of events, processes, structures, substances, and relations. Shifts in these matters result from chains of action and material, biological and informational (etc.) events and processes that cross and circulate within the bundles involved. These shifts also characterize the course of the phenomenon, including its origin and conclusion. The phenomenon's course and phases thus arise from (1) the chains of action that circulate in or through its constituent bundles or connect these bundles to those constituting other social phenomena and (2) the material and other events and processes that bear on and are incorporated into these bundles and likewise connect them to others. This nexus of linked, successive events, chains, and processes maintains the phenomenon while it persists: the constant small, nonramifying differences and changes that these chains and processes produce during this period are never so large or numerous that the phenomena dissolves or is transformed into something new. The persistence of social phenomena also rests on both the stability over time of material entities the phenomenon encompasses and the sensitivity to normativity that underwrites the organizations of practices.

In short, material things, events, and processes contribute significantly to the production of differences and changes in bundles and, thus, in social phenomena. Note that I am not claiming that the material dimension of social life is a substratum (cf. Deleuze and Guattari 1987) upon which social life is erected or from which it emerges in some technical sense of "emerge" (see Sawyer 2005). To be such a substratum, material entities would have to systematically underlie social entities. Material entities and social entities would have to constitute

distinct levels of reality. As discussed in chapter three, entities of two general sorts form levels when systematic relations of causality or supervenience exist between entities of the two sorts. Material entities do not form a substrate for social affairs because no systematic causal relations exist between material entities and social phenomena. This is so even though countless causal relations, and maybe relations of supervenience as well, exist between particular entities of these two categories. Nor is the relationship between material and social phenomena that of emergence. Emergence is an epistemological relation that obtains when entities of one sort (e.g., social institutions) arise from the activities of entities of a different sort (e.g., individuals) but cannot be explained by reference to these activities. The activities of the generating entities might, for instance, be too complex to be captured in an explanation. Social phenomena do not emerge from the material world in this sense because they do not arise solely from material events and processes. They also arise from chains of action.

Although the material world does not form a substratum for social life, material entities always, and material events and processes usually, subtend or underlie social affairs. Material phenomena, however, are also distributed throughout social life, where people, in addition to building and arranging, endlessly encounter and cope with them: material things, events, and processes help make up situations of action and are, or are responsible for, matters that concern people. Hence, beyond subtending and causing activities, practices, and bundles, material phenomena also result from, are dealt with in, and help form the contexts of human activity. They, in addition, invade, infect, suffuse, and pervade social phenomena. The material world bears a complex relationship to social life.

The idea that society arises upon a material substratum was advocated by Durkheim (1981) and his student Halbwachs (1960), who used the term "morphological" to categorize facts about materiality, including those upon which society arises. Halbwachs analyzed the morphological substratum of society as (1) the movement and spatial distribution of populations and built environments and (2) biological facts about populations (e.g., births and deaths, the age distributions of populations). He had a confused understanding, however, of the relation between this substratum and social life. On the one hand, he held that these morphological facts form a sui generis stratum of reality in the way that social facts, according to Durkheim (1938), do. Also like Durkheim vis-à-vis social facts, he believed that explanations of these facts refer to other facts in the same domain. These explanations rest on law-like regularities among these facts. On the other hand, Halbwachs conceded that morphological facts depend on social facts, though he seems never to have worked out how law-like regularities among morphological facts are compatible with this dependence. Halbwachs also believed that the physical forms of institutions/societies are crucial to them. Yet, he also claimed that these physical forms acquire significance only as mediated through thought and consciousness, that is, in so far as people become aware of them. These propositions make for one murky position. Halbwachs would have done better to analyze the significance of materiality for social life as lying in

(1) arrangements of material entities helping to compose social phenomena, (2) material events and processes injecting causality into the practice plenum, (3) material entities, inter alia, localizing and channeling activities, subtending and tracking practices, anchoring existential spaces, and suffusing the practice plenum, (4) arrangements prefiguring possible actions, and so on. Halbwachs could have also emphasized the significance of density (as Durkheim did), size, and shape. Proceeding thus would have obviated or narrowed the needs for law-like regularities and for mediation through consciousness.

Still, I am in effect arguing, Halbwachs and Durkheim were right to emphasize the material dimension of social life. Material things, events, and processes bear extensively on the composition, etiology, persistence, and evolution of social affairs. What's more, Halbwachs (1960) made a strong point when he noted that facts of population (including movements thereof) form a substratum for societies/institutions (read: social phenomena) in "transcending" particular sets or types of societies/institutions. I interpret him as meaning that because a given population participates in multiple social phenomena, facts of population always impact many such phenomena. Material entities do form a substratum of this sort for bundles and constellations. The movement of population through bundles and constellations also points toward the distinctness of life trajectories as a component of the ecology in which society unfolds. All told, materiality looms large in the practice plenum (social life), much more so than is usually acknowledged.

This and the previous chapter have examined the two major generators of difference and change in social life: chains of action, and material events and processes. This analysis of the causal strands responsible for social change undergirds the account of explaining change presented in the following two chapters. It also underlies the challenges laid down in chapter eight to the causal and explanatory cogency or significance of several social theoretical explanatory stalwarts.

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