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Materiality and Change in Social Fields

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Abstract

As field change is often explained by recourse to agentic efforts of a few or revolutionary turbulence of many, this paper provides a complementary explanation of change grounded in the quotidian dynamics of physical objects and settings. Using the culinary and mountaineering fields, we demonstrate how attending to the materiality of objects and settings offers analytical leverage into the ways fields conflict and change. More specifically, we argue field instability is normal because, at the level of social action, *mass* and *energy* are inherently finite. As a result, actors responding to effects from distal fields may nevertheless collide over the objects and settings in which they are compelled to act.

KEYWORDS
change, cognition, culture, field theory, materiality

The majority of social action cannot result from a rational calculus (e.g., Dewey, 1997; Dreyfus & Dreyfus, 1984; Joas, 1996; Silver, 2011; Simon, 1982; Whitford, 2002). Rather, only a small portion of action approximates this form, and this is made possible by a different (but complementary) form of decision-making (Bourdieu, 1990; DiMaggio, 1997; Leschziner & Green, 2013; Lizardo et al., 2016; Margolis, 1987). This complement, according to the tradition of sociological field theory (Martin, 2003, 2011), is the result of people intuitively *sensing* or *feeling* which step to take next. If a driver swerves into oncoming traffic, other cars will quickly attempt to avoid colliding with it not because they "calculated," but because they "felt." After the fact, when there is time to reflect, an account may take the form of calculation. In the moment there is no time. Such a sense for proper action is not simply an innate property of humans, however, but emerges through *exposures* to the regularities encountered in daily life. But what forms do these "regularities" take? What do they look like?

It is here, we argue, that scholars advancing the importance of materiality of objects and settings (Griswold et al., 2013; McDonnell, 2016; Rose-Greenland, 2016; Rubio, 2014; Taylor et al., 2019; Wood et al., 2018; Zubrzycki, 2013) have much to offer field theory. While regularities are constituted

by conversation, interaction, and systems of beliefs (Dromi, 2016), it is also through exposure to non-human objects and settings that novices develop field-specific capacities, even in the absence of co-presence, and it is through materials that veterans continue to feel the effects of the field. Likewise, we argue, the implicit theory of action within the sociological study of materiality is fundamentally compatible with that of field theory (Bourdieu, 2018; Martin & Merriman, 2015).

While some previous work in field theory incorporates materiality[1] (e.g., Bourdieu, 2018 is a relatively unknown essay on physical space), these analyses tend to consider the physicality of the focal objects of a field—toward which actors orient, and through which they connect with others in the field.[2] For instance, Entwistle and Rocamora (2006) consider London Fashion Week as the materialization of the field of fashion, and how the inscription of divisions into physical space serves to reproduce the field. Related, major theoretical developments have recently been made in the study of sexual fields (Green, 2014), which privileges sexualized bodies as the focal objects in the analysis.

In both cases, the complementarity between explanations in field theory and sociological theories of materiality converge with the greatest clarity. In this paper, we will unavoidably frustrate this clarity. The precision of these accounts overlooks the ways many fields are mediated by non-human material objects. Furthermore, it potentially overemphasizes the necessity of co-presence for the persistence of field effects over time and across populations. While we do not want to devalue the role of "focal objects" in field analysis, we do want to bring to light the importance of *non*-focal objects and mundane materiality.[3]

More importantly, considering the materiality of objects and settings provides insight into *how fields change*—a perennial concern in field theory. The materiality of objects and settings is significant for the structuring, development, and continuation of shared understandings and orientations, even absent copresence, and therefore enables the regularities of fields over time and space. However, as a result of the finite—and therefore always partially shared—physical space in which field activities must take place (Bourdieu, 2018), activities in one field may incite transformations in another, otherwise autonomous, field.

Taken together, we argue that the theoretical payoff of considering the physical qualities of objects and settings is a more robust understanding of how fields change. We lay out a preliminary framework for reconceptualizing the role of materiality in field change—noting that while materiality can be a source of stability and reproduction in social fields, physical objects and settings may also foment field-level change. We draw attention to two qualities of materiality that might lead to such change—the *conservation of mass* and the *conservation of energy*—and illustrate how they work in the context of change in the fields of mountaineering and culinary arts. We illustrate how the conservation of energy and mass play roles in different field change processes: namely, production-consumption coordination, field synthesis, alignment and repulsion effects, and the extension and retraction of institutional legitimacy.

1 | FIELD THEORY AND THE PROBLEM OF CHANGE

At the most general, trans-disciplinary level, a field is an organized set of vectors, and vectors are pushes and pulls of varying direction and intensity (Martin, 2011, p. 253).[4] Applying this conception of field theory to social life, as actors we know *social* fields exist by our phenomenological sense of being pushed and pulled in the course of our everyday affairs (Martin, 2011). As analysts, by contrast, we can know a social field exists when two or more people are oriented toward each other in their actions. While this is often understood in binaristic or antagonistic imagery, this need not be the case (Gerber, 2019); the key concern is whether their actions are organized in some nonrandom manner

and to what extent (Krause, 2017). This can happen directly or indirectly, generally by virtue of some shared focal object(s)—which may or may not be specifically material, and may even be other people as in the case of sexual fields (Green, 2008, 2011, 2014).

A recurring critique of field theory, as conceived by Bourdieu in particular (Bourdieu & Wacquant, 1992, p. 132; Sallaz & Zavisca, 2007, p. 25), is that it privileges reproduction and struggles to account for change (e.g., Sewell, 1992, pp. 14-15; Gartman, 1991, pp. 438-39; King, 2000, p. 425). The strongest version of this critique turns on two presumptions about the relationship between the structure of fields and the capacities of individuals (Sewell, 1992, p. 14). The first presumption is that capacities developed through the accrued experience with the contours of a field will *perfectly mirror those contours*. For example, Alexander argues the habitus "does not possess any real independence" and is therefore "a theory of the determination of action" (1995, p. 140). The second presumption is that actors will reproduce the structures most aligned with those capacities, which would be the field *as is*. If both hold, this would amount to a considerable theoretical hurdle for field theory. While it may be the case that sociologists overemphasize change (Patterson, 2014, 2018), it is still an unavoidable fact that social fields *do change*. If field theory is to have paradigmatic privilege, it should be able to incorporate both stasis and change.

The primary strategy for dealing with the above is to weaken the first presumption—i.e., that capacities simply mirror fields. One pathway to "real independence" is that capacities are relatively durable (Gartman, 2007, pp. 390-1). That the habitus tends to become "locked in" (Lizardo, 2004, p. 389) squares with recent findings that change in personal culture is relatively rare (Kiley & Vaisey, 2020; Vaisey & Lizardo, 2016), and provides for the possibility that an individual's dispositions may fall "out of sync" with present social practices (Bourdieu & Wacquant, 1992, p. 130). For example, in *Homo Academicus*, Bourdieu finds that change in the structure of the "university field" in France surrounding the events of 1968 arises not from the shifting habitus among the professoriate, but rather "the great increase in the student clientele" which shifted the distributions of power within the field (Bourdieu, 1988, pp. 128-9). In noting social environments are likely to change "at a faster rate than the practical belief embodied… in the actor," Strand and Lizardo (2017) revive Bourdieu's concept of "hysteresis," (Bourdieu, 1988, pp. 155-7; 2000, pp. 160-1), which highlights that individuals will attempt to reproduce a field even when that field has transformed (Strand & Lizardo, 2017).

A second source of field change emerging from the durability of the habitus is generational turnover resulting from the fact that incumbents may "age out" (Leschziner & Green, 2013, p. 127) or die, and even the smallest field requires some new blood in order to persist. Despite the best efforts of incumbents to train new recruits, the personal culture of younger people will always be somewhat different from older people (Bourdieu, 1988, pp. 156-7; Strauss & Quinn, 1996, pp. 115-8; Patterson, 2018, pp. 139-40). While generational turnover, then, is likely to explain broad change (Kiley & Vaisey, 2020; Vaisey & Lizardo, 2016), this presumes the conditions of the new cohorts' enculturation are significantly different from that of their forebears. But why would this be the case if the already veterans have a tendency to reproduce the conditions of their own enculturation?

To the extent theorists do unpack change in objective conditions, the common heuristic is punctuated equilibrium. Swidler (1986), for example, framed her discussion of culture in action in terms of "settled" and "unsettled" times; and Bourdieu (1988, 2017), for his part, framed change in fields in terms of "crises" and "symbolic revolution." While certainly change takes the form of revolution, this may lead us to overlook the importance of mundane change (Taylor et al., 2019). These seemingly unremarkable types of change are perhaps small, subtle, and even socially insignificant in some times and places, but may eventually lead to cascading transformations (Patterson, 2018, pp. 139-40).

A second problem with thinking of change in terms of crises is that it tends to privilege a few focal actors. This is a potentially problematic intuition that modifications must come about from the

purposive action of particularly prescient individuals. Indeed, Bourdieu even named this actor who brings about symbolic revolutions as the "heresiarch," the person who "[infringes] the symbolic order, flouting the harmony between cognitive structures and social structures on which our experience of the social world as self-evident relies" (Bourdieu, 2017, p. 17).[5] Without discounting that change is sometimes quite violent and tumultuous, sometimes led by a heroic and defiant heresiarch, and sometimes simply the result of generational turnover, we argue fields also change through the mundane practices of incumbents, during unsettled *and* settled times, not only through revolt but even through very purposeful attempts at reproduction (Taylor et al., 2019). A focus on the materiality of social fields orients us toward this mundane change.

1.1 | Theorizing the Role of Materiality for Field Change

Our main intimation is that much field change is mundane, and that much of this mundane change results from the grounding of field activity in physical locations and objects.[6] Materiality allows social phenomena to persist through time and across situations—in other words, it allows fields to extend beyond co-presence. But, as materials harbor their own internal properties, they also produce change over time (Ingold, 2007; McDonnell, 2016; Stoltz & Taylor, 2017). Two qualities of materiality in particular necessitate an instability in social fields. We refer to these two qualities as the (1) *conservation of energy* and the (2) *conservation of mass*, following the laws of classical mechanics.[7]

1.1.1 | Conservation of Energy

When the potential energy of gasoline is transformed into the kinetic energy of car movement, energy is said to be "conserved" in this relatively simple system: energy was not added or lost, it was transferred. As the *conservation of energy* relates to field theory, we argue that all fields' activities require energy, not only in the course of endogenous social action, but also in the production of the objects and spaces upon which a fields' activities rely (Gartman, 2002). Energy must have been transferred in the transformations of these objects and settings. Furthermore, this energy must come from somewhere, because, at the level of human action, energy is not created *ex nihilo*. While some activity endogenous to the field may be in service of field maintenance, i.e. expended in the production of materials and settings necessary for field activities, not all endogenous activity is directed toward the crafting the material circumstances field activities require. That is, any autonomous (understood analytically or phenomenologically) field *relies, at least in part, on the energy expended by those in other fields*.

1.1.2 | Conservation of Mass

When heating water until it turns into steam or cooling it until it turns into ice, the total mass of the water remains the same. That is, in a closed system, where the water as gas, liquid, or solid is contained, water is neither created nor destroyed, it is conserved. As the *conservation of mass* relates to social fields, we point out that, while the potential range of focal objects and settings across social fields is unbounded, the actual number of such objects and settings is not. Materiality is finite (Bourdieu, 2018). Actors in different fields can, and often do, lay claim to the same objects and settings — even if for starkly different purposes. This leads to change as two or more autonomous fields learn to *either co-exist, or be in conflict over, the physical spaces and things* to which they mutually lay claim.

2 | MATERIALITY AND FIELD CHANGE IN MOUNTAINEERING AND THE CULINARY ARTS

In the following, we illustrate change in two social fields: mountaineering and the culinary arts. We select mountaineering in the 19th and 20th centuries because, among other things, mountaineering involves relatively few people (in comparison to other fields) and yet is spread broadly across both time and space—i.e., it is "sparse."[8] Therefore unlike sexual fields—which tend to be highly localized and involve recursive co-present interaction—mountaineers often interact with each other only very seldom, beyond a few climbing partners. Especially during the early years, such interactions were mediated by letters, journals, and books. We also select an additional field of practice that is often considered "less material"—the culinary arts. The focal object of the culinary arts is more "fleeting" than that of a mountain range, and this field tends to be far less "sparse" than mountaineering. Therefore we find these fields analytically useful for sketching the wider applicability of our argument.

2.1 | Mountains, Food, and the Conservation of Energy

2.1.1 | Mountaineering, Production, and Innovation

The essence of what we mean by the conservation of energy can be distilled from Leslie Stephen's quote about the focal object of mountaineering: "nothing can be less like a mountain at one time than the same mountain at another" (1909, p. 125). Although some dimensions of materiality lead to a level of stability over time, there are also dimensions which inevitably lead to change (see McDonnell, 2016 on "cultural entropy"). The collection of actors in the mountaineering field rely on a distribution of materials that they cannot possibly create themselves. These include the text and tools produced as consequences of field genesis. However, this also includes activities which are more distant from the field effects of mountaineering. For instance, contemporary mountaineering in the U.S. relies on maintenance of roads and trails that allow a person to gain access to peaks within the time limits afforded by the average work schedule or vacation. Although climbing Mount Everest is now reduced to an astonishingly short two months, would-be summiteers generally spend years training their bodies, acquiring skills, purchasing specialty tools, and reading books and blog-posts prior to the trek. Our main point is as follows: the energy needed to produce the possibilities for this cultivation cannot be entirely endogenous to a field, no matter how analytically autonomous.

The possibility of field preservation always relies, in part, on the activity of other fields. As Bourdieu suggests in *Distinction* (1984), the fields of cultural consumption and cultural production are able to coordinate (more or less) effectively because the actors occupying the field of consumption and the actors occupying the field of production are likely to have similar enough social origins that their capacities allow for a "natural" alignment. This is evident even in a highly specialized field like mountaineering. For instance, the companies which produce high-end mountaineering equipment generally include an origin story that begins with something akin to "Founded by local climbers." (e.g., visit the websites of Arc'teryx, Patagonia, Tradlabs, or Marmot). These companies tend to be located in cities and towns near the focal objects of the climbing and mountaineering fields and often recruit avid climbing and outdoor enthusiasts as employees, thus reproducing the "substantive homologies" (Martin & Gregg, 2015, p. 49) between producers and consumers.

On the other end of the spectrum, there are fields that are quite distant from mountaineering, but are nevertheless integral to the activity of the field.[9] Such is the case, for example, with cartography and meteorology. The earliest mountaineers were embedded in the field of scientific discovery

and nation-building, as was cartography and meteorology (Reidy et al., 2007). Today, by contrast, it is the minority of mountaineers contributing to cartography, and even less likely that mountaineering contributes to meteorological knowledge. Rather, many who partake in contemporary mountaineering rely on cartographers and meteorologists, perhaps most of whom do not climb mountains. Mitchell (1983, p. 48) also notes mountaineers' reaction to mechanized transport has been ambivalent overall, but they have celebrated its role in the development of "aerial photography" which "help[s] expeditions to penetrate little-known mountainous terrain and serves in more well-traveled areas as the basis for one of the climber's essential pieces of equipment, the topographic map."

As both cartography and mountaineering developed into autonomous fields, mountaineering had a reduced claim on the production of cartographic knowledge and the production of the material representations of terrain. The wide dissemination of previously esoteric information in the form of maps, which was previously guarded by access to networks and organizations of climbers, suddenly afforded outsiders the opportunity to enter and navigate Alpine regions. This tendency has compounded with the proliferation of Global Position Systems (GPS). Mitchell's ethnography was published just six years prior to the introduction of the Magellan GPS NAV 1000, the first consumer handheld GPS device.

The history of this system is bound up with the Cold War, and was originally intended to be used solely by the U.S. military (Easton & Frazier, 2013). However, in 1983, when a commercial jet veered off-course and shot down over Soviet airspace, President Reagan agreed to let commercial airlines use the system once it was fully assembled. Upon hearing this news, Edward Tuck, a private aviator and venture capitalist, was inspired to construct a small device that would be compatible with the commercial GPS. This ultimately led to production of the Magellan 1000.

The subsequent proliferation of handheld GPS devices in mountain sports has been encountered with ambivalence by the climbing community (Lorimer & Lund, 2003, pp. 140-42). In particular, GPS has provided the material infrastructure for the rapid dissemination of, and therefore access to, one of the most crucial types of information for the field. However, incumbents in the field often interpret this as allowing the uninitiated, the unworthy, or the uncultivated to gain access to the core of their activities. In this case, the map provides access to symbolic meaning (in the sense of being an icon), while the field largely values pragmatic meanings that can only be gained from exposure to the terrain. On one hand, mountaineering relies on the material consequences of other fields—that is, their "energy" expenditure—for its continuity. On the other hand, changes in one autonomous field may lead to changes in materially "linked," yet similarly autonomous fields, creating new cleavages and fresh problematics.

2.1.2 | Culinary Arts, Production, and Innovation

The conservation of energy means actors always take a position in a field that is already organized by prior activity within the field or by activity in other fields. This is clearly exemplified by the culinary field. Food, cooking instruments, and buildings, for example, link the field to the activities in numerous other fields. For instance, if an elite restaurant in New York City serves a meal with a high-end ingredient like truffles (Leschziner, 2015), this meal becomes intimately linked with delivery systems, trade agreements, farming, cultivation, climate, and even the political economies of Europe. This also means that material consequences produced by one of these autonomous fields may lead to internal transformations within the culinary field. Elite restaurants are pushed and pulled by the ripples of economic strife, trade disputes, and overall shifts in the energy expended by these many fields through the flavor and aroma of the truffle.

Another illustration of this principle is the crossover between the culinary arts and food science. Until the early 1990s, the culinary arts were seen as largely distinct from the fields of food science, food technology, and food product development (Cheng et al., 2011, p. 18). The increasing recognition of the role of trained chefs in the food science enterprise began to gain institutional legitimacy in 1996 when then-president of the Research Chefs Association (RCA), Winston Riley, coined the term "Culinology" to "describe and formalize the fusion of two disciplines—culinary arts and food technology" (Cheng et al., 2011, p. 18).

The RCA markets itself as a hub for discussions across adjacent fields. As the organization writes in its mission statement, the RCA "cultivates collaborations between the chefs and food science professionals who develop food to increase innovation, quality and speed-to-market" (Research Chefs Association, 2020a). The goal of the association and its Culinology program, then, is to promote a synthesis between fields that continuously yet independently produce the same focal object: food dishes. Such a synthesis is necessary, from the RCA's vantage point, because scaling up the production of fine foods requires "blend[ing] the underlying principles of food science and technology with the chef's skilled art of culinary creativity and originality to satisfy public tastes in the marketplace" (Cousminer & Pintner, 2017, p. viii).

The RCA points to a possible outcome of the conservation of energy for social field dynamics: the emergence of formal organizations dedicated to synthesizing fields that exert similar or co-dependent energies. In the case of the culinary arts and food science, the RCA has made considerable progress on legitimating a formal "merger" between the two fields through higher education, where, as of 2020, there are 16 Culinology degree programs across the United States and one in Malaysia (Taylor's University) approved by the RCA (Research Chefs Association, 2020c). The RCA Culinology curriculum's "Core Competencies" reflect a focus on producing "research chefs" who can conserve energies across the culinary arts and food science by simply occupying central positions in both fields—i.e., to create satisfying dishes *and* formulate how those dishes can be scaled up for market distribution all in one workflow. Indeed, becoming a Certified Research Chef (CRC) requires competencies than span across the culinary and the scientific, including "Knowledge of Flavor Building," "Knowledge of Baking and Pastry," "Knowledge of Food chemistry and Microbiology," and "Knowledge of Research, Methodologies and Experimental Design" (Research Chefs Association, 2020b; see also Cheng & Bosselman, 2016, pp. 129-130).

The conservation of energy between culinary arts and food science is also present in contemporary haute cuisine. "Molecular gastronomy"—the study of the chemical and physical properties behind culinary creations, or the "science of culinary processes" (This, 2006, p. 1063, p. 1063)—was envisioned in its current form in 1988 by physicist Nicholas Kurti and physical chemist Hervé This (This, 2009, p. 575). The genesis of molecular gastronomy was inspired by the same motivating force behind the RCA and Culinology: the perceived lack of disciplinary communication between culinary practice and food science (This, 2009, p. 576). This (2006, pp. 576-577) notes, for example, that in the widely-used textbook *Food Chemistry* (Belitz & Gorsch, 1999), the majority of the chapter outlines the physiochemical structure of meat and meat products while very little was given to the physiochemical processes underlying meat and meat transformations in culinary creations ("[for example,] meat shrinkage during heating because of collagen denaturation").[10] The goal of molecular gastronomy,[11] for Kurti and This, was to use the scientific method to understand the chemical and physical qualities of objects produced by patterned activities in another social field: home and restaurant cooking. In other words, the goal was to understand the objects as transformed by "culinary energies."

Molecular gastronomy has also been billed as a style of cooking in and of itself, particularly in fine dining. Exemplars of this approach include chefs such as Heston Blumenthal of The Fat Duck and Dinner, Ferran Adrià (formerly) of El Bulli, Grant Achatz of Alinea, and Jozef Youssef of Kitchen

Theory, each of whom are known for incorporating experimental cooking techniques into their craft—and for working in or owning Michelin-starred restaurants. The hallmark of these experimental techniques is their reliance on scientific knowledge and practice, with famous examples including Grant Achatz's deconstructed chocolate pumpkin pie made with liquid nitrogen and Ferran Adrià's melon caviar made using spherification techniques. Media coverage of these restaurants and chefs often note the "lab-like" characteristics of the operation: a 2008 *Telegraph* article on Blumenthal, for example, features a photo of Blumenthal sitting behind what appears to be a graduated cylinder and holding an herb, and notes that when it comes to cooking, Blumenthal's "method is more likely to involve liquid nitrogen, an MRI scan, or even cooking an entire pig in a hot tub" (Stogdon, 2008).

Molecular gastronomy, as a cooking style, represents a classic instance of the conservation of energy: the adoption of knowledge and techniques for the transformation of objects from other fields (the fields of chemistry, physics, and food science) to innovate in another field (the culinary field). It is notable, though, that the haphazard use of the term "molecular gastronomy" to categorize both the science and the culinary practice can be controversial from the perspective of both the culinary and scientific fields. Blumenthal and Adrià have attempted to distance themselves from the molecular gastronomy label (Adrià et al., 2006), and scientists have argued that the application of molecular gastronomy (as a science) should be called "science-based cooking" (Vega & Ubbink, 2008, p. 372). Even though actors in the culinary and scientific fields rely on one another for innovation in their respective fields, fields may nonetheless exhibit a repulsion effect when they start laying claim to the same object. We discuss this phenomenon in more detail below.

2.2 | Mountains, Food, and the Conservation of Mass

The conservation of mass, simply put, orients the analyst to the simple observation that physical objects and settings are finite. Although materials can be transformed within an autonomous field, they can never be transformed autonomously. Every perspective exists within an always, already arranged environment, which has been so arranged by other fields (Martin & Merriman, 2015). As capacities are both acquired from, and respond to, the pattern of stimuli afforded by a given moment (Engman & Cranford, 2016; Gibson, 1986), changes in the materiality of a situation can lead to changing perspectives at the level of fields. The successful preservation of one field can lead to redistributions of material conditions of an otherwise autonomous field. The following two examples of the impact of the conservation of mass on mountaineering tease out how fields can be aligned or in conflict: environmentalism (alignment) and religion (conflict).

2.2.1 | Mountaineering, Alignment, and Repulsion

In the contemporary American mountaineering field, environmentalist values are seen as essential to the outdoor experience. The American Alpine Club, for example, includes "respect for the places we climb" in its mission, "healthy climbing landscapes" in its vision, and "promote conservation" among its core values. Thus outdoor sport enthusiasts, like mountaineers, simultaneously consider themselves as occupying a position in the environmentalist field—but this was not always the case. The prominent mountaineering narrative from the 1860s to the 1960s (which continues today but assumes a subordinated position in the field) is the masculine trope of man "conquering" nature (Reidy, 2015). By the mid-20th century, the dominant position in the field moved away from these metaphors of conquest. For instance, Charles Houston, an experienced Himalayan climber, famously wrote: "Only

when the right men are in the right places at the right time are the big mountains climbed; never are they conquered" (1968, p. 57).

This transformation in the field paralleled the development of the American environmental movement, spearheaded by two prominent mountaineers: John Muir and David Bower. In their attempts to preserve the wild lands, this brought them into dialogue with a range of fields also claiming the same physical spaces circumscribed as "wild." Boy Scouts and Camp Fire Girls, weekend-camping city-dwellers, naturalists, spiritualists, and all manner of groups—who had never felt troubled breathing at oxygen-thin altitudes, the pain of hardened forearms while dangling over a granite's edge, or the sting of wind and snow on a razor-sharp ridge—were drawn together by claiming vast, yet finite, environments (Schrepfer, 2005).

This conservation of mass does not always draw occupants into a relative harmony, however, and in many cases the opposite may even be the case. The pull of the mountains or the passion of being in the presence of a sheer precipice can invoke affective responses which people may interpret as the nearness of the divine. Certainly some religious practices are quite compatible with mountaineering, as evinced by the spirituality of John Muir, but many are not. For instance, the highest unclimbed mountain in the world, Gangkhar Puensum in Bhutan, joins two other prominent *sacred* Himalayan mountains, Mount Kailas in Tibet and Machapuchare in Nepal, which are off-limits to mountaineering (Wild & McLeod, 2008, p. 42).

The curious case of Mount Kailas demonstrates how conservation of mass can draw together multiple conflicting fields: in this example, religion, mountaineering, and government. Many books have been written about this particular sacred mountain, as it symbolized to outside observers the occupation and assimilation of Tibet by China. "The mountain," as one commenter describes it, is "perhaps the oldest continually visited religious site of pilgrimage in the world [and] has not been scaled since the 11th century Tibetan mystic Milarepa" (Ellingsen, 2001).

In the 1980s, Reinhold Messner, undoubtedly the most famous contemporary mountaineer, requested permission from the Chinese government to *circle the peak*—a common practice by Buddhists in the region. In response, the government invited him to summit the mountain instead. He declined their offer. Later, in 2001, a Spanish climbing party received permission from the Chinese authorities to climb the mountain. In response to this news, Messner voiced his disapproval of the Spanish team: "If we conquer this mountain, then we conquer something in people's souls… I would suggest they go and climb something a little harder" (Sanskriti, 2014). Similarly, the representative of the Dalai Lama in London remarked "Mount Kailas should not be made a sporting arena" (Ellingsen, 2001). As news of the Spanish bid for the summit spread, international outrage persuaded the Chinese government to rescind the permit. Ultimately, it "was because of the firm oppositions from the Hindu, Buddhist, and Jain community leaders through a worldwide letter writing campaign in 2001, China banned all mountaineering activities to preserve the sanctity of the place" (Sanskriti, 2014). Taken together this suggests one may speak of the proliferation of an indefinite number of social fields in late modernity, but all fields will ultimately be bound by the conservation of mass, which will inevitably frustrate fields' stasis and persistence over time.

2.2.2 | Culinary Arts, Alignment, and Repulsion

The contemporary culinary field provides further examples of the role of the conservation of mass for field alignment. Consider, for example, the recent introduction of cannabis products into American haute cuisine. The cannabis economic field, as a mainstream consumer market, has steadily grown in the United States as states continue to legalize marijuana for medical and recreational use. While

possessing or using marijuana is still a federal crime (as of this writing), 36 U.S. states and Washington, D.C. have legalized (or plan to legalize) medical marijuana and 15 states have approved use for people age 21 and older since California first legalized medical cannabis use in 1996 (Berke & Gal, 2020). The institutionalization of the cannabis economy has fomented the extension of cannabis products into other fields of consumption, including fine dining. Many "high cuisine" (Van Buskirk, 2020) dinner clubs have sprouted up across the U.S. since the mid-2010s that offer THC- and CBD-infused food and drinks. Andrea Drummer, the famous chef and cannabis activist who appeared on Netflix's *Cooking on High* show, offers a variety of cannabinoid-meets-haute-cuisine dishes at her Elevation VIP Cooperative—including a poached beets salad and a seared duck served with a blueberry gastrique, both of which are infused with the a marijuana strain known as "Blue Dream" (Elevation VIP Cooperative, Inc., n.d.).

This mutual claims-making to marijuana reaps benefits for both fields. For the culinary field, cannabis has introduced a new frontier of flavors, experimentation, and dining experiences. For the cannabis industry, the growing popularity of cannabis products in cafes and supper clubs means another mode of institutional legitimacy and an opportunity to frame cannabis as a symbol of a young, casual-yet-high-class cosmopolitan lifestyle. This is in stark contrast to, for example, the infamous 1936 film *Reefer Madness*, which "portrays innocent middle-class white, small-town youth being lured into marijuana addiction, sexual depravity, insanity, and murder" (Boyd, 2010, p. 12).

Foods may also lead to field conflict. A country's traditional dishes can come under scrutiny by outsider networks and organizations when the ingredients are perceived as morally or politically problematic (DeSoucey, 2010, 2016).[12] Such is the case with foie gras in France, as DeSoucey observed (2016), a foodstuff at the source of conflicts between the culinary and animal rights fields. Another example is the shark fin. Shark fin soup has a long cultural history in Chinese cuisine, where it is believed a Song Dynasty emperor conceived of the dish to symbolize his power (Fobar, 2019). The dish was also used to honor guests and believed to have medicinal value (Fairclough, 2013). Shark fin "has long been a status symbol at Chinese dinners," especially at weddings and Lunar New Year events, and is a deeply rooted sign of hospitality in culinary culture for many (particularly older) Chinese (Liu, 2019).

Despite this history, it is engulfed in shark welfare and species conservation controversies. According to the International Union for Conservation of Nature, over one quarter (closer to 33% as of December 2020) of the planet's shark and ray species populations are facing extinction (Vallianos et al., 2018, p. 4), and another study estimates that the "shark fin soup trade" has lead to more than a 90% population decrease for some shark species (de Mitcheson et al., 2018, p. 117, cited in Liu, 2019). In addition to conservation concerns, animal rights groups and large swaths of the public decry the practice of "shark finning": a fishing technique that involves capturing the sharks, cutting off their fins, and then throwing the sharks back into the water—usually alive and facing a painful death. The growing moral dispute over shark finning has led many countries to ban the practice—creating a source of institutional *il*legitimacy for shark finning and shark fin consumption. Shark fin soup is now banned at Chinese government banquets (Ng, 2013), shark fin is illegal in 12 U.S. states (Fobar, 2019), and Canada recently banned the import of shark fin (Wu, 2019). Further, 31 countries/jurisdictions have fully or partially banned shark finning, 22 have fully or partially banned shark fishing, and many companies have banned shark fin soup—including Amazon and China Southern Airlines (Animal Welfare Institute, 2020).

The simultaneous claims to sharks and shark fin between the culinary and animal welfare/conservation fields mean that actors within these fields must fight over a finite material—*so* finite, in fact, that they are going extinct in some cases. This tension over "mass" necessarily means that each field must adapt its practices, lest the material conditions that motivate action (and therefore produce the

passion) within the field break down. In the culinary field, this adaptation involves responding to growing political and legal pressures to cease shark fin harvesting and to intergenerational changes in moral perceptions of shark fin consumption. Making these adaptations can be extraordinarily difficult, as field theory would suggest, because of an hysteresis effect (Strand & Lizardo, 2017): the material objects demand a change in practice at a faster rate than the habitus can accommodate. For example, while shark finning is illegal in Taiwan, the practice may still be common aboard Taiwanese fishing vessels (Environmental Justice Foundation, 2020).

3 | CONCLUSION

In this paper, we sketched a preliminary framework for repositioning the role of materiality in field change—specifically an explanation of field change that does not rely on either uniquely prescient or unruly individuals nor violent revolutions, but rather considers sources of mundane change. We began by extending materiality beyond focal objects to non-focal objects, noting that materiality allows fields to "extend out" and exert pressures on action outside the confines of bodily co-presence. Therefore, materiality can be a source of stability and reproduction.

There are, however, two qualities of physical objects and settings which may also instigate change. The first, which we call the *conservation of energy.* This relates to the fact that, while some activity endogenous to the field may be in service of field maintenance, field's often rely on energy transferred from other fields to transform the objects and settings upon which a field's activities depend. This may lead to field change when the production of these objects and settings is frustrated because of developments in these otherwise distal fields. However, fields may also be drawn together, to co-participate in these processes of energy expenditure. The second, which we call the *conservation of mass,* refers to the fact that objects and settings are fundamentally finite. Actors occupying two distinct and autonomous fields can, and often do, lay claim to the same objects and settings. This leads to change as two or more autonomous fields learn to either co-exist with, or be in conflict over, the physical spaces and things to which they mutually lay claim. We explored the consequences of these two qualities with case studies of the social fields of mountaineering and culinary arts, and illustrated how the conservation of energy and mass play roles in different field change processes: namely, production-consumption coordination, field synthesis, alignment and repulsion effects, and the extension and retraction of institutional legitimacy.

Going beyond field change, we contend that future analyses should consider the materiality of fields as a formal dimension of fields which may be variable (Krause, 2017). For example, fields may produce far more material culture than do others— indeed, the volume of production may outstrip the proportion of capacities able to skillfully engage with it. Alternatively, some fields may be founded on the minimization of material consequences (although we would stress that fields are never "immaterial"). Similarly, some fields' activities may, quite literally, take up more (or less) physical space, making it more (or less) likely actors within these will encounter the activity produced by other fields, or make claims to materials used by other fields. Lastly, some fields may be exclusively organized around expending the energy needed to produce the material conditions for other fields, and vice versa, fields may be organized around activities which minimize the reliance on activity in other fields (although, we would contend, it is likely impossible to achieve total endogeneity in this respect).

More broadly, sociological field theory would benefit from a direct engagement with the materiality of objects and settings. As Simmel observes regarding the "unboundedness" of objectified culture, "Everybody can contribute to the supply of objectified cultural contents without any consideration for other contributors. The infinitely growing supply of objectified spirit places demands before the

subject, creates desires in him…" (Simmel, 1968, p. 48). The difference between, on the one hand, simply "passing by" material objects or places which we "cannot assimilate" and, on the other, objects or places that creates desires in us and forms a relationship "from whose impact [we] cannot withdraw," is a lucid description of those who feel the *illusio* of a field (Bourdieu, 1990, pp. 66, 82; Bourdieu & Wacquant, 1992, p. 117, p. 117)—that is, those who have "caught" the passion. When objects leave one cold and uninterested, actors are "disillusioned." They never were, or are no longer, affected by the forces of the field. The key point distilled from Simmel's observations is: such phenomenological realities, as the sense that one is pushed and pulled, are here invoked not by thoughts, talk, or interaction, *per se*, but by *materials*. Materiality carries field effects beyond co-presence, and through time and space, as the social and physical world is contoured by field activities. Field theory is fundamentally a theory of passion, and materiality creates passion, carries passion, and is carved by passion.

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DATA AVAILABILITY STATEMENT

Data sharing not applicable to this article as no datasets were generated or analysed during the current study.

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ENDNOTES

[1] We bracket some connotations of the term "material" as used in sociology. We do not conflate material with "economic" activity, nor do we refer to popular discourse where "materialism" is equated to consumerism of a pejorative variety. We are also not referring to Weber's distinct definition of "material interests" as near-universal bodily needs and impulses. Rather, following Griswold et al. (2013, p. 345), we define materiality as "physical characteristics of objects and environments." We concur with the authors when they note that "[c]ultural sociology has rarely attended to the material qualities of objects and settings, instead figuring them as expressions of cognitive categories ordering the social world. [and] therefore, neglects the causal power of physical objects and bodies in interaction."

[2] Paintings and other forms of art may serve as objects of mutual orientation for workers at contemporary art museums (Griswold et al., 2013; Rubio & Silva, 2013).

[3] We try to avoid discussing human bodies (despite being nevertheless material) for simplicity, and we do consider the materiality of some focal objects (i.e., mountains and food); however, we maintain that non-focal materials are of equal significance for field activity.

[4] As noted by others in passing (Davis & Marquis, 2005, p. 337), the term "field" has been used to identify two approaches in contemporary sociology. One could be termed the "theory of fields," and the other "field theory" (Martin & Merriman, 2015, p. 135). The latter, we argue, is largely commensurate with the trans-disciplinary approach to field theory and is most often attributed to Kurt Lewin and Pierre Bourdieu (the latter by way of Ernst Cassirer). The former is based predominantly around the work of Fligstein and McAdam, which they refer to as "strategic action fields" (Fligstein, 2001; Fligstein & McAdam, 2011, 2012). Here, we stay faithful to "field theory," and although most contemporary field theory relies on the work of Pierre Bourdieu, we try to avoid exegesis; rather, we rely on the recent work of Martin (2003, 2011) and Green (2008, 2011), as well as their collaborators (Green, 2014; Leschziner, 2015; Leschziner & Green, 2013; Martin & George, 2006; Martin et al., 2016).

[5] Special thanks to Brandon Sepulvado for pointing us toward Bourdieu's discussions of the heresiarch in the context of symbolic revolutions.

[6] Although we highlight the material dimensions of field change which involve human agents, it is no less significant that materials themselves transform, fade, decay, erode, grow, and die (McDonnell, 2016; Rubio, 2014).

[7] To be sure, both have been superseded in two respects. First, there is a sense in which mass and energy are equivalent (Einstein, 1935). As Lange (2001) argues, there is no empirically verifiable difference between the two, and it is only a meaningful distinction in so far as it describes researching at different levels of analysis. Second, mass and energy are only conserved when space-time is constant. Therefore, at very large scales, such as the expansion of the universe (Hubble, 1929), the laws of conservation are violated. Nevertheless, for our purposes, the distinction between the two is phenomenologically salient and, at the level of human action, both mass and energy are finite.

[8] For an excellent analysis of the genesis of the mountaineering field, see Hoibian (2006).

[9] For a related argument see Abbott (2005) on linked ecologies. We agree with Liu and Emirbayer (2016) that there are many conceptual similarities between ecologies and fields, and therefore Abbott's concepts of hinges and avatars could also be used to analyze influences between fields. Where our approach differs is in highlighting the materiality of such linkages, and the ways material qualities demand such linkages.

[10] This' evaluation is accurate at least up to the 1999 edition of the textbook.

[11] The original name for the field was "molecular and physical gastronomy" (This, 2006, p. 1062).

[12] Controversial food consumption can also be used by actors centrally-located within the culinary field to test whether or not another person is a member of the field or at least committed to learning about it. This done by, quite literally, testing one's habitus—do they eat it, do they gag, do they wince, do they smile. DeSoucey was tested in such a way while conducting fieldwork for her comparative ethnography on the moral politics of foie gras (2016). She recounts that a Michelin-starred French chef would only engage in meaningful conversation with her after she ate dishes that might be considered "unpalatable" for an American—e.g., runny foie gras and congealed chicken blood (Cherry et al., 2011, p. 242).

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