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Drawing Out Definitions

Dustin S. Stoltz[1] · **Michael Lee Wood**[2]

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Abstract

Defining social scientific concepts can contribute to scholarly advancement in many ways. Definitions, which we define as *a description of a word or phrase using terms for which the meaning is well known in the community*, can contribute to inclusive discussion by welcoming outsiders, mitigate misunderstandings among insiders, encourage theorists to commit to the (sometimes surprising) entailments of their theories, and provide starting points and new pathways for future research. A necessary feature of definitions is "boundaries" – *to define is to bound*. But, it is precisely in boundaries that definitions get us into problems: the meanings of words are inherently fuzzy and changing; exceptionless definitions are elusive. We elaborate a process of "definition work" which is inherently "community work." The process recognizes that meaning is a dynamic and fuzzy community property and uses theory visualizations – specifically, property spaces, schematic networks, and dynamic spanning trees – as definition tools to explore this fuzziness, while also communicating definitions along with their indeterminacy.

Keywords Definitions · Theory figures · Sociological theory · Property spaces · Schematic networks · Dynamic spanning trees · Jargon · Jabberwocky

✉ Dustin S. Stoltz
dss219@lehigh.edu

✉ Michael Lee Wood
michaelwood@byu.edu

[1] Lehigh University, Bethlehem, United States

[2] Brigham Young University, Provo, United States

Introduction

It is a cliché to claim that academics in general – and perhaps sociologists in particular – write poorly. As the historian Crane Brinton complains in the 1930s, "The academic sociologist almost always writes unnecessarily badly… he [sic] goes out of his way to build an unnecessary jargon, partly perhaps as a protective shield against criticism…" (Brinton, 1939). Such run-of-the-mill complaints rest on the presumption that writers are (at worst) intentionally obfuscating, and (at best) lazy or unskilled.[1] Is it such a simple task to write clearly? Or is it the case that, as Carroll (1989:275) wrote in a letter, "One of the hardest things in the world is to convey a meaning accurately from one mind to another"?

Meaning is a community property – neither a feature of the term, referent, nor the individual mind, but distributed. Insofar as analysts use words from a variety of contexts, they must continually be in dialogue with many communities. Definitions – or *a description of a word or phrase using terms for which the meaning is well known in the community* – are a means to engage in such a dialogue with both lay and technical communities. Definitions are an *invitation* to mutual understanding (Mills [1959] 2000:34). But, underlying this social tension is a technical tension: *exceptionless definitions are elusive*. We ought to offer explicit, plain, and modest definitions, using words that are well known to our audience when defining, but definitions will likely always be lacking.

Definitions typically operate behind the scenes in debates about key concepts, such as "culture" (Smith, 2016; Krause, 2016a; Spillman, 2016), or conversations about nuance and clarity more generally (Besbris and Khan 2017; Burawoy, 2005; Gans, 2009; Healy, 2017). Here, we follow Swedberg (2014, 2020), and focus on the act of defining as a theoretical practice used to generate insight, think through our ideas, and communicate our understandings. A necessary feature of definitions is "boundaries" – *to define is to bound*. But, it is precisely in boundaries that definitions get us into problems: the meanings of words are inherently fuzzy and changing; exceptionless definitions are elusive. Using visualizations as "definition tools" can alleviate some of this social and technical tension by exploring this fuzziness, while also communicating definitions along with their indeterminacy. In this paper, we discuss three visualization methods to facilitate definition work by improving clarity and dealing with the limitations of boundaries.

[1] This could also refer to an episode of a satirical sitcom, B*etter Off Ted*, about a likable single-dad (Ted) who heads a department in an evil corporation. In the episode, Ted approves funding for an employee's private project without his superior's (Veronica) permission, and when pressured on the issue, he tells Veronica it is a top secret project called "Jabberwocky." Not wanting to appear "out of the loop" in front of her subordinate, Veronica pretends that she knows all about it. News of this "revolutionary new way to do business" spreads to the highest positions in the company, with everyone assuming that everyone else is "in the know," while trying to elicit clues as to the nature of jabberwocky without revealing that they are not "in the know."

Grappling with meaning

The necessity of definition work: hast thou slain the jabberwock?

Is definition work necessary, or do we just need to eliminate "jargon?" Jargon is often berated as a barrier to communicating outside our technical communities, but it does have a part to play: it speeds up communication within technical communities (Vilhena et al. 2014). Like all words, jargon is a kind of compression, taking a bundle of meanings and condensing them into something that can be quickly communicated to another, provided this other has significant experience in the same community. However, there is a cost to this hastening. The first emerges when our works are read by "outsiders." If we wish to reach outsiders, they must be inducted into the ways of the community to reduce misunderstandings. The second emerges when we, the writers, proceed *as if* our readers fully comprehend the jargon of our own technical community, but in actuality, there is appreciable (if implicit) disagreement within the technical community itself. As many sociologists attest (e.g., Smelser, 2015), the discipline comprises multiple overlapping subfields, even if trafficking in similar words. Our knowledge communities, themselves, are not homogeneously connected, but rather socially structured in ways that may create uneven exchange and insulation (Reay, 2010). Finally, this relationship is dynamic. As Durkheim tells us, "one always starts with the lay concept and the lay term" (Durkheim [1895] 1964:37).[2] Even if we're persuaded by Charles Sanders Peirce's plea to William James, and coin words so "disagreeable" that lay audiences "are not tempted to use them" (quoted in Ketner, 1981:343), it is quite likely someone, somewhere will be tempted. Words will be liberated.

Without offering explicit definitions, Swedberg argues, we may find ourselves in an "illusion of agreement" (2020) wherein we use the same words, but we mean different things. The situation could be worse. Consider, Jabberwocky, the nonsense poem about the killing of a creature from Carroll's *Through the Looking Glass*.[3] After attempting to decipher the poem, the protagonist Alice proclaims, "It seems very pretty…but it's rather hard to understand!" And the narrator replies: "You see she didn't like to confess, even to herself, that she couldn't make it out at all." Jabberwocky describes such a situation: people use jargon assuming other people understand but without *really* understanding it themselves, while simultaneously refusing to admit this to others or even themselves—usually for fear of being outed as an impostor. Jabberwocky is a variant of pluralistic ignorance, in that most are privately confused, but incorrectly assume that most others are not. More importantly, this semiotic dance may produce an alienating effect, where the reader really is "out of the loop," and because "everyone else" is in the know, the writer never feels the

[2] One potential alternative, though, is the natural semantic metalanguage (NSM) project developed by Wierzbicka and colleagues (Goddard & Wierzbicka, 2014; Wierzbicka, 1996). The project is to discover a limited set of semantic units which are universal in the sense that they can be translated into every known language using very few lexical units.

[3] Some content in this section is repurposed from a blog post by one of the authors (Stoltz, 2019).

need to define their terms, thereby barring the full participation of new entrants into a community.

We should be less concerned with jargon *per se* and more so with jabberwocky. As Blumer argued (1940:718), too much uncertainty about the meaning of our terms may be "detrimental" to theorizing and research, but we cannot simply "engag[e] in the practice of the ostrich or [expect] some form of magic to make the problem vanish." Explicit definitions are a means to slay the jabberwocky (or at least slow it down), but contrary to hand-wringing about whether the discipline is uniquely susceptibility to "the emission of meaningless noises" (Alpert, 1938:855; Dressler & Korber, 1962), and broader discussions about "bad writing" in academia (Butler, 1999), creating unambiguous definitions is quite likely impossible. Ambiguity will live on, and that is probably okay (McMahan and Evans 2018), but that does not mean definitions offer no benefit.

The necessity of community work: it means just what I choose it to mean?

As C. Wright Mills writes, "the proper result of good definition is to transform argument over terms into disagreements about facts, and thus open arguments to further inquiry" (Mills [1959] 2000:34). What is a definition? As many philosophers point out, a definition takes the form of an equation with the *definens* (the word to be defined) on one side and the *definiendum* (the words used to define it) on the other. Wittgenstein ([1953] 2009:5) summarizes this position succinctly: "Every word has a meaning. This meaning is correlated with the word. It is the object for which the word stands." This resemblance to a mathematical formula has seduced many serious thinkers into a faith (or hope) that a set of semantic rules exists which are as logical and precise as mathematical rules (McMahan and Evans 2018:860-3). Following Pierce's argument to James, and provided one follows such rules, one should select "unattractive" terms (*definens*) and then "invent a sufficiently disagreeable series of words to express it" (*definiendum*) so that "loose thinkers" will not want to adopt our technical vocabulary (quoted in Ketner, 1981:343).

This strategy, in practice, ignores how meaning is a community property. In contrast, our definition of definition is: *a description of a word or phrase using terms for which the meaning is well known in the community*.[4] This, we believe, roughly covers the range of "kinds" of definitions identified in the philosophical literature (Belnap, 1993; Robinson, 1950), but emphasizes that meaning is a community property. That is, we must pay homage to the background knowledge our technical and popular audiences may bring to our words. As Wittgenstein ([1953] 2009:25) observed, "For a large class of cases… the meaning of a word is its use in the language." Our suggestion is somewhat in tension with Swedberg (2020:3) who argues that "a useful definition… should be stipulative in nature… the writer decides what the definition will be like." This "stipulative" type of definition is not necessarily beholden to prior

[4] This is a paraphrase of Bertrand Russell, itself building on Aristotle's first rule of definitions: "First of all, see if he [sic] has failed to make the definition through terms that are prior and more intelligible. For the reason why the definition is rendered is to make known the term stated, and we make things known by taking not any random terms, but such as are prior and more intelligible…" (Aristotle, 2018:329).

or current uses. It is possible that the writer may take the community into account when deciding what the definition will be like, but in the extreme, this is the *Humpty Dumpty* strategy. (Carroll, 1925):

> When I use a word," Humpty Dumpty said in rather a scornful tone, "it means just what I choose it to mean – neither more nor less.

To follow such a route will leave many of us, like Alice, "too much puzzled to make any other remark." Just stipulating a definition is insufficient. Typically, however, definitions in social scientific literature will restate meanings that are conventional to our communities, and even if they are novel definitions, it is unlikely they will be stark departures from the beaten path. Laboring through the task of defining is likely less about the author telling readers what a word means and more about recognizing the range of what their readers might assume the word to mean.

The necessity (and insufficiency) of boundaries

Etymologically, "definition" – effectively shared by most Indo-European languages – contains a "theory" of definitions deriving from the Latin *de-* (completely), and *finis* (boundary, end) or *finire* (to bound, to limit). That is, a definition *completely bounds*. This is also known as the classical theory of categories or concepts (Charles, 2010; Geeraerts, 1986; Rosch, 1999; Taylor, 2003; Wittgenstein [1953] 2009) in which a definition consists of necessary and sufficient conditions for inclusion in a set. As extensively discussed by conceptual metaphor theorists (e.g., Grady, 1998), this is a metaphorical extension of our basic bodily existence, bound by the surface of our skin: "We project our own in-out orientation onto other physical objects that are bounded by surfaces. Thus we also view them as containers with an inside and an outside" (Lakoff and Johnson 2008:29). As we move from physical objects to abstractions, we bring along this cognitive apparatus: our concepts become intangible "walled" spaces.

This "crisp set" approach to definitions has several weaknesses (Fodor, 1998; Machery, 2009:80–1; Wittgenstein [1953] 2009). Specifically, people know the meaning of words without being able to produce such a list of conditions, and should we try to generate such a list, we quickly run into infinite regress: we must sufficiently define terms used to define our terms, and so on. Furthermore, while a supposedly exceptionless definition may feel "robust," it only requires one exception to be dismantled – and we can probably "find one of anything" (Martin, 2015:251). Precision is a useful aspiration (Blumer, 1940); we should aspire to define with such clarity that even our opponents adopt our definitions (Dennett, 2013:34; Rapoport [1960] 1997; Rogers [1961], 1995:332), such that we "transform argument over terms into disagreements about facts" (Mills [1959] 2000:34). Nevertheless, this is a Sisyphean task (Swedberg, 2020). Therefore, as it is unlikely we will find a definition with no exceptions, it is unfair to hold anyone to such a standard.[5]

[5] Although, it remains possible that a reader may infer that size maps to "importance" in the field, which is not our intention – and you'll just have to take our word for it!

This classical theory has been supplanted by semantic theories which assume referents have graded memberships in various overlapping sets (Margolis and Laurence 1999; Rosch, 1983; Taylor, 2003; Wittgenstein [1953] 2009:36).[6] This also means that "reference is no longer an all-or-nothing correspondence" (Latour, 1999:148). Only definitions that include everything are without exception – and we already have a word for that, *everything*! But, even if we limited our term to a particular domain, an all-encompassing definition that accounted for every possible variation of our observations of this domain would likely be as useful as a "map of the country, on the scale of a mile to the mile" (Carroll 1894). We may bemoan the impossibility of perfect definitions, but we should not lose sight of the utility of simplification. Moreover, a little ambiguity may even be productive (McMahan and Evans 2018).

Drawing out definitions

The preceding lays out a frustrating state of affairs: We wish to accurately communicate meaning to others. Not all our meanings can be communicated using words that we can be assured are also known by our readers: we must sometimes use jargon that readers may not understand. We must, therefore, provide definitions for our jargon. But, our definitions will never be exceptionless: they will undoubtedly include some cases which should be excluded, and exclude some cases which should be included.

In what follows, just as we must use boundaries to define our terms while recognizing the indeterminacy of any definition, we use theory visualizations to bound terms while also playing with those very boundaries. In addition to aiding imagination and clear thinking, visualizations are also an invitation. At the extreme, some people have no explicit visual imagery in mind (i.e. aphantasia, see Dance et al., 2022) when reading texts. Therefore, even if theory visualizations are just "sentences rewritten within a distinct textual topology" (Lynch, 1991:11), providing visualizations is a form of inclusive community work, a tool to attempt to "convey a meaning accurately from one mind to another" (Carroll, 1989:275). Furthermore, visualizing our definitions is a means to turn definitional work into an "observational" study, by providing objects that we can "experiment on" (Silver, 2020:875).

Just like definitions, our visualizations cannot do without some kind of boundedness. Page sizes and surrounding text are the first of such boundaries. This may lead to unintended inferences (Brett, Silver, and Beelen 2020). For instance, in the most unsympathetic viewing, "bounded names" imply "ontological territories marked by discrete demarcations" (Lynch, 1991:11). We should certainly be mindful of how our visualizations afford certain ways of thinking over others – and indeed, unintended affordances may drive the creative potential of theory visualizations (Silver, 2020). However, we cannot avoid all undesired inferences. Therefore, dear reader, be charitable.

[6] This is commensurate with Weber, who contends "we must give every phenomenon to which no term has yet been accorded the nearest and most descriptive words from traditional language and just be careful to define them unambiguously" (Chalcraft and Harrington 2001:63).

Inside: property spaces

People know what words mean without knowing their definitions and, as many have argued (Firth, 1957:11; Garfinkel, 2019; Malinowski, 1935; Wittgenstein [1953] 2009:80, 109), we can infer what a word means to people by observing how they use it. We will commonly find there are *many uses* of a term, however. While we carry an implicit sense of the community's *typical use* of a term, as scholars, we should stand ready to question our intuitions.

A common practice for dealing with this polysemy involves a survey of use – what might be called *definitional surveys*. Such a study proceeds as follows. First, and crucially, we build a corpus that roughly reflects the community we wish to speak to.[7] Second, we find contextual examples of the focal term in that corpus. Third, we group these into similar specimens of a species of the term. We repeat this process until each new specimen fits into a group, or at least there appears to be diminishing returns to continuing the search. Typically, what is operating behind the scenes is a *shared property space*. That is, while there may be many different, potentially competing, definitions for a single term as evinced by how this term is used in the community, these definitions are usually not so disconnected.

Take, for example, "theory." Several sociologists have offered definitional surveys of this term. Merton (1945) offered seven species of theory describing "distinct activities carried out by members of a professional group called sociologists." Merton engages in this survey with the intent to favor one species over the others, that is, to define "real" or "proper" sociological theory. Gross and Camic (1998) take a more pluralist position when enumerating eight "intellectual projects" that characterize the field of sociological theory. Abend (2008) identifies seven species of "theory" used by sociologists, while Krause (2016b) finds five "modes of theorizing" – both taking the pluralist position. Although there are certainly more definitional surveys and typologies of theory in the sociological literature (e.g., Eisenstadt and Curelaru 1976; Levine, 1995; Martin, 2015; Martindale [1961] 2013), these four span several decades while also being published in central sociological journals (*American Sociological Review*, *Annual Review of Sociology*, *Sociological Theory*, and *British Journal of Sociology*, respectively). Furthermore, just these four authors give us twenty-seven possible uses of "theory" to work with – which is plenty for our brief demonstration.

We can reduce this set in three ways. First, we can presume that authors have identified the *same* species. For instance, what Abend calls "general propositions, or logically-connected system of general propositions, establishing a relationship between two or more variables" can be roughly equated to what Krause describes as "joining concepts to a testable hypothesis about a causal relationship between them"

[7] But, what of the specific problem of infinite regress? "We just can't investigate everything," Wittgenstein explains (1972:343), "And for that reason we are forced to rest content with assumption. If I want the door to turn, the hinges must stay put." Most words are "hinges," in the sense that in order to move on we presume they are, at least temporarily, incorrigible. Following Van Inwagen (2008:328), we corral those few terms that are necessary for our argument – those terms with "explanatory mojo" (Martin, 2017:14).

(although we could reasonably debate the extent the modifier "causal" strains this equality).

Second, we may presume that some authors propose a species of a more encompassing genus. That is, one use is an "elaboration" of a more "schematic" definition (Lizardo, 2021; Tuggy, 1993). *Elaboration* refers to the "hierarchy of specificity" (Mills [1959] 2000:34) or the degree of *schematicity*. For example, "pig" is more schematic than "Hampshire hog" or "potbelly pig" but more elaborate than "mammal." Using these first two methods, we created Table 1 with six different "schematic" senses of theory, with respective definitions drawn from each of the four authors.

We can go further. We can propose that these six senses exist in the same "property space," wherein the boundaries between them are porous. Analysts commonly arrange typologies into a "2 by 2" table.[8] In this procedure, the analyst outlines a few dimensions that account for the most variation in their empirical observations. This is "dimension reduction" (Lazarsfeld, 1937) as we take the inherent heterogeneity (and particularity) of our observations and simplify these into the patterns that *seem* most explanatory.

For example, Alejandro Portes and Julia Sensenbrenner (1993) tell us that there are four sources of social capital (each deriving from the work of Durkheim, Simmel, Weber, and Marx and Engels, respectively). These four sources are then grouped into those that come from "consummatory" (or principled) motivations and those that come from "instrumental" motivations. Thus, "motivation" is the single dimension that divides our Social Capital property space into a Set A and a Set B: either resources are exchanged because of the actor's own self-interest, or not. Portes and Sensenbrenner treat this as a binary distinction, but we can also treat such dimensions as bipolar *continua*.

In the commentary on types of "theory," a key dimension discussed is how the theory is oriented toward particular readers, such as the general audiences, as opposed to niche specialists. That is, one dimension of our space is *distance from a public audience*. Next, we tend to find discussion about the relationship of "theory" to empirical research and particular observations. So, a second dimension of our space is *distance from our data*. With these dimensions in mind, we can arrange our six senses of theory into a shared two-by-two space, one which can convey some of the fuzziness of these definitional surveys, with broken boundary lines and some senses closer to others. Finally, we can add a third dimension by scaling each porous boundary according to the number of specimens collected for each sense taken from our four authors. While there are certainly alternative ways to operationalize this dimension, this is an attempt to weaken the *unintended inference* (Brett et al. 2020) that each "sense" necessarily encompasses an equivalent "region" of the property space of "theory."[9] That is, some senses are more central in the community than are others (Taylor, 2003) Fig. 1.

[8] Camic and Gross argue, to the extent that different "theory projects" do discuss other projects, they "simply lump the majority of alternative projects together in an undifferentiated mass" (Camic and Gross 1998:468).

[9] Although, in this case, maybe that was Joyce's intention.

Table 1 Senses of "Theory" in sociology

Sense	Elaborations
Systematic Propositions and Generalizations	**Merton**: Systematic inferences **Merton**: Formalized derivation and codification **Merton**: Empirical generalizations **Camic and Gross**: General analytical tools for use in empirical research **Abend**: General propositions, or logically-connected system of general propositions, establishing a relationship between two or more variables **Krause**: Joining concepts to a testable hypothesis about a causal relationship between them **Krause**: Developing new concepts in dialogue with observations and previous concepts
Exegesis and Soc. of Sociology	**Camic and Gross**: Analyze a range of past theoretical ideas **Abend**: The study of and the students of the writings of key "theorists" **Krause**: Interpreting major figures **Krause**: The role of sacred texts and major figures
Orthological Theorizing	**Merton**: Analysis of Sociological Concepts **Camic and Gross**: Synthesize multiple theoretical approaches **Camic and Gross**: Refine existing theoretical research programs **Camic and Gross**: Attempting to dissolve the enterprise of sociological theory **Abend**: The study of certain special problems which reflect upon the nature of knowledge, language, and reality, and some sort of conceptual analysis.
Particularizations	**Merton**: *Post Factum* Sociological Interpretations **Abend**: Explanation of a particular social phenomenon **Abend**: Offer an original 'interpretation,' or 'way of making sense' of a certain slice of the world **Krause**: Applying existing concepts to new observations **Krause**: Linking a new fact or observation to an existential issue or a historical trend
General Orientations or Perspectives	**Merton**: General Sociological Orientations **Abend**: An overall perspective from which one sees and interprets the world.
Social Commentary and Critique	**Camic and Gross**: Offer a diagnosis of contemporary social conditions **Abend**: Accounts that have a fundamental normative component.

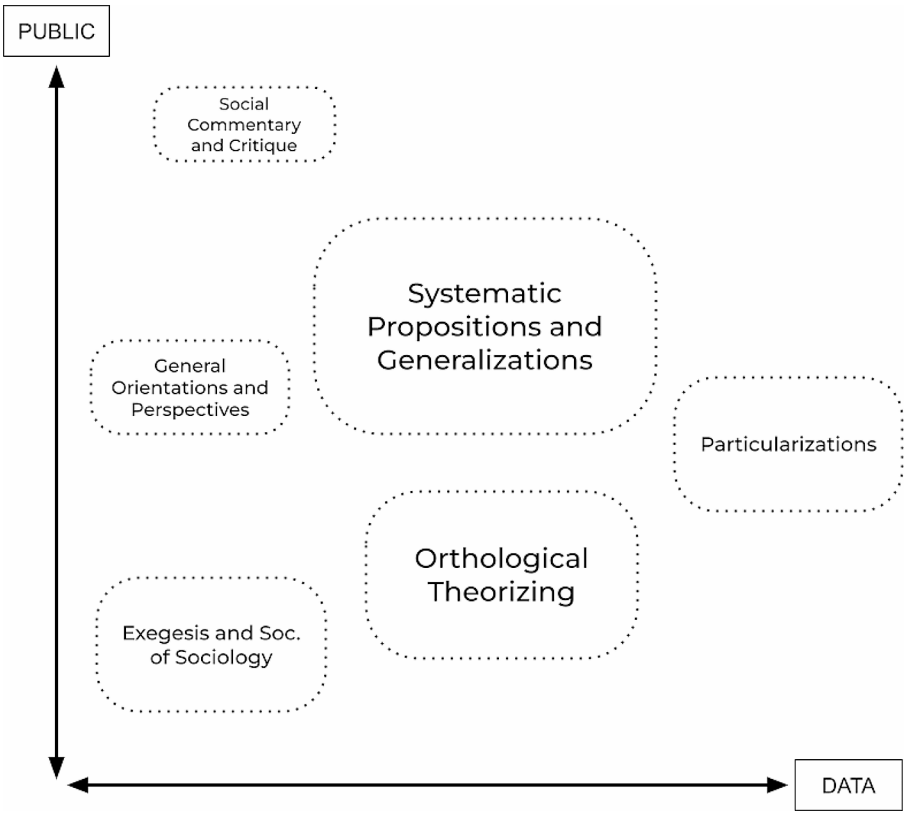

Fig. 1 This figure illustrates the shared "property" space of six senses of "theory" as derived from definitional studies of "theory" and "theorizing" in sociology. The vertical axis refers to how "close" the sense is to a public audience. The horizontal axis refers to how "close" the sense is to empirical data. Each sense is "bounded" by a porous border, occupying different "regions" of this space, and taking up space according to the number of more specific elaborations referenced in the definitional studies

The advantage of this procedure is that it necessarily leads us to emphasize what is similar without denying differences.[10] It allows "independence with being connected, diversity with mutuality" (Levine, 1996:676). Such basic property spaces based on simple distinctions – like distance to the public or distance to our data – may serve as the scope conditions for empirical studies or, at least, the starting point for more complex property spaces. Indeed, if we take the notion of a continuous space seriously, such a definitional diagram could be used to discover unidentified types of "theory" in the spaces between our senses. (We could even argue that the top right corner is the kind of work that tends to be labeled "atheoretical.") More importantly, though, such a diagram allows us to "show" our definitional work in a way that provides a shared reference. Just as Latour (1999:32) points out, "the word 'reference' comes

[10] However, if we redefine our concepts every time we encounter a problem with little consideration, this is unlikely to be a net positive for the scientific community. Several of the ways theorists go wrong when "handling problems" (Martin, 2015:25–6) roughly involves redefining concepts as an evasive maneuver.

from the Latin *referre*, 'to bring back.'" Just as a botanist does not bring back the entire forest – "And what would be the point of transporting the whole forest here? One would get lost in it." (1999:36) – we do not bring every example of a use of a term. And, just as the botanist, we further "transport" our collection into an organized space such that our observations may be shared, and "the 'things' [we] gathered… [are] presentable all at once to those [we] want to convince" (Latour, 1986:7). There are several ways readers may disagree with the original four author's taxonomies, our reduction of these into a few schematic senses occupying relative locations in a shared property space, or even our chosen dimensions of that space, but they can at least *point to* what is disagreeable.

Outside: schematic networks

Another problem definitional work grapples with is conceptual contamination. The words we use often have associations with multiple, sometimes divergent, meanings—i.e. they are polysemous (Gerring, 1999). In some cases, these meanings are semantically related (the term is *vague*), and in others, they are distinct (the term is *ambiguous*). For example, "aunt" is vague because it can refer to multiple types of relations (e.g., mother's sister versus father's sister), while "bank" is ambiguous because the word can refer to distinct concepts (e.g., river bank versus financial bank). These divergent meanings complicate interpretation insofar as some meanings may "contaminate" or "color" the way a word is interpreted. These meanings are "baggage" implicitly brought into interpretations.

Conceptual contamination is an issue in definitional work because it can create misunderstanding insofar as an audience thinks a word means Y, but the author means X. One example is the ambiguously-named concept "image schema" (Mandler & Cánovas, 2014; Oakley, 2007) from the cognitive sciences. Despite audiences' expectations, "image" here does not refer to visual processing, but to a cognitive imprint left behind from multimodal perceptual experience. Although experts within the field have a general shared understanding of the concept, outsiders hearing the concept for the first time are often misled by conceptual contamination.

Even within academic fields, conceptual contamination can create misunderstanding when different subfields use the same concepts in different ways. In sociology, words like "culture" or "capital" can take on very different meanings across subfields, such that any scholar's interpretation is contaminated by their position and experience in the field. A cultural sociologist coming from a field-theoretic perspective reading a paper on culture and capital brings different baggage than a stratification and education researcher. While such ambiguity or vagueness may be productive (Stark 2011; Deener, 2017; McMahan and Evans 2018), there are likely diminishing returns.

Visualization can help identify and address misunderstandings created by conceptual contamination in two ways: first, it can guide the creation of new terms, helping analysts avoid ambiguous or vague signifiers. Second, in fields where there are polysemous terms already in play, it can help analysts get a clear understanding of the different uses of the term, and identify the sources of these divergences (Lizardo, 2021). The specific visualization method we present is a "schematic network," which

comes from cognitive linguistics (Langacker, 1987:74; Tuggy, 1993). As visual aids, schematic networks can help with definition work by mapping out three of word relations: schematization and elaboration, extension, and entrenchment.

Schematic networks map relations between meanings associated with a single phoneme (i.e. a word). A simple schematic network for the word "gay" is shown in Fig. 2A. Most schematically, "gay" refers to a personal quality. More specifically, "gay" can refer to one of two personal qualities–*lighthearted* or *homosexual*. These schematic elaborations are designated with gray arrows. Contemporaneously, the *homosexual* meaning of "gay" is more salient, designated by a dark solid box. This is a simple example, but it illustrates how schematic networks can be used to efficiently and clearly show the meanings of a word and the risk of conceptual contamination caused by ambiguity and discrepancies in salience.

Schematic networks can also be used to illustrate how the meanings of words are *extended* to new contexts. Figure 2B illustrates this with a schematic network of "dirty" (Lizardo, 2012). Most schematically, "dirty" refers to a quality. More specifically, it can refer to either a physical quality or a moral quality. Unlike Fig. 2A, neither meaning is more salient than the other. Additionally, a horizontal line from *dirty surface* to *morally impure* is used to indicate that the *morally impure* meaning of "dirty" is a metaphorical extension from its original physical meaning.

Given our interest in conceptual contamination, we focus on cases where elaborations and extensions are referenced by the same or similar term. Tuggy (1993:167–8) uses the example "paint" which can refer to a variety of objects and practices. In such cases, the question is the (1) extent to which one or another sense is "entrenched"

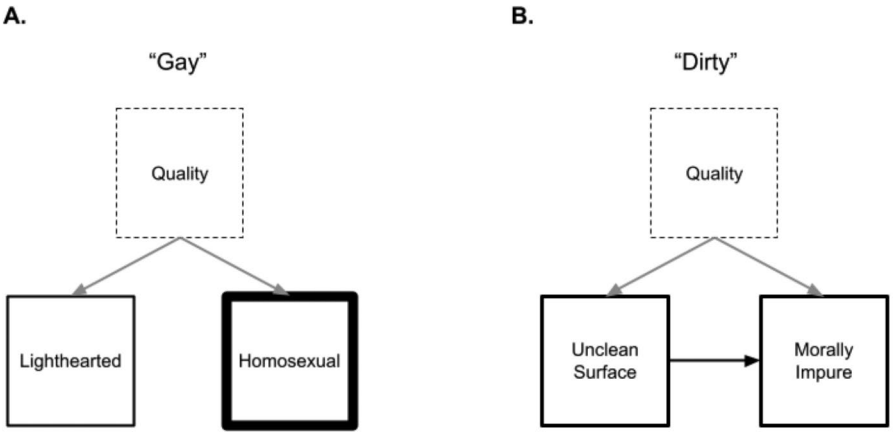

Fig. 2 Two hypothetical schematic networks, adapted from Tuggy (1993), for the terms "Gay" and "Dirty." Higher levels are more schematic "senses" of a given term, whereas lower levels are more elaborated senses of the same term (solid gray downward arrows). The lateral dimension represents instances when the term or concept is extended to different domains. When an extension is directly from another sense, the two are connected (solid black lateral arrow)

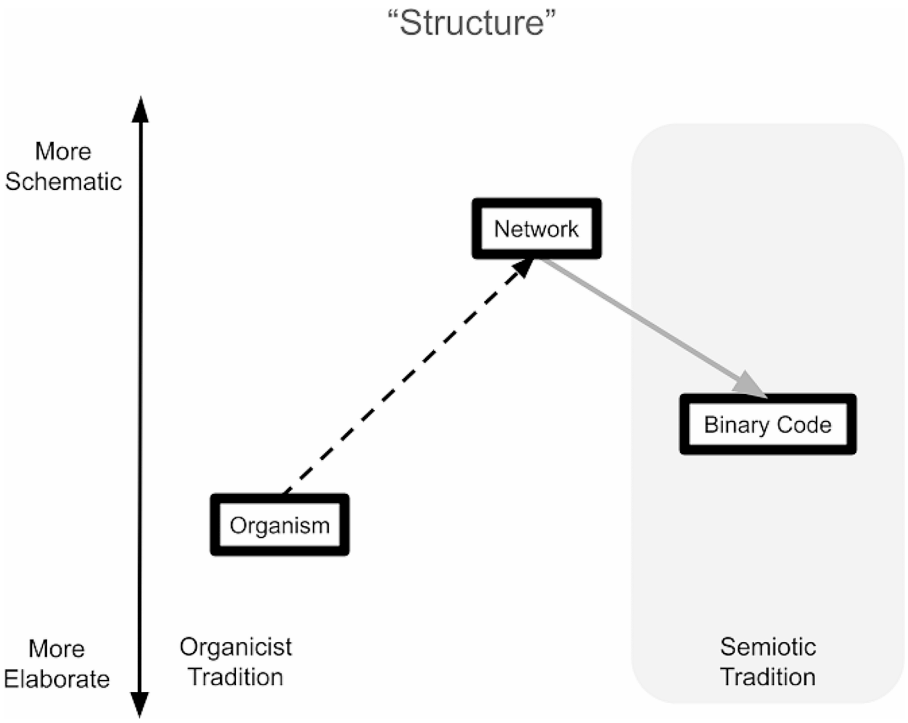

Fig. 3 Basic schematic network representing the concept of "structure" as used in the social sciences, adapted from Lizardo (2021). The vertical dimension represents the degree of schematicity (top) versus elaboration (bottom). The horizontal dimension represents the extension of the concept. The thickness of lines surrounding the senses refers to how entrenched or salient they are in the community. In this simplified version, all three senses are equally entrenched

or well-established, and therefore more salient, and (2) the extent to which multiple entrenched senses are meaningfully distinct.[11]

Using the schematic network, Lizardo (2021) examines the "structure" concept in sociological theory. Figure 3 represents the bare bones of Lizardo's argument, specifically, that there are three entrenched senses of the concept structure in the social sciences, arranged laterally: organism (to the left), binary code (to the right), network (in the middle). The senses are arranged vertically by degree of schematization with "network" being the most schematic and "organism" being the most elaborated. Finally, "network" is a schematization of "organism" (dashed upward arrow) and "binary code" is an elaboration of "network" (solid gray downward arrow).

There are many more intermediary steps interrelating these three entrenched senses of "structure." Fig. 4 is a more extensive visualization of this network. Tracing the genealogy of schematizations, elaborations, and extensions, we arrive at different "traditions" of theorizing in the social sciences.

[11] Typically, the most entrenched senses are at a meso-level of elaboration—sometimes referred to as the basic level (Martin, 2011:141–3; Rosch, 1999)—e.g., a generic pig is more salient than either mammal (too schematic) or Hampshire hog (too elaborate).

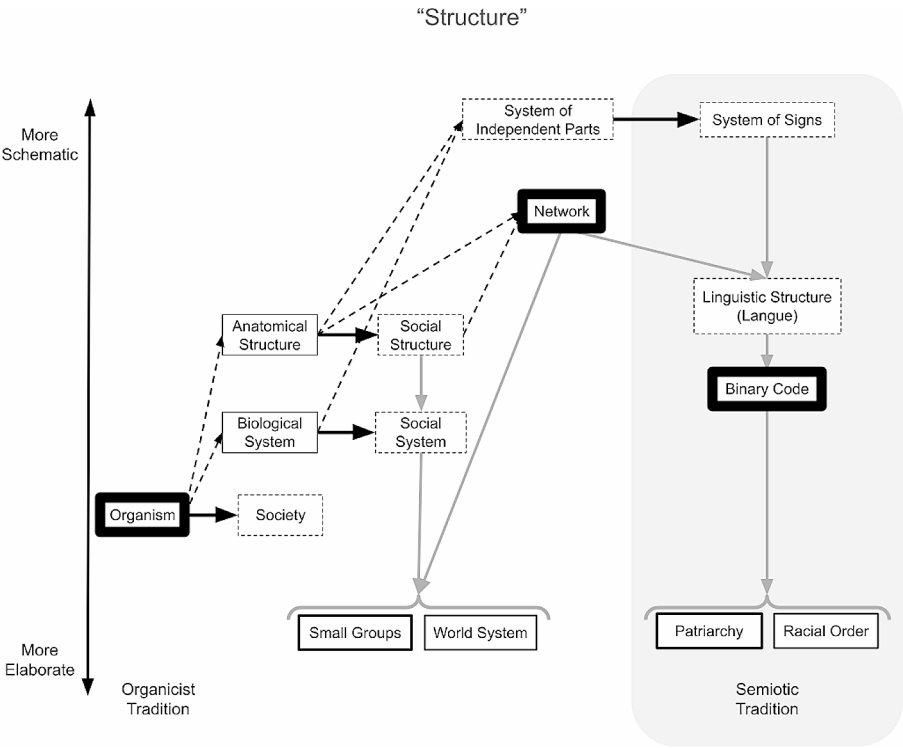

Fig. 4 A schematic network representing the concept of "structure" as used in the social sciences, adapted from Lizardo (2021). The vertical dimension represents the degree of schematicity (top) versus elaboration (bottom). The horizontal dimension represents the extension of the concept in a quasi-genealogy, from its original source model of "organism." The thickness of lines surrounding the senses refers to "entrenchment."

These entrenched senses are more cognitively available than are other senses. Despite using structure in more schematic senses, and without explicitly relying on the organism as a model for social life, the "organismic" notion continues to contaminate our intuitions (Lizardo, 2021:621). Giddens (1984:163 emphasis added) notes:

> The tendency to suppose that societies, as social wholes, are easily definable units of study has been influenced by *several noxious presumptions* in the social sciences. One is the tendency to understand "social systems" in close conceptual relation to biological systems, the bodies of biological organisms. There are few today who, like Durkheim, Spencer, and many others in nineteenth-century social thought, were prone to do, use direct organic analogies in describing social systems. Nevertheless, *implicit parallels remain very common* even among those, for instance, who talk of societies as " open systems."

Tracing the extensions, schematizations, and elaborations, we can see a "bifurcation" forming between the "organismic" senses of the term and the "semiotic" senses. Although there are extensions and elaborations of both "organism" and "binary code"

(and Lizardo demonstrates), these two senses are ultimately distinct. The implication of this being that any attempt to define the most schematic sense of "structure," one which adequately encompasses both organism and semiotic traditions, will likely be unhelpful.

If a term is widely used in a given technical community to refer to two or more senses which are entrenched and distinct, the concept is "fragmented" (Taylor and Vickers 2017). When we use fragment concepts, there is a risk of conceptual contamination. If one uses the more schematic term, "structure," but does not specify whether one means "organismic" sense or the "semiotic" sense, the reader is likely to "fill in" the sense with which they are most familiar. Furthermore, if one means a less entrenched sense, they will likely be consistently working against the intuitions of the reader. For instance, if one means "linguistic structure," but not necessarily the "binary code" interpretation, they may need to remind the reader.

Perhaps, then, we should simply not use the term "structure" in an unqualified manner. That is, we can give vague terms a pass, but we should avoid ambiguous terms in the sense that the term refers to two or more *distinct* and *entrenched* senses. We could take the *selective* eliminativist position, which suggests "a term should be eliminated in *some* contexts but not others" (Taylor and Vickers 2017:28 original emphasis). Specifically, the "greater the number of theoretical roles that a certain term is put to" and the "more pivotal the role a concept plays in the arguments put forward to reach one's conclusions," the more reason one has to eliminate the ambiguous term (Taylor and Vickers 2017:28–9). Even if we do not take such a position, by creating a schematic network of our theoretical concepts, we can better empathize with our communities. In doing so, we can anticipate the potential conceptual baggage our audiences may bring to our words and mitigate against conceptual contamination with explicit, plain, and modest definitions.

Crossing boundaries: dynamic definitions

The preceding demonstrated ways we can visualize our definitions while loosening the presumption of crisp sets using such tools like property spaces and schematic networks. Despite the fall of the classical theory of meaning with its hope for exceptionless definitions, this does not mean we can never proceed *as if* phenomena could be divided into discrete categories. Beginning with crisp sets, we can engage in definitional revision, which may reveal a theoretical contribution. We use a modified spanning tree to visualize this work.

Recall that definitions that (somehow) encompass all possible instances are both unlikely to exist and unlikely to be useful should we find one. Our definitions of a particular social phenomenon will entail simplification. We will discover tokens falling outside our boundary which, upon further reflection, should have probably been included within that boundary (and sometimes vice versa). This can be a generative source of theoretical insight.[12] Rather than beginning with so-called "watertight" definitions, we proceed by "roughly locating a few 'fixed' points that will help us

[12] And, let's bracket the possibility that claims about "bad writing" are weapons used in intellectual combat and thus red herrings.

see the general shape of the problem" (Dennett, 2013:89). This conjunction of definitional work and theoretical development operates through "successive approximations" (Dennett, 2013:89). But, how might we show such definitional revision and dynamism in a theory figure?

Consider Aliza Luft's (2015) "Toward a Dynamic Theory of Action at the Micro Level of Genocide."[13] Luft begins with a critique of prior categorical thinking: "Research on genocide tends to pre-group actors—as perpetrators, victims, or bystanders—and to study each as a coherent collectivity (often identified by their ethnic category)" (2015:148). Previously, genocide researchers explained participation in genocide in one of four ways:

1. perpetrators were obedient to an authority.
2. perpetrators responded to intergroup antagonism.
3. perpetrators succumbed to intragroup norms or peer pressure.
4. perpetrators dehumanized the outgroup.

While all are useful theories, Luft explains, they are complicated by the empirical presence of behavioral variation. Researchers miss the "dynamic" aspect of action. As a corrective, we should examine (Luft, 2015:153):

> …boundary crossing at the behavioral level: individual defection from the expectations of a behavioral script, without any change in the categorical definition of the boundary. The categorical boundary is not contested, nor is the hierarchy; what changes is an individual's behavioral position relative to the system.

Not everyone associated with a perpetrating group engages in violence at the same time or consistently throughout a conflict, and may even save members of the victimized group. This is a severe challenge to the preceding explanations. What Luft does to meet this challenge is to add dimensions to an otherwise binary property space, which previously consisted of a group committing murder and a group being murdered.

Focusing on the members of the perpetrating group, Luft notes that not everyone in that group actually participates. Furthermore, Luft identifies three instances of *behavioral boundary crossing*: (1) some of those who did participate eventually stop, (2) some of those who did not participate eventually start, (3) and some of those who did not participate also actively saved members of the outgroup. Taking these together, we arrive at a property space that can be presented by the spanning tree in Fig. 5. This visualization allows us to incorporate heterogeneity (the lowest level) into otherwise static categories (the middle level). Luft then outlines four mechanisms that explain these three cases of "behavioral boundary crossing" represented in the visualization by broken lines with arrows crossing the boundaries of their respective categories.

[13] For the classic statement see Lazarsfeld (1937) and Barton (1955), but this is elaborated in (Ragin, 2000:76–85), Becker (2008:173–215), and most extensively in Chaps. 4, 5, and 6 of Karlsson and Bergman (2016).

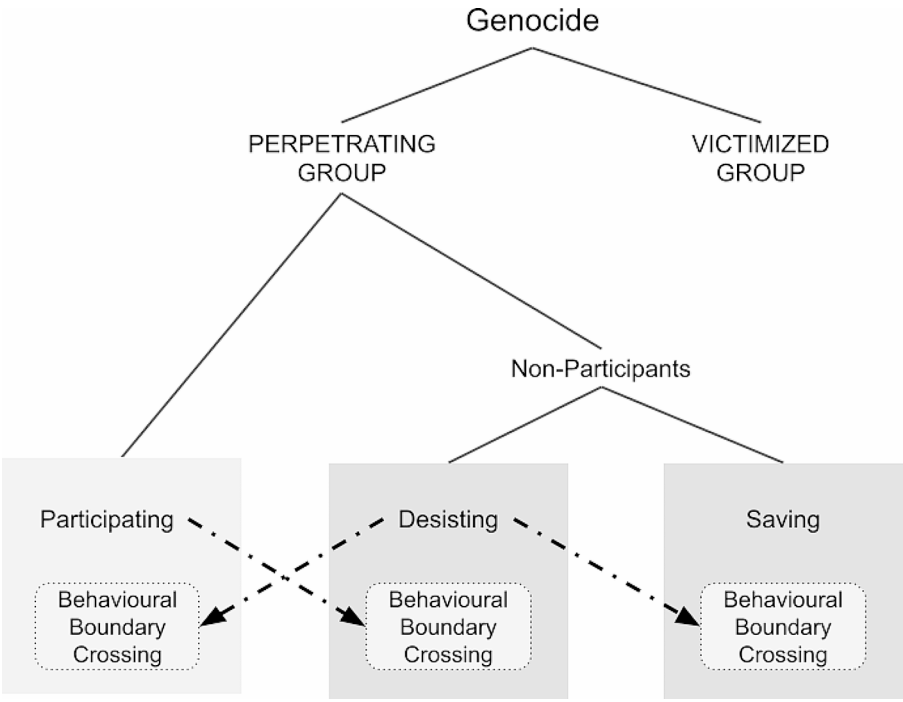

Fig. 5 This figure shows a spanning tree of Luft's (2015) argument about definitions of perpetrators of genocide. Prior work stops at the second level, defining groups discretely as either perpetrating or victimized. Luft identifies not only heterogeneity within the perpetrating group (lower levels), but also dynamic action where people change their behavior (broken lines with arrows)

In this case, previous expert categories led to an insufficient explanation for the perpetration of genocide precisely because they omitted too much observed variation. Elaboration proved necessary. Attempting to create classical categories — with rules for inclusion and exclusion and the presumption of mutual exclusivity, in which all members are equally representative — is likely a necessary step in this theorizing process. Especially if we begin, as Durkheim suggests, "with the lay concept and the lay term" (Durkheim [1895] 1964:37). It provides a foothold that is relatively stable, even if it may eventually give way. Developing theory, however, is not just showing that these categories are insufficient (because, as we have been arguing all along, *of course they are*), but rather pointing out where this slippage is leading to problems in our explanations, and how they may be systematically mended. This is precisely what Luft does (see also Monk, 2022), as we can see in Fig. 5.

Discussion

Writing with *clarity* is a laudable aspiration. This leans on a visual metaphor of knowledge: *to understand is to see*. We want to write in ways that readers can *see clearly*. Clarity, however, is not an either/or attribute of a text or a term. What we

can see depends upon neither the environment nor the visual apparatus alone, but what the intersection of the two affords us. The "cockeyed" squid lives in the ocean's "twilight zone," and has one smaller black eye and one larger yellow eye. The squid tends to gaze downward with its smaller eye and upward with its larger eye. While the larger eye is likely better at spotting the shadows of prey above, the smaller eye is better at identifying bioluminescent creatures below (Thomas, Robison, and Johnsen 2017). In such a case, clarity is a function of the individual intersecting with the environment, and the orientation of the individual to that environment. Just like vision, meaning is relational. Conveying "a meaning accurately from one mind to another" (Carroll, 1989:275) is not only about selecting the correct words, but also about which audiences we are gazing toward when we select those words.

By suggesting a sentence is "clear," we are making assumptions about our community and our readers, about what knowledge and experiences they bring to our prose. Clarity is not simply "common sense." Writers can raise the bar of entering their conversation by increasing the particularity of intersecting background knowledge – often exemplified by "jargon." In the extreme, we find something like James Joyce's *Finnegans Wake*, with so many inside jokes, nods to other writers, neologisms, and multilingual puns, that we might speculate whether Joyce himself could fully participate in the conversation.[14] As we suggest, lowering the bar is not necessarily a simple task, though. Offering explicit, plain, and modest definitions is one such method. We should be obvious when offering a definition, use words that we assume are well known to our audience when defining, and acknowledge that our definitions will always be lacking. The last point, we argue, is crucial. Our definitions will never be exceptionless: they will include some cases which should be excluded, and excluded some cases which should be included. The desire for clarity is a virtue, up to a point. "Any procedure can be abused as well as used" (Merton, 1945:472).

Visualizing our definitional work can both help us come to terms with how our communities understand a term, and also allow us to communicate to our audiences what we mean by a term. Just as we must use boundaries to define our terms while recognizing the indeterminacy of any definition, we can use theory visualizations to bound terms while also playing with those very boundaries. Visualizing our definitions is a means to turn definitional work into an "observational" study, by providing objects that we can "experiment on" (Silver, 2020:875).

Here, we have engaged in definitional work using a range of visualizations to explore the polysemy of terms along the lines of elaboration, extension, and dynamism. First, we demonstrated the ways that property spaces can reveal how seemingly distinct uses of a term are related by underlying dimensions. Second, we introduced the schematic network as a visualization tool to tease out vagueness and ambiguity in our terms by exploring elaboration, extension, and entrenchment – this helps us better anticipate where misunderstandings may arise. Finally, we consider how we can incorporate boundary crossings and dynamism within our definitions using dynamic spanning trees. For the sake of focus, we have bracketed the political or strategic aspects of definitions. That is, some definitions may serve some interests against oth-

[14] We could also identify individuals representative of the community and observe or ask them (e.g., Becker, 1993).

ers (Turner, 2013). We do not deny this. What explicit definitions and theory visualizations offer, though, is another way to demonstrate we have nothing up our sleeves.

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References

Abend, G. (2008). The meaning of 'theory'. *Sociological Theory*, *26*(2), 173–199.
Alpert, H. (1938). Operational definitions in sociology. *American Sociological Review*, *3*(6), 855–861.
Aristotle (2018). *The Aristotle Collection*. Charles River Editors.
Barton, A. H. (1955). The Concept of Property-Space in Social Research. *The Language of Social Research* 40–53.
Becker, H. S. (1993). How I learned what a crock was. *Journal of Contemporary Ethnography*, *22*(1), 28–35.
Becker, H. S. (2008). *Tricks of the Trade: How to think about your research while you're doing it*. University of Chicago Press.
Belnap, N. (1993). On rigorous definitions. *Philosophical Studies*, *72*(2–3), 115–146.
Besbris, M., and Shamus Khan (2017). Less theory. *More Description Sociological Theory*, *35*(2), 147–153.
Blumer, H. (1940). The Problem of the Concept in Social psychology. *The American Journal of Sociology*, *45*(5), 707–719.
Brett, G., Daniel Silver, and Kaspar Beelen (2020). The Right Tool for the job: Problems and solutions in visualizing Sociological Theory. *Journal for the Theory of Social Behaviour*, *50*(2), 223–248.
Brinton, C. (1939). What's the matter with sociology? *Saturday Review of Literature*, *6*, 1–4.
Burawoy, M. (2005). For public sociology. *American Sociological Review*, *70*(1), 4–28.
Butler, J. (1999). *A 'Bad writer'* (p. A27). Bites Back. The New York Times.
Camic, C., and Neil Gross (1998). Contemporary developments in Sociological Theory: Current projects and conditions of possibility. *Annual Review of Sociology*, *24*(1), 453–476.
Carroll, L. (1925). *Through the looking glass and what Alice found there*. John C. Winston.
Carroll, L. (1989). The Selected Letters of Lewis Carroll. edited by R. L. Green. Springer.
Carroll Lewis. 1894. Sylvie and Bruno Concluded. Macmillan.
Chalcraft, D., and Austin Harrington (2001). *The Protestant Ethic Debate*. Oxford University Press.
Charles, D. (2010). *Definition in Greek Philosophy*. Oxford University Press.
Dance, C. J., Ipser, A., & Simner, J. (2022). The prevalence of aphantasia (imagery weakness) in the General Population. *Consciousness and Cognition*, *97*, 103243.
Deener, A. (2017). The uses of Ambiguity in Sociological Theorizing: Three Ethnographic approaches. *Sociological Theory*, *35*(4), 359–379.

Dennett, D. C. (2013). *Intuition pumps and other tools for thinking*. W. W. Norton & Company.
Dressler, D., & Korber, G. W. (1962). A comment on the Language of sociology. *Pacific Sociological Review*, *5*(1), 36–40.
Durkheim, E. [1895] 1964. The rules of the Sociological Method. Free.
Eisenstadt, S., Noah, & Curelaru, M. (1976). *The form of sociology: Paradigms and crises*. Wiley.
Firth, J. (1957). A Synopsis of Linguistic Theory, 1930–1955. Studies in Linguistic Analysis.
Fodor, J. A. (1998). *Concepts: Where Cognitive Science went wrong*. Oxford University Press.
Gans, H. J. (2009). A Sociology for Public Sociology: Some Needed Disciplinary Changes for Creating Public Sociology. *Handbook of Public Sociology* 123–134.
Garfinkel, H. (2019). Notes on Language games as a source of methods for studying the formal properties of linguistic events1. *European Journal of Social Theory*, *22*(2), 148–174.
Geeraerts, D. (1986). On necessary and sufficient conditions. *Journal of Semantics*, *5*(4), 275–291.
Gerring, J. (1999). What makes a Concept Good? A Criterial Framework for understanding Concept formation in the Social Sciences. *Polity*, *31*(3), 357–393.
Giddens, A. (1984). *The Constitution of Society: Outline of the theory of Structuration*. University of California Press.
Goddard, C., & Wierzbicka, A. (2014). *Words and meanings: Lexical Semantics Across Domains, languages, and cultures*. OUP Oxford.
Grady, J. (1998). The 'conduit metaphor' revisited. *Discourse and Cognition*, 205–218.
Healy, K. (2017). *Fuck Nuance Sociological Theory* 35(2):118–127.
Karlsson, J. C., & Bergman, A. (2016). *Methods for Social Theory: Analytical Tools for Theorizing and writing*. Routledge.
Ketner, K. (1981). Peirce's Ethics of Terminology. *Transactions of the Charles S Peirce Society*, *17*(4), 327–347.
Krause, M. (2016a). Clarification? Yes! Standardization? No. Or: What Kind of Cooperation for the sociology of culture? *The American Sociologist*, *47*(4), 454–458.
Krause, M. (2016b). The meanings of Theorizing. *The British Journal of Sociology*, *67*(1), 23–29.
Lakoff, G., and Mark Johnson (2008). *Metaphors we live by*. University of Chicago Press.
Langacker, R. W. (1987). *Foundations of cognitive grammar: Volume I: Theoretical prerequisites*. Stanford University Press.
Latour, B. (1986). Visualization and cognition. *Knowledge and Society*, *6*(6), 1–40.
Latour, B. (1999). *Pandora's Hope: Essays on the reality of Science studies*. Harvard University Press.
Lazarsfeld, P. F. (1937). Some remarks on the Typological procedures in Social Research. *Zeitschrift Für Sozialforschung*, *6*(1), 119–139.
Levine, D. N. (1995). *Visions of the sociological tradition*. University of Chicago Press.
Levine, D. N. (1996). Thoughts on 'Visions' and its creation. *Sociological Forum*, *11*(4), 675–685.
Lizardo, O. (2012). The conceptual bases of metaphors of Dirt and Cleanliness in Moral and Non-moral reasoning. *Cognitive Linguistics*, *23*(2), 367–393.
Lizardo, O. (2021). The Cognitive-Historical Origins of Conceptual Ambiguity in Social Theory. Pp. 607–30 in Handbook of Classical Sociological Theory, edited by S. Abrutyn and O. Lizardo. Cham: Springer International Publishing.
Luft, A. (2015). Toward a dynamic theory of action at the Micro level of genocide: Killing, Desistance, and saving in 1994 Rwanda. *Sociological Theory*, *33*(2), 148–172.
Lynch, M. (1991). Pictures of nothing? Visual construals in Social Theory. *Sociological Theory*, *9*(1), 1–21.
Machery, E. (2009). *Doing without concepts*. Oxford University Press.
Malinowski, B. (1935). *Coral Gardens and their magic* (Vol. 1). Unwin Brothers.
Mandler, J., & Cánovas, C. (2014). On defining image Schemas. *Language and Cognition*, *6*(04), 510–532.
Margolis, E. (1999). and Stephen Laurence. Concepts: Core Readings. MIT.
Martin, J. L. (2011). *The explanation of Social Action*. Oxford University Press.
Martin, J. L. (2015). *Thinking through theory*. W.W. Norton.
Martin, J. L. (2017). *Thinking through methods*. University of Chicago Press.
Martindale, D. [1961] 2013. The nature and types of Sociological Theory. Routledge.
Merton, R. K. (1945). Sociological theory. *The American Journal of Sociology*, *50*(6), 462–473.
Mills, C. Wright. [1959] 2000. The sociological imagination. Oxford University Press.
Monk, E. P., Jr (2022). Inequality without groups: Contemporary theories of categories, intersectional typicality, and the disaggregation of difference. *Sociological Theory*, *40*(1), 3–27.
Oakley, T. (2007). Image Schemas. The Oxford Handbook of Cognitive Linguistics 214–35.

Portes, A., and J. Sensenbrenner (1993). *Embeddedness and Immigration: Notes on the Social Determinants of Economic Action*. The American Journal of Sociology.
Ragin, C. (2000). *Fuzzy-set Social Science*. University of Chicago Press.
Rapoport, A. [1960] 1997. Fights, games, and debates. University of Michigan Press.
Reay, M. (2010). Knowledge distribution, embodiment, and insulation. *Sociological Theory*, *28*(1), 91–107.
Robinson, R. (1950). Definition. Clarendon.
Rogers, C. R. (1995). *On becoming a person: A therapist's view of psychotherapy*. Houghton Mifflin Harcourt.
Rosch, E. (1983). Prototype Classification and Logical Classification: The Two Systems. New Trends in Conceptual Representation: Challenges to Piaget's Theory 73–86.
Rosch, E. (1999). Principles of categorization. *Concepts: Core Readings* 189–206.
Silver, D. (2020). Figure it out! *Sociological Methods & Research*, *49*(4), 868–905.
Smelser, N. J. (2015). Sources of unity and disunity in sociology. *The American Sociologist*, *46*, 303–312.
Smith, C. (2016). The conceptual incoherence of 'Culture' in American sociology. *The American Sociologist*, *47*(1), 388–415.
Spillman, L. (2016). Culture's coherence: How the trees compose the Woods. *The American Sociologist* 1–14.
Stoltz, D. (2019). Categories, Part III: Expert Categories and the Scholastic Fallacy. *Culture, Cognition, and Action* (Culturecog). Retrieved December 18, 2023 (https://culturecog.blog/2019/05/20/categories-part-iii-expert-categories-and-the-scholastic-fallacy/).
Swedberg, R. (2014). *The art of Social Theory*. Princeton University Press.
Swedberg, R. (2020). On the use of definitions in sociology. *European Journal of Social Theory*, *23*(3), 431–445.
Taylor, J. R. (2003). *Linguistic categorization*. OUP Oxford.
Taylor, H., and Peter Vickers (2017). Conceptual fragmentation and the rise of Eliminativism. *European Journal for Philosophy of Science*, *7*(1), 17–40.
Thomas, K. N., Bruce, H., Robison, Sönke, & Johnsen (2017). Two eyes for two purposes: In situ evidence for asymmetric vision in the Cockeyed Squids Histioteuthis Heteropsis and Stigmatoteuthis Dofleini. *Philosophical Transactions of the Royal Society of London Series B Biological Sciences*, *372*(1717). https://doi.org/10.1098/rstb.2016.0069.
Tuggy, D. (1993). Ambiguity, polysemy, and vagueness. *Cognitive Linguistics*, *4*(3), 273–290.
Turner, S. P. (2013). *The politics of Expertise*. Routledge.
Van Inwagen, P. (2008). How to think about the Problem of Free Will. *The Journal of Ethics*, *12*(3–4), 327–341.
Vilhena, D. A., Jacob, G., Foster, M., Rosvall, J. D., West, J., Evans, C. T., & Bergstrom Jesper Sørensen, and Delia Baldassarri. 2014. Finding Cultural holes: How structure and culture diverge in networks of Scholarly Communication. *Sociological Science* 1:221–238.
Wierzbicka, A. (1996). *Semantics: Primes and universals*. Oxford University Press.
Wittgenstein, L. (1972). *On certainty*. Harper Collins.
Wittgenstein Ludwig. [1953] 2009. Philosophical Investigations. Blackwell.