

# **Clean up your theory!**

## **Invest in theoretical clarity and consistency for higher impact research**

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### **ABSTRACT**

This essay starts from a concern that many empirical researchers undermine their rigorous empirical work by coupling it to unclear and inconsistent theory. I suggest this is because we underestimate the difficulty of achieving theoretical clarity and consistency. I illustrate the problem in detail by cataloging common ways we violate clarity and consistency in the articulation of theoretical constructs and relationships and illustrating these violations with examples from unpublished manuscripts. In addition, I draw on the management literature on theory writing as well as on the dual process theory of cognition and the philosophy of science to identify and unpack three challenges to clear and consistent theory: the taxing cognitive effort required to turn ambiguous, associative intuition into logical arguments; the impossibility of achieving perfect clarity; and the existence of tradeoffs between clarity and other valued qualities of theory, particularly generalizability. The implication is that researchers need to invest not just in empirical rigor but also in theoretical rigor. (159)

**Keywords:** writing theory; constructs; propositions; construct clarity; causal diagrams; theoretical contribution

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This essay starts from the premise that many empirical researchers in management under-invest in bringing clarity and consistency to the theory they use to motivate, design and interpret their empirical endeavors. We invest in rigorous empirical work, quantitative and qualitative, that requires substantial technical skill, but surround it with theory full of undefined or ambiguous constructs and unexplained or logically inconsistent hypotheses—theory that is, in a word, sloppy. Admittedly, this premise is based primarily on my own anecdotal experience as reviewer, editor, and especially as instructor of a PhD seminar on theory development. But I hear similar laments from other editors and the premise is consistent with a body of editorial essays noting that many manuscripts contain theory marked by lack of clarity and consistency (Cornelissen 2017, Feldman 2004, Ragins 2012, Suddaby 2010, Sutton and Staw 1995).

The problem with sloppy theory—beyond undermining the chance of getting published in the first place—is that it limits the potential contribution of our empirical work. It undermines the relevance of our findings and makes it harder to link them to the collective enterprise of management research (Adner et al. 2009, Suddaby 2010). It also hinders the design of empirical tests that could better identify causal mechanisms or adjudicate between competing theories (Adner et al. 2009, Gibbons 1999).

To be clear, not all empirical research needs an ex-ante elaboration of theory that concludes with predictions that guide the analysis. When the nature of a phenomenon is not well-established, it can be valuable to uncover and document details about the phenomenon without articulating theoretical predictions in advance—such work often provides essential input for subsequent theorizing. In other instances, it may be important to establish the magnitude of a phenomenon of interest: e.g., how prevalent is a given management practice or organizational feature? how big is the pay gap between women and men?

That said, a common format of empirical research in management involves first elaborating a theoretical idea into predictions that the empirical analysis seeks to test. This can come in several flavors: assessing whether existing theory applies in a new setting; assessing which of several theoretical explanations best fits an observed pattern; identifying competing theoretical predictions and assessing which bear out in observation; articulating a new theoretical idea to resolve puzzling inconsistencies across past findings; etc. It is this type of manuscript – an empirical analysis that begins with a theory section that motivates and guides it– that is the primary concern of this essay.

Now, we are not without help on the task of how to write theory. We have a rich literature in management on writing theory, principally in the form of editorial essays that define theory, identify characteristics of good theory, and/or explain what constitutes a theoretical contribution (Bacharach 1989, Corley and Gioia 2011, Cornelissen 2017, Delbridge and Fiss 2013, Feldman 2004, Makadok et al. 2018, Reynolds 1971, Sutton and

Staw 1995, Thomas et al. 2011, Van Maanen 1995, Weick 1989, Whetten 1989). Several of these essays offer insightful advice on enhancing theoretical clarity (Ragins 2012, Suddaby 2010).

A key contention of this essay, however, is that we continue to produce sloppy theory because we – individually and collectively – tend to under-estimate the substantial *difficulty* of articulating clear and consistent theory. When it comes to empirical method, we value rigor, precision, technical skill. But when it comes to theory, management discourse tends to focus on the new or novel or interesting (Haveman et al. 2019, Van De Ven 1999, Van Maanen et al. 2007)—we have a “collective preoccupation with theoretical novelty” (DiMaggio 1995) and are “riveted on new and revised theories” (Hambrick 2007), in an “insane pursuit of originality” (Weick 1999). By contrast, theoretical clarity and consistency can be taken for granted as “mere” technicalities. Van Maanen (1995), for instance, dismissively describes as “technocratic” work that seeks to achieve simplicity and precision.

Understanding more deeply why clear, consistent theory is hard may help us allocate more time and attention to the task, before we race to the data. In this essay I draw on dual process theories of cognition as well as the philosophy of science literature to identify and analyze three distinct but related challenges. One is that, as dual process theories suggest, many of the ideas in our head start out as undirected, imprecise associations, rather than logical, causal connections—and working them into a logical sequence is one of the most costly types of System 2 thinking (Kahneman 2011). Second, achieving ideal clarity is ultimately impossible (Popper 1983, Van Maanen 1995). And third, there are multiple criteria for good theory, so researchers always face tradeoffs in articulating theory. Analyses of theorizing not only in management but also in the philosophy of science imply a central tradeoff between clarity and generalizability. Starting from this central tradeoff, I derive two conditions under which greater investments in clarity are warranted: when the baseline level of clarity is low; and when the goal is to conduct empirical tests of theory.

Before discussing these sources of difficulty, though, I first provide a more systematic look at the basic ways we commonly violate theoretical clarity and consistency. The literature on writing theory offers a rich set of ideas about what good theory should look like. It is less common to see specific examples of unclear and inconsistent theory. I therefore offer illustrative examples of each violation from various unpublished manuscripts, in the belief that seeing specifics makes the issue easier to understand and to see in one’s own work.

I conclude with a discussion of some techniques for enhancing clarity and consistency. I briefly summarize advice from existing literature on theory writing, then elaborate on two ideas: the pros and cons of diagramming; and using a scaffolding metaphor to facilitate starting quickly and discarding early work more freely.

To set up my review of common violations of clarity and consistency in writing theory, I turn first to the management literature on theorizing to provide a definition of theory, along with definitions of clarity and consistency in the context of theory.

## WHAT THEORY IS

Primers and essays on theory development from management scholars (e.g., Bacharach 1989, Doty and Glick 1994, Eisenhardt 1989, Makadok et al. 2018, Sutton and Staw 1995, Wacker 1998, Whetten 1989, Zikmund 2009) display considerable consensus on what theory is and what its essential components are. A theory is an explanation of a phenomenon that articulates three elements: (1) Constructs, which are the objects that are causing things or being caused; (2) Relationships between the constructs, usually including some causal relationships; and (3) an Explanation of why the relationships hold, i.e., why one construct acts upon another construct. At a minimum, then, a theory consists of at least two constructs, a statement of the relationship between them, and an explanation of the logic underlying that relationship.

Some sources include “boundary conditions” as a fourth essential component (Bacharach 1989, Suddaby 2010, Wacker 1998, Whetten 1989). Boundary conditions refer to statements of the circumstances or contexts in which the theory’s relationships are expected to hold; e.g., in what time period or geographic context or under what assumptions about human behavior. For brevity, I focus only on the first three elements: constructs, relationships, and explanations.

Regarding the first component, constructs are often assumed to be of an abstract or conceptual nature, rather than as concrete, observable things. Suddaby (2010) notes that “constructs are conceptual abstractions of phenomena that cannot directly be observed ... not reducible to specific observations.”—e.g., “organizational performance” rather than “profit”; or “absorptive capacity” or “innovation” rather than “R&D spending”.

The second component—the relationships between constructs—sometimes comes in the form of propositions or hypotheses. Both terms have a broad and a narrow meaning, which is worth noting. While some sources use the term proposition to refer to *all* statements of relationships between constructs (Bacharach 1989, Zikmund 2009), many others use proposition to refer to one particular style of theorizing (Cornelissen 2017, Delbridge and Fiss 2013, Kilduff 2006), where relationships between constructs are stated in one or a few sentences, set apart from the rest of a manuscript, and explicitly state a testable cause-effect relation: e.g., *Proposition 1: Increases in X cause increases in Y*. In other words, a proposition is one way of stating a theoretical relationship, but not all theoretical relationships are expressed via propositions.

In empirical research in management, statements of predicted relationships between constructs are almost always labeled hypotheses (rather than propositions). In the theory literature, propositions and hypotheses are sometimes distinguished by whether they are conceptually or empirically focused: propositions refer to statements of relationships between constructs, whereas hypotheses refer to statements of the predicted correlations between empirical operationalizations of the constructs: e.g., *variable  $\alpha$  and variable  $\beta$  will be positively correlated* (Bacharach 1989). This distinction is generally not reflected in empirical papers in management, where the term hypothesis does the work of both proposition and hypothesis. To avoid generating confusion about the broad or

narrow meanings of proposition and hypothesis, I use the broader term “relationship” (or “statements of relationships”) in the rest of this essay.

## THEORETICAL CLARITY AND CONSISTENCY

As we will see in the next section, sometimes the problem with a manuscript’s theory is that it is missing one of the three components. But even where all three components are included, the articulation of a theory can be better or worse. Consequently, essays on theory development often identify dimensions of theoretical quality: the characteristics that make for better vs. worse statements of theory.

The list of proposed quality dimensions can be daunting. For instance, Wacker (1998) discusses eight dimensions and Bacharach (1989) identifies at least ten. In a later section, I come back to this broad set of quality dimensions, to discuss the tradeoffs among them. Here I focus on three: clarity, precision, and consistency. I first define them, then review arguments about why they are valuable.

In many essays on theory, *clarity* and *precision* are used synonymously. Is this warranted? Of the variety of dictionary meanings of “clear” and “clarity”, the most relevant for theory articulation is “being free from obscurity or ambiguity, or being easily understood” (Merriam-Webster 1991). For “precision”, the most relevant definition is “exactly or sharply defined or stated” (Merriam-Webster, 1991). One way to view the relationship of these terms is as a Venn diagram with two mostly overlapping circles: often we are referring to the same thing, but there are edge cases where they mean different things. Statements that are clear but not precise have easy-to-understand concepts but few details: “people behave differently in groups than they do alone”. Statements that are precise but not clear define terms very specifically but use complex or esoteric terms: “in a network, an alter’s tendency to triadic closure reduces an ego’s eigenvector centrality”.

In the context of articulating theory, then, we generally use the term precision to refer to very high degrees of clarity, where we provide ever finer specifications of constructs and relationships. For the rest of this essay, then, I largely use the term clarity, by which I mean lack of ambiguity. I interpret the term precise to refer to a particularly high level of clarity, where the nature of constructs and relationships are specified in detail. This will be important in the later tradeoffs analysis.

For *consistency*, the most relevant sense of the term is “agreement or harmony of parts or features to one another or a whole ... [the] ability to be asserted together without contradiction” (Merriam-Webster, 1991). In this way, consistency applies to a *set* of things, rather than just one thing. It refers to the degree to which the items of the set are compatible or in agreement.

Clarity and consistency are dimensions of theory quality because they enhance the ability of empirical research to make a contribution to a wider research community. First, clearer theory makes it easier to relate one’s

specific empirical findings to the work of other researchers. If the constructs I use to interpret my empirical observations are ill-defined, then it is not clear what types of phenomena fall inside vs. outside my construct, and subsequently it is difficult to know what other empirical settings the theory should apply to. Both Suddaby (2010) and Adner et al (2009) argue that clearer articulation of theory is important to the collective accumulation of knowledge, by enhancing the ability to link and compare empirical findings across researchers.

Second, clear and consistent theory aids in designing discriminating empirical research, either to test a proposed theory or to adjudicate between competing theories. More clearly defined constructs are easier to operationalize into observable measures (Adner et al 2009). Particularly on the micro side of management research, much methodological rigor is invested in establishing construct validity: using multiple measures, additional data sources, and statistical analyses to argue that the chosen set of empirical measurements are good operationalizations of a construct. But this methodological work is made much easier when the construct is more clearly articulated in the first place (Suddaby 2010). Furthermore, clear, consistent relationships make it easier to derive more subtle empirical predictions—which in turn make it easier to generate evidence that identifies causality or helps discriminate between alternative theories of the same phenomenon (Gibbons, 1999; Adner et al 2009).

Third, clarity and consistency are essential to achieving falsifiability. Falsifiability refers to whether a theory's propositions can be subjected to empirical test—whether one can imagine evidence that would disprove the theory. In the philosophy of science, falsifiability is a key tenet of scientific method, sometimes identified as a defining feature of science (Bacharach 1989, Gould 1981, Popper 2014, Quine and Ullian 1998, Wacker 1998).

One of the primary barriers to falsifiability is theoretical ambiguity (Adner et al. 2009, Astley and Zammuto 1992, Bacharach 1989). When construct definitions and statements of relationships are ambiguous, it is hard to determine whether empirical findings that do not support the hypotheses are refutations of the theory or just inadequate operationalization.

The “replication crisis” surrounding ego depletion theory is a recent example. The theory posits that individuals have finite self-control “resources”, so that exerting self-control on one task will degrade performance on a subsequent task that demands self-control. Recent attempts to replicate the original empirical findings have yielded no clear evidence either way (Englert and Bertrams 2021). A big part of the problem is that the self-control construct has not been defined precisely (i.e., to a high degree of clarity). One result has been wide variation in the experimental tasks chosen as requiring self-control—to the point where the same task has been used in some studies as the treatment effect and in others as the control (Lurquin and Miyake 2017)! Thus, no one knows whether the lack of findings are falsifications of the theory or just inappropriate operationalizations of self control.

Despite the potential for theoretical clarity and consistency to enhance the contribution of empirical research, editorial essays frequently cite a *lack* of clarity and consistency—in constructs, relationships, and/or explanations—as common sources of manuscript rejection (Cornelissen 2017, Feldman 2004, Kilduff 2006, Ragins 2012, Suddaby 2010, Sutton and Staw 1995). Several papers offer detailed guidelines for writing clearer theory (e.g., Ragins 2012, Suddaby 2010). Much writing on theorizing, however, explains and illustrates *good* theory. My thought here is that offering specific examples of violations of clarity and consistency would complement past work, making it more concrete. In the next section, I systematically identify common violations of clarity and consistency in the articulation of both constructs and relationships, and offer specific examples of each, across a variety of research settings.

## **CLARITY AND CONSISTENCY: COMMON VIOLATIONS**

In this section I elaborate the constructs of theoretical clarity and consistency by identifying common ways we fall short of these ideals and providing brief illustrations of these violations. The categories and illustrations are summarized in Table 1. Table 1 also includes a column that offers a suggested improvement on the sample violation, to offer examples of enhanced clarity or consistency.

For the most part, these examples come from unpublished manuscripts: either journal submissions or doctoral student working papers. I have no interest in picking on specific authors, so I have tried to keep the examples brief and in some cases have changed the specifics to avoid obvious identification. That said, I ask forgiveness in advance from any former students who recognize an example.

### **Clarity of Constructs**

For constructs, the ideal of clarity is that each reader comes away with the same understanding as the author of which specific phenomena are “inside vs. outside” of the purview of the construct. Suddaby (2010) points out that the essence of constructs is the categorization of phenomena. Thus, a clear construct is one where the reader understands what types of phenomena or observations count as instances of the construct. How do we typically violate this ideal?

*No definition.* The most obvious source of construct ambiguity is not providing any explicit definition, a violation that is surprisingly common (Suddaby 2010). For example, a study of executive teams at technology firms used the term “governing coalition” as a construct referring to some combination of people with formal authority in a firm. In a few instances the term was followed by a parenthetical phrase giving an indirect sense of what the term meant: e.g., “changes in governing coalitions (specifically the addition of new outside directors and new senior executives)”. But it was not explicitly defined, leaving it unclear who constitutes the governing coalition.

One obvious reason that a manuscript might omit an explicit definition of a construct is that the author assumes the term's meaning is well-known. This assumption can be a problem because words often have multiple meanings. In fact, the more a construct has become widespread in a field, the more likely it has come to take on a wide range of meanings (Hirsch and Levin 1999, Suddaby 2010) – so just where you might assume that readers are familiar with a term is where it may be important to articulate how you are using it.

*Definition only by a few examples.* A subtle flavor of “no definition” is a definition based on only a few specific examples of the construct. For instance, scholars of professional service firms tend to define their central construct only via a short list of examples: “professional service firms, such as law firms, accounting firms, etc. ...” (von Nordenflycht 2010). But what else is part of that “etc.”? As another example, a manuscript introduced constructs of “core stakeholders” and “fringe stakeholders” then defined them only with examples: “core stakeholders, including customers, employees, governments and shareholders, among others, [and] ... fringe stakeholders such as the poor.” What falls into the “among others” and what else falls into the “such as”?

*Definition by other esoteric, yet un-defined terms.* Ambiguity also arises when a construct is defined by using other undefined or ill-defined constructs. For instance, a manuscript defined “improvisation” as “the conception of action as it unfolds”. But “conception of action” was not explained, yet is not self-explanatory. Another manuscript defined its central construct, “organizational technology”, only as a list of its possible varieties: long-linked technology, intensive technology, or mediating technology. But these more specific technologies were either tautologically defined -- mediating technology, for instance, was defined as the technology used in mediating industries – or defined using additional non-self-explanatory terms.

In a study of strategic decision-making processes, Miller et al (1998) initially seem to provide non-definition definitions of their central constructs. “Comprehensiveness” of a strategic decision process is defined as “the extent to which a [team] utilizes an extensive decision process”—in other words, “comprehensive” is defined merely by using a synonym, “extensive”. And “extensiveness of strategic planning” is defined as “the extent to which a [team] utilizes a substantial planning process”—so “extensive” is defined merely with yet another synonym “substantial”. Fortunately, they do not stop there but go on to provide examples of what might constitute comprehensive: “indicators of the level of comprehensiveness include the extent to which brainstorming sessions occur, the number of alternative solutions ... considered, and the extent to which quantitative analyses are conducted.” Similar examples are given for what might constitute “extensive”. Thus, they end up using more concrete examples to elaborate the (arguably inadequate) one-word definitions initially offered.

Definitions of words always rely on other words and it is impractical to define every word used in a definition. What authors should pay close attention to is when definitions rely predominantly on additional “lingo”, on additional abstract concepts. The more that a definition relies primarily on additional abstract



language, the harder it is for the reader to absorb it—and the more likely to feel lost in a maze of abstractions (Feldman, 2004; Ragins, 2012).

*Un-acknowledged relationships to similar constructs.* Even where constructs are explicitly defined, ambiguity can arise when a construct is not explicitly distinguished from similar constructs that are either used in the same paper or are very likely to be in readers' minds. For instance, a manuscript that focused on "identity strain" did define the term ("when an individual perceives that others around them do not validate their cherished identity"). However, the manuscript also used the terms "identity conflict" and "identity tension", but offered no explanation for how these relate to "identity strain". Should the reader assume these are synonyms? Is one of these an antecedent of the other? A revised version explicitly mitigated this ambiguity, in part by simply acknowledging it rather than leaving it unaddressed: "in the identity literature, there is some ambiguity regarding the partly overlapping constructs of identity strain, identity threat, and identity conflict. ... while we draw on relevant work on all three constructs, for the sake of consistency we use the term identity strain throughout." This acknowledges that the constructs are mostly synonyms, though allowing also that they may have subtly different meanings.

The "governing coalition" example mentioned above also applies here. The lack of definition was exacerbated by the fact that the term's implicit meaning seemed closely related to more common terms such as governance structure or ownership structure or management team. Was it intended as a synonym for one of those? Or was it being used because it captured something that none of those more common terms did?

There are any number of examples of closely related constructs used by different researchers with potentially similar meanings: e.g., resources, capabilities, assets; reputation, status, prestige. Clarity is enhanced by anticipating other constructs that readers are likely to associate to and addressing their relationships: are they synonyms? Are they overlapping circles in a Venn diagram? Is the focal construct a more specific instance of a related construct, or vice versa?

### **Clarity of Relationships**

For relationships, clarity describes a state in which a reader understands which constructs are related to each other; what the nature of the proposed relationship is (e.g., direction of causation – i.e., does A lead to B or does B lead to A? – and direction of effect: i.e., positive vs. negative); and *why* that relationship exists, in other words the causal logic linking A to B.

*Tautology.* A tautology arises when a manuscript asserts a causal relationship between two constructs, but one of the constructs is part of the definition of the other. For instance, a manuscript proposed that management consulting firms that diversify will experience higher performance. But performance was defined in part as

growth, i.e., the organization getting larger. Diversification, by definition, involves growth (entering a new line of business). Thus, any observed relationship between diversification and growth would in part be definitional rather than causal. In this case, the problem arises with the definition of performance. To avoid the tautology, performance would need to be defined more subtly, to make it independent of the growth inherent to diversification.

In the strategy literature, there have been arguments about whether key constructs are implicated in tautologies. For instance, Arend and Bromiley (2009) raise the concern that “dynamic capabilities” theory (Teece et al. 1997) rests on a tautology: if dynamic capabilities are *defined* as capabilities that lead to superior firm performance in changing environments, then it is tautological to propose that dynamic capabilities cause superior performance—this relationship will always be true, given the definition of dynamic capabilities. Eisenhardt and Martin (2000) argued that dynamic capability theory is *not* tautological as long as one can define dynamic capabilities independently of firm performance—which they do in their paper. A similar debate arose around the construct of resources (Barney 1991, Priem and Butler 2001).

In the psychology field, Silvia (2007) offers “writer’s block” as an example of a tautology. Writer’s block is sometimes offered as a cause of not writing. But it is defined as the state of not being able to write. So the construct’s “effect” is part of the construct’s definition. Silvia uses this as an example of a larger category of tautologies labeled dispositional fallacies: descriptions of behavior that are then conceived of as *causes* of that same behavior.

*No explanation of relationships / Missing the “why”.* Perhaps the most common editorial critique regarding the articulation of theory is failing to offer a logical explanation for why a proposed relationship holds (Cornelissen 2017, Eisenhardt 1989, Feldman 2004, Sutton and Staw 1995, Thomas et al. 2011). It is not enough to *state* the relationships, we also need to logically explain why we think they occur. This is the crux of Sutton and Staw’s (1995) “what theory is not” argument: what commonly makes a manuscript vulnerable to the critique of lacking theory is failing to explain the “why” that logically justifies the relationship. Thomas et al (2011) also highlight this as a common mistake, and caution that citations to past empirical correlations or to existing theory are not by themselves sufficient justification for proposed relationships: “simply naming the theories and citing key publications is not the same as articulating the logic that informs the relationship among constructs.”

For instance, consider again the manuscript that proposed that diversification across consulting services leads to higher performance. The manuscript provided no explanation as to why. Does diversification lead to economies of scope that lower costs, hence increase profit? Does it allow the firm to offer customers a one-stop shop, hence lead to more revenue? Does it diversify the firm’s revenue stream across businesses on different cycles, hence reducing volatility of revenue and profit? The manuscript was silent on why the relationship was

expected. Where there is no explicit logic specifying why a relationship should hold, it is hard to take the theory seriously. It will also be harder to probe empirically.

Another manuscript proposed that reductions in an executive's power inside a firm increase the likelihood the executive will exit the firm; in other words, executive power leads to longer tenure. The manuscript found empirical support for this, in a correlation between measures of power and instances of exit. However, the manuscript did not explain why. Is it because the executive will no longer enjoy working at the firm after experiencing a reduction in power? Or because she will perceive that her opportunities for advancement are gone? Or is it because any conflict among managers or between managers and investors will more likely be resolved by her being forced out? Or is it something else? Articulating the logic – the reasons, the mechanisms – linking the power construct and the exit construct would constitute better theorizing, in part because it facilitates better logical validation and more subtle empirical testing.

### **Consistency of Constructs**

For constructs, the most relevant aspect of the dictionary definition of consistency is “regularity or steady continuity”. As a construct is discussed or occurs multiple times in a manuscript, its label and meaning should stay the same.

*Varying labels.* The basic violation of construct consistency is using multiple labels for a single construct. For instance, one manuscript first defined a core construct as “embedding” behavior (by a firm), then referred to the same construct as “engaging behavior” and “immersing behavior” in other places. Another manuscript switched back and forth between “organizational forgetting” and “organizational unlearning”.

The most likely reason for changing construct labels is that authors are wont to look for synonyms, instead of repeating the same term across the manuscript. This is understandable: when we learn to write, we are taught to avoid word repetition and to use synonyms where possible to make our writing more engaging. However, when it comes to articulating a theory, frequent switching between synonyms undermines consistency. In a broader guide to academic writing, Starbuck (1999) includes a heading of “*Use only one term per concept: avoid synonyms*”. At the very least, an author should acknowledge what terms she considers to be synonymous, e.g., “I consider organizational forgetting and organizational unlearning to effectively be synonymous”.

Another reason for multiple labels, though, is that an author may just not be clear yet on what the best construct label is. For instance, one manuscript referred to its central construct as “knowledge exploration”, “knowledge exploration performance”, and “effective knowledge exploration”. The addition of the extra terms (e.g., performance or effective) potentially changes the meaning of the construct, making it more specific than the unqualified original term. It gives the impression that the author is undecided about what the construct is.

One other form of construct inconsistency is using a higher-order category and one of its lower-order components interchangeably. For instance, a manuscript offered a hierarchical relationship between two constructs: “commitment is an essential component of internalization”. However, later in the manuscript, commitment and internalization were used interchangeably, each playing identical roles in descriptions of the propositions.

*Multiple definitions, unacknowledged.* In some instances, an author may want to offer multiple possible definitions of a construct. As I will note in a later section discussing tradeoffs between clarity and generalizability, multiple definitions may be appropriate when theorizing a new construct intended to generalize across a variety of phenomena (for instance, Astley and Zammuto (1992) note that Kuhn (1970) provided multiple definitions of “paradigm”; and Van Maanen (1995) notes that Weick (1976) offers 15 different senses of the construct “loose coupling”). In this case, acknowledging that you are offering multiple definitions communicates that it is deliberate rather than an oversight or a sign of indecision.

What is less appropriate—i.e., is a consistency violation—is to offer multiple definitions inadvertently and thus generate ambiguity about how the reader should interpret a construct. For instance, one manuscript first defined “team cohesion” as “the desire of team members to remain part of the team”, but subsequently said cohesion is defined as “the extent to which team members like and value each other.” It seems reasonable to imagine that the latter (team members liking each other) increases the former (desire to remain part of the team). But then that sounds like a causal relationship between two distinct constructs. Which one is the cohesion? The liking or the desire to remain – or is it meant to encompass both?

### **Consistency of Relationships**

For relationships, the most relevant aspect of the dictionary definition of consistency is lack of contradiction: claims *within* the statement of a theoretical relationship (e.g., “if this, then that”; “X causes Y”) should be logical, and claims *across* multiple relationships should not lead to contrary conclusions.

*Illogic within the statement of a relationship.* Inconsistency arises *within* the statement of a relationship (or the accompanying explanation) when the connection between constructs has logical flaws or gaps. In other words, the conclusion does not logically follow from the premise. In a manuscript on viral social media content, a proposition stated that *the emotional valence of a video will influence an individual’s decision to watch the video*. This proposed relationship appears illogical as it is unclear how an individual can know a video’s emotional valence before viewing it. Another proposition linked an individual’s choice to share a video on social media with the costs of watching the video: *the individual will share the video when the value of sharing exceeds the cost of*

*watching the video*. This matches a benefit with an unrelated cost: the cost to the focal individual of watching the video seems unrelated to either the value or cost of sharing it with others.

Another manuscript sought to analyze the effect of managers' cross-departmental ties on the degree of knowledge exploration the managers engaged in. The manuscript theorized, reasonably, that the knowledge exploration benefits of cross-departmental ties increased with the number of ties (as the diversity of knowledge increased). It also theorized, reasonably, that managers incur costs (principally, time) to initiate and maintain ties—and that some of these costs are fixed and are incurred with the first cross-departmental tie, with subsequent ties having low marginal costs. These assumptions led to this hypothesis: *the relationship between cross-departmental ties and knowledge exploration is u-shaped*. This logic is inconsistent, primarily because the degree of knowledge exploration is independent of the costs of maintaining ties. Knowledge exploration (which was, in fact, not explicitly defined) was theorized to increase with the number of ties. So knowledge exploration should have a strictly increasing relationship with cross-departmental ties. There is no reason for knowledge exploration to *decrease* with the first few ties. Perhaps the *returns* to knowledge exploration – i.e., the knowledge benefits minus the time costs – have a u-shaped relationship with number of ties. But that construct – the returns to knowledge exploration – is a different construct from the knowledge exploration activity itself.

*Conflicting logic across relationships*. Logical inconsistency *across* relationships arises most starkly when the implications of one relationship contradict the implications of another relationship. For instance, a study predicting the likelihood of firms adopting employee profit sharing plans, it was first proposed that profit-sharing would be more prevalent in right-to-work states because wages are *lower* in right-to-work states, so firms offer profit sharing to offset lower wages. Subsequently, the paper proposed that profit-sharing would be more prevalent in states with *higher* minimum wages because firms offer profit sharing to encourage greater productivity. Thus, the paper predicted that both lower wages and higher wages predict greater adoption of profit sharing plans.

As a second example, a study analyzing the relationship between a firm's profitability and its propensity to hire experienced vs. inexperienced workers theorized in one paragraph that the administrative costs of managing experienced workers was *higher* than for inexperienced workers. In the next paragraph, the manuscript theorized that experienced workers rely *less* on a firm's infrastructure and require *less* training and development than do inexperienced workers—which seems a contradiction of the assertion in the previous paragraph.

As a third example, a study of the gender composition of different departments within an organization first hypothesized that departments with *more* women than men were more likely to be discontinued, then proposed a later hypothesis that departments with *equal* numbers of women and men were more likely to be discontinued. On their own, these are logically inconsistent. They could be consistent if each condition were being compared to departments with *fewer* women than men – i.e., departments with *more* women than men and

departments with *equal* numbers of women and men could both be more likely to be discontinued than those with *fewer* women than men. But that specific comparison was not stated (and in that case, the two hypotheses could be replaced with a single hypothesis: departments with *fewer* women than men were *less* likely to be discontinued).

*Asymmetry of logic across relationships.* A more subtle form of inconsistency across relationships arises when the mechanisms and assumptions used to justify one relationship are ignored or used differently in another, similar relationship. For instance, the manuscript analyzing managers' ties and knowledge exploration also made a distinction between internal (cross-departmental) ties and external (outside the firm) ties. A proposition about the effect of internal ties assumed that the marginal benefit of internal ties was increasing: each additional internal tie led to greater marginal knowledge value. However, a subsequent proposition about the effect of external ties assumed that the marginal benefit of external ties was constant: each additional external tie added the same amount of marginal knowledge benefit. The difference in assumptions about the marginal benefit of internal vs. external ties was not explained. If the different assumptions were explicitly acknowledged and justified, the overall logic may appear consistent. However, without such acknowledgement, the logic across the relationships appears inconsistent.

As another example, a manuscript was empirically testing a theory that HR practices could increase or decrease employees' propensity to focus on the future, which in turn increased employees' job satisfaction. HR practices were clustered into three types, based on what they intended to generate in the workforce: ability, motivation, and opportunity. After theorizing that motivation-related HR practices focused on *past* assessments and were intended to affect *present* behavior, the manuscript then proposed that motivation-related HR practices increase employees' *future* focus. Then, after noting that opportunity-related HR practices focused explicitly on *present* and *future* events, the manuscript theorized that opportunity-related HR practices *decrease* future focus. In both instances, the logic of the explanation seems explicitly inconsistent with the predicted relationship. Furthermore, each proposition uses a slightly different logic, without offering a compelling justification for the asymmetry.

*Inconsistency across alternative representations of same relationship.* Another common source of relationship inconsistency is a mismatch between the logic expressed in formal propositions vs. that expressed in the accompanying text or visually represented in a diagram (Feldman, 2004). Anytime a relationship is represented in different ways (formal statement, explanatory paragraph, diagram), there is an opportunity for inconsistencies across the representations, particularly early in a manuscript's life when the author is working out the logic. This is not to say that authors should not express theories both linguistically and diagrammatically—Eisenhardt and Graebner (2007) suggest that representing theories in multiple formats (text, propositions,

diagrams) helps readers understand better. Rather it is to say that authors should make a point of checking the logical consistency across these multiple representations.

Hopefully this systematic review makes clarity and consistency problems more apparent, and perhaps easier to spot. Before identifying techniques to mitigate the problem, I next go into detail on why these problems can be so pervasive. As I noted in the introduction, my contention is that we underestimate the difficulty of writing clear, consistent theory. The next section suggests three sources of this difficulty.

## **WHY CLARITY AND CONSISTENCY ARE HARD TO PRODUCE**

### **Associative System 1 Thinking vs. Costly System 2 Thinking**

Perhaps the fundamental difficulty is that writing clear and consistent theory is arguably one of the most taxing types of cognitive processing that we can do. Dual process theories of cognition (e.g., Evans and Stanovich 2013, Kahneman 2011) posit that humans have two modes of thinking: System 1 (aka Type 1) is autonomous, fast, intuitive; System 2 (aka Type 2) is slow, deliberative and needs to be activated. Unlike autonomous System 1 thinking, System 2 takes effort, requires working memory, and is capacity constrained (Evans and Stanovich 2013). Articulating clear consistent theoretical arguments is not at all what System 1 thinking is good at—it requires significant System 2 effort.

Much of our intuitive, un-reflected-on “thinking” occurs within System 1. But our System 1 cognition is largely associative (Kahneman 2011). We associate ideas and images and words and concepts to each other without crisply distinguishing the nature or direction of the connections. We may associate two concepts because of cause/effect relationships, but also because of characteristics they share, or because one is a property of the other, or because one is a category and the other a category member. Furthermore, the associations tend to be reciprocal, with causation occurring in both directions (Kahneman 2011). In the theories we form “in our head”, we may conflate several distinct concepts into one amorphous concept, or associate two constructs with each other without being clear whether they represent antecedent and consequent or are simply synonyms.

Not surprisingly, these are the kind of basic clarity and consistency violations illustrated in the previous section. Upon reflection, it is easy to see why we may struggle to provide clear definitions of constructs. In general, we come to understand words intuitively—and yet sometimes find it hard to define them clearly, as many of us realize when we are asked the meaning of a word (e.g., by a child). It is even less likely that our System 1 thinking generates logical consistency in ideas about cause-effect. As Adner et al (2009) note: “No one intentionally forwards a logically inconsistent argument, but it is nonetheless surprisingly easy to do. ... when

relying on verbal theorizing, people rarely think logically through each stage of the chain of an argument; rather, they rely on their intuitions .... Our intuitions, however, often prove wrong.”

At the same time, the cognitive work required to create clear, logical, causal connections between the mess of associations in our heads is one of the more costly types of cognitive work done by System 2 processing. According to Kahneman (2011: 22–36), the costliest types of thinking include “check[ing] the validity of a complex logical argument” and “maintain[ing] simultaneously in memory several ideas that ... need to be combined according to a rule”.

Thus, our initial theoretical thoughts are almost certainly rife with ambiguities and logical inconsistencies. But synthesizing those ideas into a clear, consistent logic takes substantial cognitive effort. It is not surprising then that Sutton and Staw (1995) lamented that “scholars ... are challenged by having to write logically consistent and integrated arguments”. Avoiding sloppy theory takes substantial effort.

### **The Impossibility of Clarity**

The second source of difficulty is that it is not really possible to achieve “perfect” clarity, for several reasons. For one thing, definitions of words rely on other words, which mean those other words also need to be clearly defined, with yet more words that then also need to be defined, and so on. Trying to pin down a perfect definition ultimately involves this “infinite regression” of definitions (Popper 1983).

In addition, clarity—when characterized as the reader understanding what the author means—depends on readers’ subjective interpretations. However, many words generally have multiple meanings, as evidenced by the frequency with which dictionaries offer multiple definitions of a word. What’s more, meanings of words continue to change over time (Adner et al. 2009). And even where we have formal definitions for words, words’ informal meanings depend on the social context in which they are used—and the more so in the case of abstract ideas in specialized fields, as is the case with theoretical constructs (Astley and Zammuto 1992). This means different readers can easily take away different—and perhaps even incompatible—understandings, despite an author’s concerted attempt to be clear. To some degree, clarity is out of the author’s hands.

Third, if we think of constructs essentially as categorizations (Suddaby 2010), where we need to make clear what phenomena do versus do not qualify as examples of the category, we can then think about how there are (almost?) always borderline cases that defy categorization. Sports fans can think about the difficulty encountered weekly in determining whether an NFL receiver has made a catch or whether a soccer player has committed a handball, despite repeated attempts to refine the definition of both constructs (catch and handball). More relevant to organization theory, one can reflect on the difficulty in defining the term “employee” (Doellgast et al. 2021). Operating on the undefined or ambiguous margins of that distinction can be the basis for billion dollar business models (Conger 2020).



For all these (related) reasons, constructs will inevitably retain some degree of ambiguity (Van Maanen 1995). Given this, I suggest viewing clarity as having decreasing returns: increases in clarity are valuable and cheap when clarity is low but become increasingly costly when clarity is already high. At a certain point, we need to accept a degree of ambiguity in order to proceed with research. Part of the difficulty is knowing when to stop investing in clarity. One of the premises of this essay is that we tend to stop too soon – we underestimate the value and cost of clarity – but I do not mean to imply that it is obvious when to stop.

### **Downsides of Clarity? On Tradeoffs in Theory Quality**

Finally, clarity may not just have decreasing returns—at a certain point, it may generate *negative* returns. Astley and Zammuto (1992) argue that preserving ambiguity in the articulation of a theory is not just inevitable but valuable. Ambiguity is valuable because it increases the opportunity for a wider range of other researchers to interpret the theory in different ways that make it relevant to their own contexts. Consequently, the theory can be applied to a broader set of phenomena and has greater potential to inspire subsequent research. By contrast, pushing to clarify a theory’s constructs and relationships as much as possible—in other words, moving into the realm where clarity becomes precision—can limit the theory’s applicability and, thus, its ability to inspire more research.

Astley and Zammuto acknowledge that ambiguity hinders the falsifiability of a theory, as I discussed earlier. But they see this as a feature, rather than a bug. An ambiguous theory can be argued to be consistent with a wide variety of findings, so it has a greater chance of surviving and becoming influential. They go so far as to suggest that “the most influential theories may, in fact, be those that are nonfalsifiable.”

This tension between clarity and ambiguity brings us to the third difficulty: the inherent tradeoffs among the multiple dimensions of theory quality. Beyond the four quality dimensions we have discussed—clarity, precision, consistency and falsifiability—there are several others often discussed in treatments of theory, including parsimony (simplicity), generalizability (abstraction), novelty, and accuracy.

*Parsimony* (or *simplicity*) means including the minimum number of constructs and relationships needed to explain the phenomenon of interest (Bacharach 1989, Eisenhardt and Graebner 2007, Feldman 2004, Quine and Ullian 1998, Suddaby 2010, Wacker 1998, Whetten 1989). *Generalizability*, or the *level of abstraction*, refers to how broadly applicable the theory is: the range of specific instances that can be explained by the theory (Eisenhardt 1989, Feldman 2004, Quine and Ullian 1998, Reynolds 1971, Suddaby 2010, Van Maanen et al. 2007). *Novelty* refers to features that catch an audience’s attention by violating their expectations of how the world works (Van Maanen et al. 2007, Weick 1989) or by defamiliarizing an existing phenomenon (DiMaggio 1995). *Accuracy* refers to the degree to which a theory can generate predictions that match outcomes in specific situations (Cartwright 1983, Thorngate 1976).

It is generally recognized that one cannot achieve high levels of all of these characteristics, as there are tradeoffs between some of them. For instance, DiMaggio (1995) suggests there may be a tradeoff pitting logical consistency against novelty because “it is often necessary to frame a theory in paradoxical terms in order to get readers to pay attention.” Perhaps the most commonly noted tension is between generality on the one hand, and precision or accuracy on the other. Hirsch and Levin (1999) note a perennial tension between scholars who advocate for loosely-defined constructs that apply broadly and those who advocate for precisely-defined constructs to facilitate empirical testing. In the context of social science more broadly, Thorngate (1976) suggests that a theory of social behavior can not simultaneously be general, parsimonious, and accurate. In this “impostulate of theoretical simplicity”, he allows that a theory may achieve both generality and accuracy—but at the cost of being complex. These theoretical tradeoffs are not unique to social science. In the realm of physics, Cartwright (1983) argues that general laws, which seek to explain a broad range of phenomena via a single set of equations, necessarily make simplifications that then make them inaccurate when making predictions in specific situations. Accurate predictions require more precisely specified theories, that then apply only to a narrow range of settings.

To come back to the clarity-ambiguity tension, my read of Astley & Zammuto’s argument for ambiguity is that it is primarily an argument for generalizability. One of the chief benefits of retaining ambiguity, in their telling, is to allow a theory to be applicable beyond one specific set of facts or observations; i.e., to be generalizable. They identify two specific ways to preserve useful ambiguity. One is to avoid tying construct definitions to specific sets of observations: we “must allow more freedom to ... theoretical terms than would be given them were they direct representations of observable entities.” That is just what generalizing means—and, as already noted earlier in this essay, is often part of the definition of a theoretical construct in the first place. The second way is to offer multiple definitions of constructs. Again, this seems consistent with the idea of generalizing constructs to make them applicable beyond one setting or definition.

My interpretation of the argument for ambiguity, then, is that it is not an argument for ambiguity for its own sake – no discussion of the quality dimensions of theory lists ambiguity as an end goal – but as a necessary input to generalization. Going back, then, to the argument earlier in this essay that clarity is an important input to falsifiability, we can see the clarity vs ambiguity tradeoff as a central fulcrum between falsifiability on one side and generalizability on the other. And here we see one of the central tensions of scientific theorizing: that theory is more theory-like the more that it is abstracted or generalized (Weick 1989), but that generalization undermines the ability to falsify, which is seen as a core principle of the epistemology of science (Popper 2014, Quine and Ullian 1998).

### **When to invest more in clarity**

These tradeoffs between valued characteristics of theory mean that articulating theory requires striking some degree of balance. In the face of tradeoffs, we can ask whether there are contexts in which leaning one way or the other is warranted. When is clarity particularly valuable (relative to generalizability)? Here I point out two situations where clarity may be particularly valuable: where the baseline of clarity is low; and where the researcher's primary goal is empirical testing, rather than theoretical development.

In the first instance, the concept of a tradeoff suggests a "production possibilities frontier", borrowing from economics. Increases in one side of the tradeoff are very valuable when we have little of that side, and then increasingly less valuable the more of that side we have. Do we want guns or butter? If we have little butter, then more butter is very valuable (relative to the decrease in guns required to generate that additional butter). But if we have a lot of butter, more butter has relatively little added value. Where theoretical clarity is already substantial, then additional increases in clarity may well come at a high cost of generality and the ability to extend a theory's reach or impact. But if a theory is low on clarity, then increases in clarity are very valuable. So when we think about the benefits of ambiguity, we need to consider whether there is a difference between useful ambiguity and sloppiness. The forms of ambiguity suggested by Astley & Zammuto (1992)—allowing multiple definitions of a construct, defining constructs at a higher level than a pre-specified set of observations, leaving some aspects of a construct unspecified—seem quite different from the clarity violations described in earlier in this essay, such as providing no definitions or inconsistent definitions. For instance, a "responsible" way of offering multiple definitions of a core construct might simply be to explicitly acknowledge that you are doing so (Weick 1989). Leaving the specification of a theoretical relationship at a high level or general level—e.g., saying that construct X generates more of construct Y, rather than specifying that increases in construct X generate exponential increases in construct Y—is different from offering inconsistent logics across relationships or omitting any explanation for why the proposed relationship might occur. We can recognize the value of useful ambiguity, in the service of generalization, yet not let that be an excuse for exerting low effort at clarity and consistency.

In the second instance, where a researcher chooses to land on the clarity / ambiguity spectrum should also depend on a particular manuscript's intended function within the larger scientific enterprise. When seeking explicitly and primarily to theorize, i.e., to develop novel theory, then generality is likely to be more important than falsifiability, and so useful ambiguity is particularly valuable. This would be consistent with Kilduff's (2006) recommendation, when theorizing, to "Offer Big Ideas. Theory papers succeed if they offer important and original ideas." In Kuhn's (1970) framework, this is more in the mode of "revolutionary" or paradigm-shifting science. One imagines here the image of scientist as disheveled mad genius.

When seeking primarily to do empirical analysis, especially analysis designed to test theory and/or to adjudicate between competing theories, clarity and consistency will be more valuable to design research methods and interpret results. In Kuhn's framework, this is more of the "normal science" mode, taking generalized

theoretical ideas and clarifying and specifying them in ways that allow for measurement and testing. One imagines here the image of the scientist in a clean lab-coat in a controlled environment taking careful notes.

This is consistent with the central idea in Hirsch and Levin (1999). Academic fields need efforts at both conceptualizing broad, loosely-defined constructs and at defining those constructs more clearly. Generalized concepts are valuable to generate new ideas about unexpected connections across phenomena that inspire new research activity. But these concepts subsequently need to be more precisely defined to facilitate falsification attempts.

All these—the costliness of clear, consistent reasoning; the decreasing returns to clarity; and the tradeoff with generalizability—mean that achieving theoretical clarity and consistency is probably harder than many of us assume. One implication of this recognition is to not beat ourselves up when we see that we have committed some of the violations described in the previous section, particularly in the early stages of writing. On the other hand, awareness of the magnitude of the challenge should also remind us not to take it for granted in the face of our habits of allocating time and System 2 effort only to empirical rigor. In the next section, I briefly summarize techniques identified in existing literature for enhancing clarity and consistency; and then elaborate on two less-discussed ideas that I have found very helpful.

## **SOME TECHNIQUES TO ENHANCE THEORETICAL RIGOR**

Because my overall diagnosis is that we underestimate the difficulty of articulating clear, consistent theory, the primary remedy is to allocate more time to the task, despite our instinct to jump to empirical analysis. That said, a hard task might also be made easier by applying useful techniques. Much advice on this front is available in the literature on writing theory (e.g., Feldman 2004, Kilduff 2006, Ragins 2012). Consistent with the idea that the biggest challenge is exerting costly System 2 effort to convert messy System 1 ideas into clear and consistent arguments, this advice breaks down into three tasks: (1) writing – i.e., initial drafting to get what’s in your head on paper; (2) rewriting – to apply more System 2 effort; and (3) asking others for help, to catch what we inevitably miss.

It should be noted that another relevant technique involves using formalized approaches to expressing theory; i.e., using math, as in simulation models or economics-based analytic models. Gibbons (1999) and Adner et al (2007) recommend formalized approaches in part for their ability to enhance clarity and consistency beyond what natural language is likely to achieve. More discussion of formal theorizing is beyond the scope of this essay, so curious readers are referred to those two references to start.

On writing and rewriting, a key technique is to recognize that writing has two phases with different purposes: an initial phase when we are writing to ourselves to figure out what we think, and a second stage when

we write to others (Ragins 2012; Van Maanen et al 2007). Ragins (2012) points out that failing to recognize this two-step process can result in two errors. First, we may stop after the first phase, thus failing to write for the reader: “what we write always seems clearer to us than to our readers ... instead of revising our writing to meet [readers’] needs, we call it done the moment it meets ours.” Second, when we do rewrite, we resist discarding what we wrote in the first phase: “we are hopeless romantics when it comes to our writing: we fall in love with our words and we just can’t cut them loose” (Ragins 2012).

To embrace the implications of the two phrases of writing, I find it useful to think of first-phase writing as **scaffolding**: the temporary structure of pipes and planks that is erected to allow construction of a new building. Scaffolding needs to be built, hence takes real time and effort. It can even be quite elaborate. But it is not part of the final building and is removed – no one argues to retain the scaffolding just because it took effort to erect.

Assume that much of your early drafting is scaffolding and can be joyfully discarded on the way to the sleek new building. In addition to facilitating the emotional work of “cutting loose” our dearly produced words, a scaffolding mindset can facilitate the emotional work of getting started on writing in the first place. If we know the first phase is scaffolding and thus its aesthetic quality is of no import, it can reduce the anticipated exhaustion and demoralization we may fear about writing sentences we don’t like.

## Diagramming

One valuable technique that is seldom discussed in any detail is diagramming your theory: representing constructs and relationships as boxes and arrows, respectively (Whetten, 1989). In fact, diagramming may be so taken-for-granted that when it *is* mentioned in essays on theory, it is put in a negative light, highlighting its insufficiency for fully representing theory (Haveman et al. 2019, Sutton and Staw 1995, Thomas et al. 2011). Diagramming has limitations, sure—but also benefits. Here I specify these benefits and limitations, then make two suggestions to help maximize the benefits and minimize the downsides: use the *scaffolding* metaphor here, too; and do not conflate causal diagrams with process diagrams or ‘mind map’ diagrams.

Visualizing a theory with a causal diagram can improve clarity and consistency in several ways. For constructs, creating the boxes forces you to choose a single label for a construct. For relationships, linking the boxes via arrows requires you to be explicit about which constructs relate to each other; and in what direction: i.e., what causes what? This eliminates the risk of completely omitting relationships. It also increases your ability to identify ambiguous and inconsistent relationships across constructs. In addition to helping an author work out the logic of the theory, diagrams can also help communicate the theory more quickly and clearly to the reader (Whetten 1989).

So, what are the limitations and downsides? One limitation is that the visual toolkit of just boxes and arrows is not well suited to expressing a variety of forms of causality. By default, arrows connote linear or dichotomous relationships: if A is present, then B; or if more of A, then less of B. It is not obvious how to visually

represent more complicated relationships, such as non-linear relationships or conditions like “necessary but not sufficient” (Bacharach, 1989), or a proposition that one construct has a greater effect than another construct. Authors can invent visual solutions or can add text to a diagram to express more complicated causality. But as Delbridge and Fiss (2013) caution, relying on diagramming risks leading a theorist to stay with a linear or “net effects” perspective and neglect considering more complicated relationships.

Second, box-arrow diagrams are not well-suited to expressing the *why* of a theory. They summarize the relationships but are unlikely to express the explanation component of theory. In theories expressed via propositions, there is often a long chain of logic behind the propositions. For instance, Reynolds (1971) argues that the proposition “*larger organization size causes more formalized structure*” relies on ten underlying assumptions. These ten assumptions could perhaps be elaborated into a more complicated visual diagram. But then we run the risk of producing what Sutton and Staw (1995) call diagrams “more closely resembling a complex wiring diagram than a comprehensible theory”. This stems from a related limitation of diagramming: there are no clear rules for what level of detail to go into with a diagram, so one can readily end up with either too little or too much detail.

One way to deal with these limitations and risks is to adopt the scaffolding metaphor here, too. Early attempts at diagramming should be seen as scaffolding, rather than the final building. They are an attempt to clarify one’s thinking. In this phase, they may well expand into the abhorrent “wiring diagrams” as the theorist works out the details—i.e., as a way of “thinking logically through each chain of the argument” (Adner et al, 2007). But ultimately the goal is to explore the complexities, then pare back to a simpler synthesis. In fact, just because you use a diagram to clarify your own thinking, it is not necessary that a diagram appear in the final manuscript.

A third limitation of diagramming is the potential to conflate a causal diagram with other types of conceptual diagrams. The chief example here is a diagram of a process or sequence. It is natural to represent a process with the same visual toolkit of boxes and arrows. But in this case, the boxes represent stages of a process and the arrows represent the sequence or time dimension: step A is followed by step B is represented as  $A \rightarrow B$ . This is not necessarily a proposition or a causal relationship. It is not the same thing as saying A causes B. In a theory about process, a diagram that mixes causality and sequence can generate considerable ambiguity about the theoretical relationships (Cornelissen, 2017).

A second example of conflating the role of a diagram is when we use a diagram to help represent the fullness of our associative thinking, as in the practice of mind-mapping (Mento et al. 1999). This may be a very helpful technique for getting what’s in our heads onto paper. However, just as the first round of writing is not ready for communicating to others, a mind-mapping diagram is not useful for clearly communicating a theory’s constructs and relationships. The arrows between constructs may represent a variety of associations. In particular, the arrows may be describing connections between constructs that are definitional rather than causal: e.g., linking

a higher-order concept with a lower-order, more specific instance of that construct, or linking synonyms, or linking a construct with components that define the construct.

## **CONCLUSION**

Rigorous empirical research can make a larger contribution when framed by clear and consistent theory. Discourse in management writing on theorizing tends to prize the new and novel, while clarity and consistency are taken as unproblematic. But there are multiple challenges that make clarity and consistency harder to achieve than we might expect. Our intuitive System 1 thinking is rife with ambiguities and inconsistencies and turning it into clear, logical abstract arguments requires some of the most taxing System 2 effort. Furthermore, investments in clarity may be seen to be at odds with aspirations to make our theories more influential by making them more generalizable. The argument here, though, is that these challenges imply that if we underinvest in theoretical clarity and consistency, we may well find ourselves committing the violations that look more like sloppiness than achieving a balance between clarity and useful forms of ambiguity—especially when our primary endeavor is empirical analysis.

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**Table 1: Summary of Common Clarity and Consistency Violations – along with suggested enhancements**

	Sample Violation	Sample Improvement
<b>Constructs:</b> For each construct, do I...		
provide a definition...	... changes in governing coalitions (specifically the addition of new outside directors and new senior executives) ... [no definition provided, other than implicit mention of outside directors and senior executive]	We use the term governing coalition to describe the combination of significant owners, board directors, and senior executives, in other words all of the parties that exert various forms of formal control over the firm. The governing coalition is not the same as the management team, as it includes non-managing directors and large owners. It is not the same thing as the ownership structure, as not all managers or directors may own shares and not all owners are large, powerful owners. We use the term governance coalition, rather than governance structure, to connect to the political view of firms (March 1962, Cyert & March 1963).
... that describes the properties of the construct, rather than only list specific examples?	Professional service firms, such as law firms and accounting firms. (no further explanation)	A firm is a professional service firm the more that it is characterized by knowledge intensity, low capital intensity, and a professionalized workforce.
... that does not rely on esoteric undefined terms?	example 1: I define improvisation as the conception of action as it unfolds.  example 2: Comprehensiveness of a strategic decision process is defined as the extent to which a team utilizes an extensive decision process.	example 1: At its core, improvisation means the opposite of planning ahead. I define improvisation as the conception of action as it unfolds. Stated another way, improvisation is acting without pre-planning (i.e., conceiving of one's actions on the spot, as the action itself unfolds).  example 2: Indicators of the level of comprehensiveness include the extent to which brainstorming sessions occur, the number of alternative solutions considered, and the extent to which quantitative analyses are conducted.

	<p>... that distinguishes it from (or relates it to) closely related constructs?</p>	<p>example 1:  <i>... identity strain, which reflects individuals' feelings of tension or discomfort that stems from an inconsistency between their role identity and their current environment. ... We advance knowledge on responses to identity threats.</i></p> <p>example 2:  <i>... [specific decision] changes the governance structure of a firm's governing coalition by introducing new large investors...</i>            Why governing coalition instead of governance structure or ownership structure or corporate governance, for instance?</p>	<p>example 1:  <i>in the identity literature, there is some ambiguity regarding the partly overlapping constructs of identity strain, identity threat, and identity conflict. ... while we draw on relevant work on all three constructs, for the sake of consistency we use the term identity strain throughout.</i></p> <p>example 2:            (repeated from above, with underlining to highlight relationship to similar constructs)  <i>... The governing coalition is not the same as the <u>management team</u>, as it includes non-managing directors and large owners. It is not the same thing as the <u>ownership structure</u>, as not all managers or directors may own shares and not all owners are large, powerful owners. We use the term governance coalition, rather than <u>governance structure</u>, to connect to the political view of firms (March 1962, Cyert &amp; March 1963).</i></p>
	<p>... use the same label throughout the paper?</p>	<p><i>firms' embedding behavior / firms' engaging behavior / firms' immersing behavior</i></p>	<p><i>My central construct is firms' embedding behavior. This behavior could alternatively be described as immersing or engaging behavior – I consider these terms to be synonymous – but I use embedding behavior throughout the paper.</i></p>
	<p>... acknowledge if I offer multiple distinct definitions?</p>	<p><i>... team cohesion, which is defined as the desire of team members to remain as part of the team. ... while team cohesion has many components, such as interpersonal attraction, group pride, and task commitment, the focus of this paper will be on the aspect of interpersonal attraction.</i></p>	<p><i>Team cohesion has been defined in various ways. It has been seen as the desire of team members to remain as part of the team. Others define it as a combination of several components, including interpersonal attraction, group pride and task commitment. In this paper, we focus specifically on the interpersonal attraction component.</i></p>
<p><b>Relationships:</b></p>			
<p>For each relationship, do I...</p>			

	...avoid a tautology?	<p><i>example 1:</i>  ... performance involves growth and profitability ...  H1: higher diversification accounts for higher performance...</p> <p><i>example 2:</i>  Definition: dynamic capabilities are capabilities that lead to superior performance in changing environments...  Proposition: dynamic capabilities cause superior performance.  (adapted from Arend and Bromiley 2009)</p>	<p><i>example 1:</i>  We use performance to refer primarily to a firm's productivity, it's output relative to inputs. ...  H1: higher diversification generates higher performance...</p> <p><i>example 2:</i>  Definition: dynamic capabilities refers to organizational routines that facilitate integration of resources – such as product development processes and strategic decision making processes – reconfiguring resources – such as transfer processes and resource allocation processes – and gaining resources – such as knowledge creation processes and alliance processes.  Proposition: high-functioning dynamic capabilities generate superior overall firm performance.  (adapted from Eisenhardt and Martin 2000)</p>
	...provide a logical explanation for <i>why</i> the relationship may exist?	<p>H1: higher diversification accounts for higher performance...  [no clear explanation for why]</p>	<p>Diversifying into service lines that the firm's existing clients also have need for can allow the firm to offer a one-stop shop, reducing clients' need to search for a variety of providers for multiple services. This increases the chance that a client will select the firm as a provider, relative to non-diversified competitors. The firm may then generate more revenue for lower marketing expenditure, yielding higher overall performance.</p>

	<p>...avoid logical errors in linking the antecedent to the consequence?</p>	<p>example 1:  <i>Proposition: an individual will share a video with others when the value of sharing exceeds the costs of watching the video</i></p> <p>This proposes a cost-benefit tradeoff, but the cost is unrelated to the benefit. The benefit comes from sharing the video. But the cost of watching the video is unrelated to sharing the video, regardless of whether the costs refer to the sender or receiver.</p> <p>example 2:  <i>Knowledge exploration benefits of cross-departmental ties increase with the number of ties. There are fixed costs to first establishing cross-departmental, but the cost of additional ties is low. Therefore, the relationship between cross-departmental ties and knowledge exploration is u-shaped.</i></p> <p>The costs are irrelevant to the knowledge exploration benefits of ties. Ignoring the cost statement reveals two contradictory statements.</p>	<p>example 1:  <i>Proposition: an individual will share a video with others when she expects the likelihood that the content will make the recipient think better of her is greater than the likelihood it will make the recipient think less of her.</i></p> <p>example 2:          [same first two statements, then...]</p> <p><i>Therefore, managers' net returns to knowledge exploration are initially negative but turn positive after a threshold number of cross-departmental ties.</i></p> <p>The theory should distinguish between knowledge exploration (the activity) and the returns to knowledge exploration (the benefits minus the time costs).</p>
	<p>Across the relationships, do I ...</p> <p>...avoid logical contradictions?</p>	<p><i>Employee profit-sharing plans will be more prevalent in right-to-work states because employers will adopt them to offset lower wages in right-to-work states. [i.e., lower wages predict more adoption of profit-sharing plans]</i></p> <p><i>Employee profit-sharing plans will be more prevalent in states with higher minimum wage rates because employers will adopt them to encourage greater productivity. [i.e., higher wages predict more adoption of profit-sharing plans]</i></p>	<p>Ex ante, choose one logical argument, run the empirical test, then offer alternative explanations in a Discussion section; or assume that wage rates are not a reliable predictor of the prevalence of profit-sharing plans because there are countervailing implications of high and low wage rates.</p>

	<p>...use parallel logic OR justify why I do not use parallel logic?</p>	<p><i>The marginal benefit of cross-departmental ties is increasing: each additional cross-departmental tie generates a larger increase in knowledge.</i></p> <p><i>The marginal benefit of cross-organizational ties is constant: each additional cross-organizational tie adds an equal amount of new knowledge.</i></p>	<p><i>The marginal benefit of cross-departmental <u>and cross-organizational</u> ties is increasing: each additional tie generates a larger increase in knowledge.</i></p> <p>OR</p> <p>Offer a theoretical reason that cross-department vs. cross-organizational ties generate knowledge differently.</p>
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