



Strategy Science

Publication details, including instructions for authors and subscription information:
<http://pubsonline.informs.org>

Strategy Theory Using Analogy: Rationale, Tools and Examples

Glenn R. Carroll, Jesper B. Sørensen

To cite this article:

Glenn R. Carroll, Jesper B. Sørensen (2024) Strategy Theory Using Analogy: Rationale, Tools and Examples. Strategy Science 9(4):483-498. <https://doi.org/10.1287/stsc.2024.0174>

This work is licensed under a Creative Commons Attribution 4.0 International License. You are free to copy, distribute, transmit and adapt this work, but you must attribute this work as “*Strategy Science*. Copyright © 2024 The Author(s). <https://doi.org/10.1287/stsc.2024.0174>, used under a Creative Commons Attribution License: <https://creativecommons.org/licenses/by/4.0/>.”

Copyright © 2024 The Author(s)

Please scroll down for article—it is on subsequent pages



With 12,500 members from nearly 90 countries, INFORMS is the largest international association of operations research (O.R.) and analytics professionals and students. INFORMS provides unique networking and learning opportunities for individual professionals, and organizations of all types and sizes, to better understand and use O.R. and analytics tools and methods to transform strategic visions and achieve better outcomes. For more information on INFORMS, its publications, membership, or meetings visit <http://www.informs.org>

Strategy Theory Using Analogy: Rationale, Tools and Examples

Glenn R. Carroll,^{a,*} Jesper B. Sørensen^a

^aGraduate School of Business, Stanford University, Stanford, California 94305

*Corresponding author

Contact: gcarroll@stanford.edu,  <https://orcid.org/0000-0001-7718-9348> (GRC); sorensen@stanford.edu,

 <https://orcid.org/0000-0002-9539-8458> (JBS)

Received: February 4, 2024

Revised: July 29, 2024; September 9, 2024

Accepted: September 21, 2024

Published Online in Articles in Advance:
October 21, 2024

<https://doi.org/10.1287/stsc.2024.0174>

Copyright: © 2024 The Author(s)

Abstract. We discuss why analogical reasoning is widely used in strategy formulation, implementation, and evaluation despite its assessment by many logicians as a weak form of logical argumentation. Given this popularity, we consider how analogies might be used to assist in strategic decision making to develop better strategy arguments, including those consistent with the theory-based view of strategy. We develop an extended analogy between the online platforms Tripadvisor and Glassdoor to illustrate our main points. We also describe in steps how to build and evaluate strategy analogies and we suggest why working with analogies may be helpful to those practicing the theory-based view of strategy.



Open Access Statement: This work is licensed under a Creative Commons Attribution 4.0 International License. You are free to copy, distribute, transmit and adapt this work, but you must attribute this work as “Strategy Science. Copyright © 2024 The Author(s). <https://doi.org/10.1287/stsc.2024.0174>, used under a Creative Commons Attribution License: <https://creativecommons.org/licenses/by/4.0/>.”

Keywords: competitive strategy • organization and management theory • entrepreneurship • strategy formulation

1. Introduction

Contemporary research in strategy involves more than a nod to underlying theoretical ideas. It entails the application of discipline-based theoretical ideas to core strategy problems. For instance, strategic analyses and decisions about vertical integration, internationalization, and acquisition often draw on theory from transaction cost economics and industrial organization economics (Rumelt et al. 1991). In other analyses, strategy researchers develop their own novel scientific theories about what is going on, theories that hold broader applicability. For example, the dynamic capabilities framework posits that organizational and technological assets initiated and developed internally within a firm will convey strong advantages over competitors who acquire them from the outside (Teece et al. 1997).

Strategy analysts often call upon executives to embrace more fully the idea that strategies are theories and to use them in everyday practice. Rumelt (2011), for instance, describes the strategist’s task as akin to that of a scientist, where information is systematically collected in order to evaluate explicitly formulated hypotheses. Sørensen and Carroll (2021a, b) agree on the explicit use of theory and go a step further methodologically, asking that an organization’s strategy be laid out and justified with first-order deductive logic, which rigorously formalizes causal arguments. Ehrig and Schmidt (2022) propose a compatible framework, focusing on the necessary conditions to generate an intended strategy outcome (relatedly, see Dul et al.

2010, Dul 2016). In what has blossomed into the theory-based view (TBV) of strategy, Zenger (2016) proposes that executives develop and use firm-specific theories about which capabilities and assets to add to the corporation, with the explicit goal of increasing shareholder value (Felin and Zenger 2017, 2020).

In all these frameworks, strategists are advised to build a theoretical argument consisting of premises (or conditions) and outcomes (e.g., profit, market share, shareholder value). If validly constructed, then the arguments imply that the conclusion holds if the premises are true—the premises are said to cause the conclusion in natural language. In other words, premises specify what needs to be true for the outcome to occur. Various frameworks and strategists suggest proceeding with theoretical analysis in differing ways. Some start with premises and debate their veracity (related to soundness in technical language), whereas others start with conclusions or intermediate conclusions and then try to determine the needed premises. In developing forward-looking strategies for a future world, we follow Sørensen and Carroll (2021a) in advocating the initial development of a valid deductive argument that states the premises—the conditions that need to be true—to generate a desired conclusion. Whether all the necessary premises are true at the moment of strategy formulation is beside the point (often they will not be), but they identify what needs to happen eventually for the strategy to succeed. This insight underpins Sørensen and Carroll’s (2021a, p. 129) mantra for strategy formulation using

deductive logic: “Validity today, soundness tomorrow.” Deductively valid arguments are a necessary condition for formulating a successful strategy and set the stage for debating whether the assumptions underlying the firm-specific theory are (or will be) true for the firm.

In many respects, the theoretical approaches to strategy can be seen as specific ways of operationalizing Drucker’s (1994, p. 95) ideas about “the theory of the business.” And, like the academic analyses of strategy seen in contemporary journals, the theoretical thinking entailed in these approaches revolves around familiar notions of causality using first-order deductive logic: “If a firm does action X, then outcome Y will happen.” Indeed, first-order deductive logic is the workhorse of common-sense notions of “causality” and “logic.”

But by relying explicitly on deductive logic, these approaches can present seemingly insurmountable knowledge demands on the practicing executive strategist. It is not uncommon in strategy for executives and others to fail to understand fully the causal mechanisms behind competitive success, especially when the economic forces involved may not be easy to describe and document. Viewing a strategy as a hypothesis may be a more realistic expectation, but it suggests that an answer may be immanent when that may not be true because of ambiguity or data unavailability. Rallying the troops in a firm around a hypothesis may also be difficult because it reveals more uncertainty to teams than some regard as ideal for a strategy. But perhaps the biggest issue with using deductive logic is that for many executives, it is a difficult and foreign way to think. Deductive logic does not reflect the way most people naturally discuss strategy, or many things for that matter. First-order logic requires disciplined systematic thinking with detailed attention to unstated assumptions, logical fallacies, and the like. As a result, leading with a deductive approach may stymie rather than stimulate efforts to discuss and debate strategy as theory. In the worst case, strategy formulated through the strict application of deductive logic may hinder its accessibility and utility for decision making.

The absence of formal deduction in strategy discussions does not imply an absence of reasoning. Rather than using explicit deductive arguments, executives often use analogies and analogical reasoning when developing strategy or when making major strategic decisions (see Gavetti and Rivkin 2005, Gavetti et al. 2005, Gary et al. 2012), although the relative frequency of such decision making is not known precisely. Entrepreneurs with startups looking for funding also often develop pitches where an analogy plays a key role.¹ An analogy in either of these contexts typically holds up a familiar specific (usually successful) case as the rationale for a particular future decision or course of action in another case, based on the presumed similarities of the two cases. The implied reasoning of the analogy

goes along the lines of, “when they faced a situation like this in case A, they did action X and it led to success, so in our somewhat similar case B, if we do action X, then it will also likely lead to success.”

Analogies play two distinct roles in business discourse (cf. Gentner 1982). One is rhetorical or persuasive, as when someone uses an analogy as a simile or metaphor, for the purpose of making their point more emphatic or vivid. The other role for analogy in business discourse is generative, where analogies are used for problem-solving purposes and aid in developing theory (Gavetti and Rivkin 2005).²

As cognitive scientists note, analogy plays an important role in knowledge transfer and the explanation and understanding of new concepts (Holyoak and Thagard 1996, Gentner 2017). For strategy reasoning, the central problem with relying on analogy for causal inference is that, in the assessment of many logicians, analogy is an unreliable form of inductive argument—one likely to lead to unwarranted or questionable inferences and conclusions. Indeed, the combination of wide usage of analogical reasoning along with its logical weaknesses may help explain the lack of confidence many executives express in the strategies and strategy processes of their firms (Sørensen and Carroll 2021a). Yet given analogy’s wide appeal and the difficulties of adopting first-order logic instead, discouraging executives from using analogy seems likely to fall on deaf ears. So, rather than avoiding or banning analogies, a more practical route (extending Gavetti and Rivkin 2005) seems to involve searching for ways we can best use analogies for strategy, recognizing them for what they are. In other words, ask, How can we take advantage of the potential benefits of this type of reasoning while simultaneously avoiding its worst pitfalls? What role might analogy play in practice driven by the theory-based view of strategy?

In this article, we attempt to address these questions. We do so by delving into the two uses of analogy—persuasive and generative—and join them with key issues in strategy and strategic decision making including the theory-based view of strategy, where analogy could play a helpful role. After explaining and defending the use of analogies, we show some useful ways to use and evaluate analogical reasoning in strategy formulation and analysis using, among other things, an analogy involving the online businesses Tripadvisor and Glassdoor.

2. Analogy

Generally speaking, an analogy is a conceptual construction involving a *source* object or entity and a *target* object or entity. Let us call the source entity *A* and the target entity *B*. An analogy is a claim that *B* (the target) is like *A* (the source).

A *proportional analogy* takes the familiar form that “A is to B” is like (or similar to) “X is to Y” (Indurkha 1989). Here we essentially have two sources and two targets, although the relationships “A is to B” and “X is to Y” are sometimes considered the source and target.

For instance, in the spring of 2023, a memo purportedly leaked from Google (Patel and Ahmad 2023) argued that the artificial intelligence (AI) business models of OpenAI and Google at the time—which rested heavily on presumed scale advantages and the erection of barriers to entry—were under threat from open-source software. The memo noted that “open-source models are faster, more customizable, more private, and pound-for-pound more capable.” In discussing this memo and related developments in AI, Global Village Space (News Desk 2023) made an unusual analogy:

Customers are starting to wonder why they are hiring the services of the largest and most general-purpose AI model ever created if all they want to do is exert some intelligence in matching the language of a contract against a couple hundred other ones. If GPT-4 is the Walmart you go to for apples, what happens when a fruit stand opens in the parking lot?

Here the analogy takes the form of “open-source AI is to GPT-4 [OpenAI] as a fruit stand in the parking lot is to Walmart.” Presumably the analogy intends to spark discussions about the limitations of OpenAI’s approach to AI, and possible strategic alternatives.

A proportional analogy shifts the focus from the objects to their *relationships*: Is the relationship between A and B (source entities) similar to the relationship between C and D (target entities)? This is something quite different from just asking whether particular attributes of two entities are similar—you need an understanding of why or how they are similar. A proportional analogy about strategy often says something about the relationships of firms’ outcomes to their technologies, labor forces, or customer bases.

In the AI example above, for instance, the reader is, of course, not meant to think that open-source AI is literally like a fruit stand. Rather, we are meant to focus on the relationship between the fruit stand and Walmart. One possible interpretation of the OpenAI analogy, for example, is that a fruit stand in a Walmart parking lot takes advantage of the work done by Walmart to draw customers, and then offers a more specialized, presumably superior offering. Applying this same relationship to AI, the idea would be that open-source providers could similarly piggyback on the investments of OpenAI, Google, and Meta (which has embraced open source) to provide superior customized solutions to clients.

To see the power of knowing the underlying relation driving an analogy, consider this claim: “3 is to 6” is as

“2 is to 4.” As Gentner (1983, p. 156) observes about this analogy:

We do not care how many features 3 has in common with 2, nor 6 with 4. It is not the overall number of shared versus nonshared features that counts here, but only the relationship “twice as great as” that holds between 3 and 6 and also between 2 and 4. To underscore the implicit selectiveness of the feature match, note that we do not consider the analogy “3 is to 6” is as “2 is to 4” better or more apt than the analogy “3 is to 6” is “200 is to 400,” even though by most accounts 3 has more features in common with 2 than with 200.

Here, knowing the relation appears to mean knowing the underlying theoretical principle at work (arithmetic doubling) and then thinking deductively. In strategy analogies, the principle used most often is causality, linking structures or actions of a firm to outcomes such as growth or profit (Gavetti and Rivkin 2005).

The limitations—and even dangers—of using analogies to make decisions are well known among philosophers. Most logicians and philosophers regard analogy a weak and unreliable form of inductive argument; they worry that relying on analogy to make an argument can result in incorrect inferences and conclusions. For instance, Gensler (2010, p. 97) says that “analogical reasoning is elusive and difficult to put into strict rules.” Others claim that it may not be a form of reasoning at all (Goodrich 1986, Posner 1990).

Yet using an analogy in a strategy discussion often appeals strongly to others: the familiarity of its elements can resonate vividly, and its specificity makes it a powerful communication device (Holyoak and Thagard 1996, 1997; Hofstadter and Sander 2013). Analogy also appears to be an attractive way to engage participants in discussions that might otherwise be unappealing (Chou and Shu 2015). Lamond (2006) calls analogies, “useful heuristic devices for deepening and sharpening reflection on the merits.” Moreover, Hofstadter (2001) refers to analogy as the core of cognition, implying that analogy allows us to discover things about an entity that may not be apparent before. Strategy analyst Martin (2022) calls it “a critically important thinking skill.” Accordingly, it seems mistaken to dismiss analogical reasoning out of hand for doing strategy.

Is there a good case for using analogy in the strategy process when its logical basis for argumentation and decision making is so weak? We think there is, and the case rests on two distinct benefits of analogies: the rhetorical or persuasive benefits of analogies, and the generative or problem-solving benefits. Moreover, although the inferential weaknesses of analogical reasoning are real, in our view, they can be addressed by complementing the benefits with explicit attention to the logical structure of the implied arguments.

Consider the main reasons analogies are so appealing to executives and others.

First, analogies are remarkably efficient modes of communication. By comparing a proposed startup to, say, Uber, we are making a very complex claim with a simple phrase. There are many aspects to Uber—countless many—and rather than detail them all, with the analogy we apply them wholesale to the startup with a single comparison. The short phrase “like Uber” potentially conveys a wealth of information, making it a powerful tool for persuasion.

Second, because strategy analogies are usually specific and concrete (material analogies), they present a more memorable and vivid image than an abstract idea, again endowing them with persuasive power. As Lamond (2006) notes, “people are often more confident in their judgements about various concrete cases than they are about abstract theories that attempt to account for their judgements, and so regard this as a more profitable way to approach a question (see Sunstein 1993, 775–7).” In other words, the concrete nature of the source in the analogy makes it readily salient to many—more so if it invokes a familiar case or setting. Perhaps this explains the popularity of using analogies in teaching science (Harrison and Treagust 1993, 1994), as when the properties of sound are explained in terms of water waves. Of course, this is also partly how we get into trouble using an analogy because not all parties to the communication know or invoke the same aspects of comparison.

Third, analogies provide us with insights and provide predictions even in cases where our conceptual and theoretical understanding is limited (again, this is also what gets us in trouble at times with analogy). This feature highlights the generative power of analogies. Through analogy to a more familiar source, we hope to deepen our understanding of a target where our knowledge is limited; analogizing sound to water offers insight because we have a more direct experience with causal relations involving water. Thus, Lamond (2006) calls analogies “useful heuristic devices for deepening and sharpening reflection on the merits,” and Hofstadter (2001) refers to analogy as the core of cognition. Duit and Treagust (2003) argue that analogies can foster fundamental conceptual change in thinking as well as novelty. By allowing strategists to reframe their own situation, analogy may allow them to discover things about their organization and its strategic advantages that may not have been apparent.

Fourth, a related generative benefit of analogy comes from it being a powerful problem-solving tool. As Bartha (2015, p. 63) puts it, “the best solutions involve techniques that generalize and allow us to solve similar puzzles.” Analogical reasoning is one such technique because “[b]y transferring knowledge about causal relations, the analogy provides a new explanation of

why various phenomena occur” (Holyoak 2012, p. 234). Note here that the generative benefit of an analogy comes from the transfer of the causal relation from source to target; hence, the generative benefits of analogies require going deeper (implicitly or explicitly) than similarities in features.

Fifth, a benefit of analogical reasoning from both a persuasive and a generative perspective is that it “produces principles that operate at a low or intermediate level of abstraction” (Sunstein 1993, p. 747). That is, analogy does not rely on a comprehensive theory and does not require working with highly abstract conceptual representations. In our experience, practicing executives, perhaps because of the demands of their jobs, often reason in concrete terms (i.e., with specific actors, market conditions, and technological constraints). As a result, the relatively concrete nature of many analogies makes them easier for executives to comprehend and to work with. This conceptual quality also makes analogy remarkably flexible and adaptive to new and unexpected situations. With analogy, we encounter uncertain situations with some rough guidance in hand; we do not have to start anew in our analysis and thinking.

Sixth, strategy analogies usually (but not always) employ success stories as sources. This use has the effect of suggesting that the target will also be successful when we do not know if that is the case. Although such an effect can lead us astray and be highly problematic, it does (if the claim about the source is correct) propose a sort of existence proof for a strategy: it worked in the source domain, so it has a chance to work in the target domain too.

All of these features of analogies help explain their prevalence in business discourse and decision making. Their use is not restricted to business or strategy: in law, Sunstein (1993, p. 741) claims that “analogical reasoning is the most familiar form of legal reasoning ... it dominates brief writing and opinion writing.” In particular, the common legal approach of reasoning by precedent shows many similarities to analogical reasoning even though it too is seen as weaker than deductive reasoning (Hunter 2001, Lamond 2006). Law proceeds with such reasoning because legal matters often need to be decided and acted upon in the midst of uncertainty. That is, legal analysts and jurists often need to act before the theory of the situation is complete and a deductive theory can be used: a judgment must be rendered. As Sunstein (2017, p. 1735) describes it, the analogical reasoning process allows legal actors to “solve problems through incompletely theorized agreements.” The resulting consistency in decisions is often considered an advantage of analogical reasoning in law (Sunstein 1993).

Strategy and strategic decision making bear similarities to legal decisions. Action often cannot be delayed: competitors must be countered, markets must be dealt

with, technologies must be updated, and customers must be served. Consistency in strategic decision making yields a coherent strategy just as consistency in legal decisions makes a coherent body of law. These benefits do not eradicate the limitations and dangers of analogical reasoning in strategy, any more than reasoning by precedent leads to consistently just legal outcomes. But it does suggest that when used carefully, analogies can serve as a viable foundation for strategic decision making. The question is how to improve the use of analogies in practice. We think effective widespread use of analogies in strategy begs for a deeper understanding of their advantages and disadvantages.

3. Using Analogy in Strategy Theory

Gavetti and Rivkin (2005) document cases of executives in major companies using analogical reasoning to make major strategic decisions. Their examples draw on corporate histories of Intel, Toys “R” Us, Ford Motor Co., Dell Computers, Enron, and Merrill Lynch. In an extended analysis, they described how Circuit City moved into car sales as the entity CarMax, noting the similarities of the two companies’ markets, as well as a few key differences. Similarly, Gavetti and Menon (2016) show that in setting up Merrill Lynch’s strategy for financial services, founder Charles Merrill relied heavily on an analogy with retail grocery markets and Safeway’s success.

For strategic decision making, the most relevant kind of analogy seems to be the predictive analogy. This conceptual construction involves using the analogy to make an inference-like prediction, typically to a conclusion of interest about the target (Indurkha 1989). Because the jump to the prediction is not a true logical inference, it is often said to be “justified” or “plausibly justified” or simply “plausible,” where plausible means “with some degree of support.” Such a reasoning process means that, in some psychological sense, a rational person would find it a more reasonable conclusion than, say, a random inference (Hesse 1966).

For example, let us say we know entity *A* contains features or attributes *a*₁, *a*₂, and *a*₃; meanwhile, entity *B* contains properties *b*₁ and *b*₂. We know (or judge) that *a*₁ is similar to *b*₁, and *a*₂ is similar to *b*₂. These comparisons involve an inferential process by which we map attributes of the source onto the target, creating a set of premises. Our chief predictive concern is with the unknown property *b*₃. Because *b*₃ is unknown, we make the problem an inferential argument about the target conclusion *b*_c using the believed source

Table 1. Analogical Reasoning

| A | | B |
|----------------|-------------------------|----------------|
| a ₁ | is similar to | b ₁ |
| a ₂ | is similar to | b ₂ |
| a ₃ | is similar to | ? |
| a _c | is plausibly similar to | b _c |

conclusion *a*_c. Here we ask, On the basis of the known similarities *a*₁ to *b*₁ and *a*₂ to *b*₂, can we predict (with confidence) that *b*_c will be like *a*_c? Table 1 displays the conceptual challenge here, showing both the question for *a*_c and the plausible conclusion.³

In entrepreneurial strategy circles, pitches for funding often include analogies. A famous successful pitch about Glassdoor,⁴ the online website (<https://www.glassdoor.com/>) about companies’ cultures and jobs, stated that “Glassdoor was Tripadvisor for jobs” (Chen 2021). Let us see how this might have fit into the predictive analogy framework.

Tripadvisor is a travel website (<https://www.tripadvisor.com/>) that provides online access to hotels, flights, restaurants, rental cars, and activities. Tripadvisor is a successful startup and serves as the source entity; Glassdoor was the proposed target hoping to receive venture funding. Of course, investors want to place money in ventures that will succeed and offer high returns. That was the big unknown about Glassdoor at the time—would it succeed? So, the conclusion the founders were trying to convince investors was that because of the similarities of the two companies, they could also expect a similarity in the outcome of market success (see Table 2).

Although that basic company-to-company analogy might have been the headline, we have little doubt that the analogy did not stop there for many of those involved in the startup or considering investing in it. Rather, the founders of Glassdoor were trying to convince investors that because of the many similarities of the two companies and their markets, they could also expect a similarity in the outcome of market success. Although we do not have access to the details of the analogy actually used in these pitches (the premises), we imagine that they involved specifying further particular similarities in the two markets and business models including: hard-to-access data on experiential goods, free open access, ability to collect and monetize data from users, and monetization from ads and referrals. The premises of the detailed analogy might have looked something like those depicted in Table 3.

Table 2. Analogy of Tripadvisor and Glassdoor

| Source | | Target |
|------------------------------|-------------------------|---|
| Tripadvisor | is similar to | Glassdoor |
| Tripadvisor’s market success | is plausibly similar to | Glassdoor’s expected market performance |

Table 3. Decomposed Analogical Reasoning About Glassdoor

| Tripadvisor (source) | | Glassdoor (target) |
|---|-------------------------|---|
| Offers hard-to-find information about an experiential good (hotel rooms) | is similar to | Offers hard-to-find information about an experiential good (jobs) |
| Free & open access for users on the web | is similar to | Free and open access for users on the web ^a |
| User-generated content | is similar to | User-generated content |
| Five-star rating system supplemented by detailed user reviews | is similar to | Five-star rating system supplemented with detailed user reviews |
| Collects data from registered users to produce reports and predict trends | is similar to | Collects data from registered users to produce reports and predict trends |
| Generates revenues from ads and referrals | is similar to | Generates revenue from ads and referrals |
| Market success | is plausibly similar to | Expected market success |

^aAt its inception, Glassdoor did not require users to register, as it now does. Also, full access now requires a minimal post by a user.

As this more elaborated comparison suggests, the analogy of Glassdoor to Tripadvisor likely was quite effective. From a persuasion perspective, the association of Glassdoor with Tripadvisor not only seems plausible, the fact that Tripadvisor had been so successful to that point likely made the analogy quite resonant. Yet surface-level similarities are just that; what an investor (and indeed the entrepreneur) cares most about is whether there are lessons to be learned from Tripadvisor that are relevant to building the Glassdoor business. For this generative use of the analogy, the limitations of analogical reasoning are more consequential. Yet this is presumably the aspect that the investor cares most about; the investor should expect a well-reasoned argument for why Glassdoor will succeed. Simply saying “it looks like Tripadvisor” does not clearly meet that standard. Although it does not prove anything, the developed analogy offers for consideration a plausible unique, forward-looking, firm-specific theory of how Glassdoor might succeed in the market. In other words, the premises in a predictive analogy of this kind suggest specific ways to develop a theory-based view of successful strategy for the target firm.

4. Developing Strategy Analogies

How might we use and evaluate strategy analogies in ways that allow us to gain their advantages while minimizing the risks?

In fact, we started showing how to do this with the Glassdoor example. The first step, an almost obvious one but still sometimes overlooked, involves the systematic decomposition of the global analogy (Glassdoor is similar to Tripadvisor). If the analogy is about companies or even parts of companies, then an initial way to start evaluating it is to compare the underlying markets and business models. Break it down. Many analogies made in business discourse do not get decomposed into underlying features but stay global, which makes them harder to analyze and evaluate.

For instance, the success of Uber’s business model may have depended on features such as easy call and location spotting via an app on a mobile phone, automatic tracking of drivers, easy pay after trip completion via mobile phone app, an ample supply of available gig workers, pricing by demand, lots of demand, and frustrated legacy service customers (taxi riders). In the Glassdoor example, we went from the global analogy to six component analogies, hoping to justify the inferential leap to the seventh component about market success. Doing this more detailed analogical analysis adds confidence about reaching a justified conclusion.

But notice that the detailed components (the premises) in our example all add features that are similar between the source and the target. From the entrepreneur’s point of view, this is entirely understandable: he or she is trying to make a case, trying to persuade people to invest in and support the proposed venture. But the analysis is obviously incomplete—we know Glassdoor is different in some respects from Tripadvisor. What are those features? Can we specify them too? Doing so creates what philosophers call negative analogies, as contrasted with the positive analogies above. As impartial analysts or decision makers, we would want to know the plausibility of the conclusion considering both the positive and negative analogies. Otherwise, we risk deluding ourselves through confirmation bias.

Table 4 shows an expanded reasoning process using both positive and negative component analogies (or premises). Here we have two positive analogies (a_1 to b_1 and a_2 to b_2) and one negative analogy (a_3 to b_3). Yet

Table 4. Reasoning with Positive and Negative Analogies

| A | | B |
|-------|-------------------------|-------|
| a_1 | is similar to | b_1 |
| a_2 | is similar to | b_2 |
| a_3 | is not similar to | b_3 |
| a_c | is plausibly similar to | b_c |

we still might infer the conclusion that a_c is plausibly similar to b_c . As Bartha (2019) states it, the conclusion implies that b_c is plausible in the target because of certain known similarities with the source and despite certain known differences.

As an example of this reasoning process in strategy, Table 5 takes the Tripadvisor/Glassdoor analogy and decomposes it further to consider several explicit negative analogies. Here we state in Premise G an obvious difference between the two enterprises, namely, that one serves (mainly) potential tourists, whereas the other serves (mainly) potential employees. We decompose the analogy further by stating Premises H and I, that the potential experiences of site users differ in duration (one time versus ongoing) and the degree of customers' willingness to be forthcoming (despite veiled anonymity).

The question facing the strategist or investor is whether the conclusion is still warranted: Do we still plausibly expect market success from Glassdoor given these negative dimensions of the analogy? One can easily imagine that practicing executives could, through discussion and debate, arrive at a decomposition of the Glassdoor and Tripadvisor analogy akin to that in Table 5. After all, the decomposition relies on comparing features of the two companies and their markets. But it is less clear whether this elaboration would lead to a clear conclusion for the decision makers, and on what basis they would do so. At its heart, this question shows the basic challenge of analogical reasoning—we may or may not accept the conclusion as plausible; there is no automatic conclusion from accepted premises as with deductive reasoning. The example is illustrative, we believe, of a typical set of facts and beliefs found in a strategy-based analogical problem.

5. Evaluating Strategy Analogies

Given the general reasoning problem of an analogy, how should one go about assessing the plausibility of the conclusion? The question has been addressed by numerous philosophers, logicians, and scientists. Although the answers offered will never provide full certainty or total confidence, we also do not need to resort to random guessing or flipping a coin. A variety of so-called “common-sense” guidelines have been proposed (Bartha 2019), although many of them do not seem very helpful. For instance, logician Bartha (2019) lists the following possible guidelines used by some: (1) *counting premises* (more similarities between the premises make the conclusion stronger; more differences between the premises make the conclusion weaker; more analogies supporting the same conclusion make it stronger); (2) *assessing premises* (structural analogies, which rely on the form or structure of the entities being compared, are stronger than those using superficial similarities⁵; similarities and differences between the premises should be weighted based on their relevance to the conclusion; analogies with weaker conclusions are more plausible); (3) *relying on background knowledge* (knowledge about the background domain makes the analogy stronger).

Yet, most of these guides are weak, considered too vague and inconclusive, at least as typically stated (Bartha 2019). For instance, we noted above that for almost all companies used in a strategy analogy, there are countless numbers of features that could be compared yielding many similarities but also many differences. Of course, we do not want the conclusion to rest mindlessly on our simple ability to itemize and count features. Moreover, people expecting this criterion to be applied could “stack the deck” by searching for similarities, no matter how trivial.

Table 5. Further Analogical Reasoning About Glassdoor

| Premise | Tripadvisor (source) | | Glassdoor (target) |
|------------|---|-------------------------|---|
| A | Offers hard-to-find information about an experiential good (hotel rooms) | is similar to | Offers hard-to-find information about an experiential good (jobs) |
| B | Free and open access for users on the web | is similar to | Free and open access for users on the web ^a |
| C | Data self-input by users | is similar to | Data self-input by users |
| D | Simplified aggregate ratings supplemented with detailed user reviews | is similar to | Simplified aggregate ratings supplemented with detailed user reviews |
| E | Collects data from registered users to produce reports and predict trends | is similar to | Collects data from registered users to produce reports and predict trends |
| F | Generates revenues from ads and referrals | is similar to | Generates revenue from ads and referrals |
| G | Consumers seeking to find good travel destinations (hotels, activities) | is not similar to | Potential employees seeking to find good jobs (high pay, compatible culture) |
| H | Travel experiences are often one-time events with (usually) minor adverse effects of a bad choice | is not similar to | Jobs are ongoing experiences with (usually) significant adverse effects of a bad choice |
| I | Tourists willingly and accurately describing bad experiences publicly | is not similar to | Employees reluctantly describing bad experiences publicly |
| Conclusion | Market success | is plausibly similar to | Expected market success |

^aGlassdoor did not initially require users to register, as it now does.

The principle typically asserted with the strongest conviction follows the second guideline Bartha identifies, the admonition to weigh or use premises based on their relevance to the conclusion. As Gensler (2010, p. 97) explains: “we don’t just count similarities when we argue by analogy; many similarities are trivial and unimportant. Rather, we look to *relevant* similarities (emphasis in original).” (Others distinguish between what they call superficial and deep or structural analogies (e.g., Gilovich 1981, Ross and Kilbane 1997).) But how do we know which similarities (and differences) are relevant (or deep) and which are not?

In many strategy contexts, the question is compounded by the fact that for a proposed future action, the answer is simply unknowable until the action has been undertaken. For example, once Glassdoor is launched and operating, we may very well learn how different potential employees and potential tourists are to each other, but it may not be possible or easy to learn this in advance—and even if such kind of information is knowable in advance, then it will likely not be easy to ascertain.

What to do? Along with many others, Gensler (2010, p. 97) suggests that the best—and perhaps only—course of action is to follow the third guideline Bartha identifies, to rely on our background knowledge to determine “what things are likely to go together.” Gavetti and Rivkin (2005, p. 8) claim that “strategists must analyze chains of cause and effect” and advise us to identify why the strategy of the source worked and then assess the similarities and differences with the strategy of the target, looking for what Gavetti and Menon (2016, p. 214) call “deeply similar” comparisons. Indurkha (1989, p. 225) explains further the general point:

Once it is realized that an inference based only on some existing similarity between the source and the target—and nothing else—is about as justified as a random inference, one learns to exercise extreme caution in deriving an inference from an analogy. One seeks justification in other places; it must be some other piece of knowledge, some other piece of fact, which “justifies” why the existing similarities determine the inferred ones. And if no such justification can be found, the so-called analogical inference is to be properly discarded.

Let us be more specific with regards to strategy. We are trying to determine the relevance of the premise to the conclusion. So, among other things, the question in the Glassdoor analogy in Table 5 then becomes how relevant or important are Premises G, H, and I to the conclusion? At face value, Premise G may not be that important. Premise H may be relevant because it speaks to the willingness of potential employees to trust the views and opinions of unknown third parties; someone may be willing to trust that third party for a

three-day vacation but not be willing to do so for a new job. Likewise, Premise I seems potentially relevant: if past employees are not willing to provide accurate information for public consumption then why would anyone rely on Glassdoor in deciding where to work?

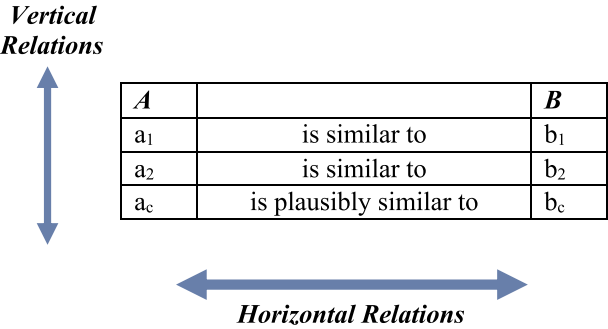
Suppose we follow the guideline to use background (often cultural) knowledge to assess the relevance of these premises. How do we do that? One thing is clear: because of self-interest, we should be wary of the entrepreneur or strategist proposing the argument even if he or she possesses deep background expertise in one or both domains. But, if the decision makers (investors) are experts in tourism and employment relations, then maybe all we have to do is to ask their opinions (but this inherently conservative route may never lead to disruptive conclusions, despite being true to analogical reasoning⁶). However, even in this situation, we may worry that the decision makers are all too eager to accept a conclusion that will benefit themselves, that the decision becomes biased because of their anticipated outcome. An obvious solution here would be to bring in an outside, disinterested expert and seek his or her opinion (Schauer and Spellman 2017). Or perhaps, we could collect additional objective data that will inform the issue, possibly via a simple survey or experiment. An interesting twist on these ideas would involve hiring multiple experts and asking them to argue opposing sides, a sort of devil’s advocate or debate setup. In that way, at least all the important issues would seem to be brought into consideration.

Although structuring the analogical reasoning decision in ways that rely on background knowledge seems helpful, it also still leaves many uneasy. We are still relying heavily on our subjective judgment and we would like to do something to make it more objective if at all possible.

One potentially promising direction involves analyzing what are called the vertical relations of the premises in the analogy. Hesse (1966) first made the distinction between what she calls the horizontal and vertical relations of an analogical argument. *Horizontal* relations are what we have been mainly discussing so far—they are the one-to-one mappings of the features of the source to similar (or dissimilar) features of the target (e.g., a_1 to b_1 and a_2 to b_2 in Table 1). *Vertical* relations are defined by the relationships of the features within the source to the conclusion (a_1 to a_2 to a_c) and within the target to the conclusion (b_1 to b_2 to b_c). Visually, this distinction can be seen as shown in Figure 1.

Horizontal relations are about material similarity and identity. What are vertical relations? In Hesse’s (1966, p. 87) view, in a valid analogical argument, the vertical relations need to be causal relationships, or presumed causal relationships, between the features of the source and the target. In her words: “the vertical relations in the model [source] are causal relations in

Figure 1. (Color online) Horizontal and Vertical Relations in Analogy



some acceptable scientific sense, where there are no compelling a priori reasons for denying that causal relations of the same kind may hold between terms of the explanandum [target].” She talks further of “a tendency of co-occurrence” as the essential requirement for evidence of causality, a suggestive but notably weak condition.⁷ According to Hesse, “the use of analogical argument presupposes a stronger causal relation than mere co-occurrence, ... but it does not presuppose that the actual causal relation is known” (Hesse 1966, p. 84). For many applications, the causal relations are suggested by some established or known theory (Drake and Kramer 2012).

To illustrate, consider the simple analogy shown in Hesse (1966, p. 59) and modified by Drake and Kramer (2012, p. 438). Here they are trying to draw an inference about whether there is life on the moon (the target) using earth as the source. The argument contains one positive premise (about shape, both are spherical) and one negative premise (about atmosphere, which is present on the earth and absent on the moon). What should we conclude? We know life is present on the earth and the analysts claim most people would conclude that life on the moon is absent. As Drake and Kramer (2012, p. 438) explain: “because we believe (possibly incorrectly) on the basis of our experience of life on earth that an atmosphere is necessary for life, we may conclude that there is no life on the moon.” In other words, we rely on a background “theory” that life requires an atmosphere or else living organisms cannot survive. Although the background theory may be vague, it is useful to articulate it as clearly as possible so that the strength of the analogy’s foundation can be assessed.⁸

If we use causality of the vertical relations as a way to evaluate a typical strategy analogy, then we will need to specify the causal relations or determining forces behind the success of the source. This recognition goes to the heart of the TBV of strategy that is the topic of this special issue. As we elaborate in Sørensen and Carroll (2021a), such specification is possible but it may not be

an easy task; sometimes it requires knowledge of how economic and social forces operate. To get a glimpse of the difficulty, consider how strategy analysts commonly argue about the root causes of a particular firm’s success, and how long it often takes to gather and analyze relevant information and data to compare and evaluate the potential causes. Moreover, the task will likely be challenging to executives, at least initially. However, a clear articulation of the details of the analogy (as in Table 5 for Glassdoor) often provides a good starting point.

Let us explore how using and evaluating the vertical (causal) relations among the premises might work in the context of the Glassdoor analogy. We start by asking, What are the causal relationships (or theory) used in the vertical relations of the source, Tripadvisor? Another way to look at this is to ask, Do the Premises A to I for Tripadvisor imply (or force) the conclusion as they would in a deductive argument? In other words, do the conditions spelled out in Premises A to I generate the market success of Tripadvisor? If we accept the Premises A to I jointly, do they lead to (or explain) the market success of Tripadvisor?

We think most analysts and others would likely say no in response to these questions. Although we have listed many features about Tripadvisor in the premises, we do not really have a compelling explanation or theory of its market success. The listed features alone surely did not lead to the company’s success, something seems missing to make the argument complete.

This observation suggests an important guide for assessing the vertical (causal) relations in an analogy: Start with the conclusion (Sørensen and Carroll 2021a). In other words, the analyst should first ask, What is the intended inference of the analogy? And then the analyst should invoke his or her background knowledge of the reasons for the conclusion in the source of the analogy. In other words, the analyst should ask, Why do I think Tripadvisor experienced market success? Because the intended inference is that Glassdoor will have analogous success. The answer to this question (the vertical relations of the source) surfaces the analyst’s implicit theory of Tripadvisor’s success, perhaps a unique theory. This inductive process of surfacing the theory may be made easier by focusing on the features of the source (Tripadvisor) that seem most salient, and trying to identify their relevance to the outcome.

In assessing a proposed analogy, the key step for a listener or other audience member would then be to ask whether the observed similarities evoked by the analogy are relevant to that listener’s theory of the success of the source. In other words, are the proposed comparison features relevant causal factors, given the listener’s implicit theory? Or do they involve factors that are irrelevant? Furthermore, the listener should assess whether the theory seems plausible in the target

domain, or whether there are unstated differences between the source and target domains that render the analogical claim less plausible.

Imagine, for example, that someone drew an analogy between Facebook (target) and Intel (source), where the claim was that Facebook succeeded for the same reasons as Intel (the intended inference) because they both had massive scale, were dominant in their markets, and had made heavy investments in information technology. Here we would likely reject the analogy as implausible if we hold a credible understanding of why Intel succeeded. By most accounts, Intel's success can be attributed primarily to cost economies of scale arising from the very high fixed costs of semiconductor research and development and manufacturing, and the technical lock-in of customers because of proprietary standards in chip architecture. Even in its early days, a consideration of Facebook would suggest that the same causal processes do not apply: product development involved substantially less engineering investment (Facebook started in a dorm room); the production process did not involve large, irreversible investments in equipment (servers can be repurposed in ways that silicon manufacturing fabs cannot); and finally, although Facebook users may develop high switching costs, these arise largely from the coordination challenge of getting friends to move to other platforms (e.g., Myspace, Google Plus) rather than proprietary technical standards.

On these grounds, a listener would likely reject the utility of the Intel/Facebook comparison as a generative analogy: it is not clear that the Intel case helps predict outcomes for Facebook. This negative conclusion, of course, depends on the implicit vertical relations that the listener imputes to the source in the analogy, Intel. A different causal theory might be more generative, for example, if the theory emphasizes the ability to persuade venture capital investors to make substantial, risky, long-run investments in a company poised to be dominant in an emerging technology.

Let us now return to the Glassdoor/Tripadvisor analogy. We aim to draw an inference from the analogy about Glassdoor's potential success. To assess the plausibility of this inference, we need to be explicit with ourselves about why we think Tripadvisor experienced market success. Let us consider one such causal model, which explains why Tripadvisor became a popular site among travelers. As a site providing reviews of hotels and restaurants, the success of Tripadvisor depends on its ability to provide credible, useful, and accurate assessments of these experience goods, such that prospective travelers turn to the company for guidance. Tripadvisor generates these assessments through user-generated content, that is, the reviews of hotels and restaurants are provided by travelers. An alternative would be for Tripadvisor to review the hotels and restaurants itself using staff or hired outside contractors,

as the *Michelin Guide* does. The success of Tripadvisor as a review site can be traced in large part to its ability to garner and publish assessments that users find as credible, plausible, and useful as those generated by professional review sites, at a substantially lower cost. The credibility, plausibility, and usefulness come from the multiple reviewers for each site, thereby providing a diversity of perspectives and experiences;⁹ the low cost comes from the free assessments that travelers provide voluntarily. The ability to draw on multiple reviewers for each site comes from the fact that numerous people travel regularly, and many show an eagerness to share their experiences.

How well does this causal model apply to Glassdoor? Again, the inference we are seeking to assess is whether Glassdoor might become a popular site among employees. Like Tripadvisor, Glassdoor is attempting to provide reviews of an experience good—what it is like to work for an employer. It provides these assessments by soliciting reviews from people who work for (or have worked for) the company. This suggests that it is plausible to infer that Glassdoor will, like Tripadvisor, generate reviews at a low cost. Glassdoor also seems likely to be able to generate a diversity of experiences and perspectives, because formal employment is common, suggesting that the reviews could be viewed as credible, plausible, and useful.

To this point, our analysis of the vertical (causal) relations in the Glassdoor/Tripadvisor analogy would suggest that the analogy is helpful. If we knew something about Tripadvisor but did not know anything about Glassdoor, we would not go far wrong in understanding how Glassdoor might succeed in generating credible, plausible, and useful reviews at low cost. Despite points of difference between the two—for example, employees have a longer and more complex relationship with their employer than travelers with a hotel—the analogy seems productive. At a minimum, the analogy articulates for consideration a plausible unique, forward-looking, firm-specific theory of how Glassdoor might succeed. It identifies the obstacles or problems that Glassdoor needs to overcome to succeed according to that theory, thereby assisting with the theory-based view's of problem solving—highlighting the problems to be solved to succeed. In other respects, the analogy offers a kind of tentative existence proof that Glassdoor might succeed.

What if, in our analogy, we invoked a different causal model, using different premises in a different vertical argument? (This seems very likely for someone following the theory-based view's advocating development of firm-specific theories.) How would our conclusion about the analogy fare? We might, for example, use our understanding of how Tripadvisor makes money (i.e., converts its success in attracting users into revenue) and try to apply that to Glassdoor. In Tripadvisor's case, the

main source of revenue comes from click-based advertising and referral fees to hotels, restaurants, and online travel agents, as well as banner advertising. The revenue generated by the ads comes through an auction mechanism, where advertisers bid for search key words (e.g., “Puerto Vallarta hotels”). This causal model would then lead us to ask whether a similar process would apply to Glassdoor. The analogue to a hotel or restaurant on Glassdoor would seem to be an employer. Unlike a hotel, however, employers are usually not trying to sell anything to Glassdoor’s users. Yet employers might nonetheless wish to use Glassdoor to advertise, to announce job openings in particular. Glassdoor might be an attractive place to post job openings, if one supposes that employees go to Glassdoor to read reviews of employers either because they are unhappy with their current job, or they are interested in a specific employer. At the same time, job openings do not occur at the same frequency as hotel room vacancies, and are not nearly as standardized, so an auction-based model to generate advertising revenue might be more difficult.

In summary, both of these Tripadvisor/Glassdoor analogies specify vertical (causal) relations that one might have good reason to use and learn from them. More specifically, when considering the strategic opportunities and issues facing new startup Glassdoor, a strategist would likely find considering the Tripadvisor case useful. Thus, the Tripadvisor/Glassdoor analogy not only has persuasive powers due to the horizontal relations in the comparison, but potential generative benefits as well. The generative benefits could be used in the strategy-making process for a specific case, but also to develop general theory for use in other cases. Moreover, in cases where the analogy seems incomplete or deficient, incapable of generating the desired outcome in the target, the analysis offered has likely narrowed the problem to show much more precisely where a novel (perhaps firm-specific) premise would work to generate the conclusion.

6. Building Strategy Analogies: A Step-By-Step Process

Suppose you are launching a startup, or you are put in charge of developing a new strategic initiative for a firm. You find the accessibility and persuasiveness of analogy to be attractive, and you believe it may be a compelling way to engage your colleagues in the strategy-making process. How do you do it? Where do you start? How do you select a source for the analogy?

The obvious place to start is with the target company or startup. This is the company you work for and for which you will endeavor to design a strategy.

To build the analogy, you next need to select a source company or startup. This would be another company (or division or unit) to which you want to compare the

target. How do you select the source?¹⁰ Although the temptation may be to choose a very similar company (or division or unit) as the source, one which has many similar features that can be used as premises in the horizontal relations, you should exercise great caution in contemplating this route. The most important consideration is that the source should display the conclusion you want to generate in the target, another example of starting the argument with the conclusion. The conclusion for a strategy analogy may be a statement as basic as “market success” as in our Tripadvisor/Glassdoor example above. Or, it might be some specific type of strategic advantage such “low cost” or “high perceived quality.” Or, it might be some outcome related to the success of a particular unit or activity of an organization. In any case, you need to make sure that the source’s conclusion is an accurate or true state of the world about it.¹¹

Once you have the source’s conclusion specified, you will want to start thinking about the premises. Again, the temptation may be to list features or attributes that appear to be similar in the source and the target. Although these similarities may be good to identify in a brainstorming exercise and to keep in mind, they may also be distracting and even highly misleading. Instead, what you want to do is to specify the premises for the source that generate the conclusion in a deductive argument, the vertical (causal) relations for the source (Clement and Gentner 1991). These premises are essentially the reasons why the conclusion holds, and why the strategy succeeds; they represent solutions to the strategic challenge the organization faces (Gavetti and Rivkin 2005). Specifying these premises may not be easy and there may very well be differences of opinion among your team and with others. In this step, the theory-based view of strategy plays a large role and your ability to specify the theory behind the success of the strategy is critical.

The next step in building the analogy then involves trying to specify a corresponding or parallel premise in the target for each premise in the source. This task too is likely difficult. But even attempting to do so is likely to focus the analysis productively and to generate new ideas and insights about the target, illustrating the generative power of analogy for strategy theory. If you can specify the target’s parallel premises, then you have a complete analogy and the causal argument that works for the source would plausibly also work for the target. If the analogy remains incomplete or invalid by relying exclusively on the source and its premises, then you might add to the target’s vertical argument an additional premise or two, perhaps firm-specific premises as suggested by the theory-based view of strategy. This step may generate novel ideas or strategic moves that carry value in other contexts and analyses.

If you build a complete analogy with a valid argument, you will have built—at a minimum—a persuasive case for the strategic success of your startup or company, provided you can (perhaps in the future) overcome any obstacle or problems highlighted by the premises. In completing this step, it is important to check that none of the dissimilar horizontal relations interfere with the vertical relations. In other words, does the target have the same internal consistency as the source?¹² And, of course, others may challenge your premises and your causal argument, a likely occurrence if you rely on a unique firm-specific theory. Your ability to defend or revise the analogy in the midst of criticism will determine its persuasiveness.

Research conducted on how individuals and groups perform in developing analogies gives some practical tips on setting up the process. Although we advocate exchange and debate in developing strategy arguments, research shows that individuals perform as well as groups in coming up with analogies (Lamm and Trommsdorff 1973, Green and Armstrong 2007). So, a first preparation step of articulating an initial analogy done in isolation might make sense. Research shows, too, that although people prefer familiar and concrete sources (Chou and Shu 2015), experts in a target domain do no better in generating analogies than those from analogous domains (Franke et al. 2014, Poetz et al. 2014). Research also shows that individual and groups come up with deeper analogies when offered no advance guidance or constraints (Blanchette and Dunbar 2000) on the source.

Green and Armstrong (2007) show that the ability to generate multiple analogies increases predictive ability, so the analogy task is a good exercise for teams developing strategy. We would also suggest that after developing an analogy with a source showing the intended conclusion, an interesting and perhaps informative exercise would be the reverse task—use a source with the opposite of the intended conclusion, say, market failure. If the target's premises line up well in such an analogy, it may be a useful warning sign. Another interesting exercise to undertake after developing an analogy with a source showing the intended conclusion, would be to go back and try to specify some negative premises. That is, can you identify some important aspects of the source and the target that differ and still retain confidence in the conclusions?

Depending on the situation and available resources, we also think it is advisable to develop several different strategy analogies of this kind for the same problem at the same time, perhaps with separate teams. Task them each with coming up with a good strategy analogy. Once developed, comparing and contrasting across the alternative strategies may prove insightful and lead to consensus around one, or a possible synthesis of the two.

7. Using Analogies in the Theory-Based View of Strategy

The theory-based view of strategy (Felin and Zenger 2009, 2017) puts a special twist on the use of theory and strategy. Like all approaches, it asks that theory be clearly articulated and amenable to falsification. The twist is that the theory-based view tells executives and entrepreneurs to develop unique firm-specific theories to reap advantage. For instance, Felin and Zenger (2020) claim that Steve Jobs benefited from innovation he saw at Xerox because he held a unique firm-specific view of Apple's potential strategic success:

It was not Steve Jobs' decision to simply be open to external sources of technology at Xerox or elsewhere that fueled Apple's great success. Rather, it was his novel theory—the unique set of problems that he aimed to solve—that allowed Jobs to see value at Xerox that others could not readily see. Specifically, Steve Jobs sought to make the use of computers easy and intuitive, and with that problem frame he identified value in the graphical user interface and related technologies that Xerox possessed. In other words, it is through the lens of this problem framing and theory of value that Jobs sees value in open innovation. For the most part, other market actors at the time were not similarly attuned to this problem, but rather were focused on developing computer technologies for scientific and office settings—solving problems regarding speed and storage capacity. (Felin and Zenger 2020, p. 226)

At its core, the theory-based view asks executives to answer the following questions, among others (Felin and Zenger 2017, p. 268):

1. What specifically is your firm's theory of value? How is that different from others?
2. Is your theory of value novel, simple, and elegant?
3. Is it falsifiable? Is it generalizable and generative?
4. Who do you need to convince (or incentivize) for your theory to be realized?

So far, much of the deductive logical approach to theory advocated by Sørensen and Carroll (2021a) has been used to build theory based on general economic and social forces. But the approach is fully amenable to the kind of firm-specific theory advocated by theory-based analysts. In fact, passages in Sørensen and Carroll (2021a) go down this route, such as when they asked what did streaming music competitors like Spotify think was Apple Music's strategy theory when Apple launched it and how it compared with their own. They speculated that Apple may have been seeking success mainly from its easy interoperability with other Apple products rather than superior streaming capabilities, a better user interface, or exclusive music assets.

What roles might analogy play in the firm-specific theories that undergird the theory-based view of strategy?

In addition to using the premises to identify obstacles or problems to overcome (as described above), we see several potentially important roles for analogy in developing firm-specific theories of value.

First, use of analogies will likely assist in the theory discovery and identification necessary to develop firm-specific theories, especially early in the process. Developing and articulating theory is often challenging for social scientists. Surely, the challenge is even greater for executives and entrepreneurs. We suspect many people do not even know how to get started in developing a theory of their firm. Because they are easier for most people to think about than theories per se, analogies offer a good way to begin identifying and developing a unique theory of a firm's strategy, especially if the steps we outline above are used to go beyond the initial analogy.

Second, because of its ease of use, an analogy offers a way to involve a whole team or organization in theory development process. By comparing and contrasting different possible analogies for a firm, people who do not normally think in theoretical terms can engage in discussion and debate about the best firm-specific theory for a firm's strategy.

Third, a good analogy for a firm may make it easier to identify what is unique or novel about its theory of value. The analogy may make unique aspects of a firm stand out vividly, because they are concrete and would likely show as negative analogical premises.

Fourth, at the same time, a good analogy shows that aspects of the developed theory are generalizable because many characteristics (premises) of the analogy will apply to both the source and the target.

Fifth, because of their wide familiarity and their use of well-known entities, analogies will likely aid in communication and dissemination of the firm-specific theory of value.

8. Discussion

During a visit to our school, a former MBA student shared an anecdote from his postgraduation career. The alumnus, who had taken a required strategy course from one of us, had become a high-ranking executive at a ride-hailing company. He recalled how his team had been struggling in its attempts to provide ride-hailing services for wheelchair passengers. In many markets, providing the service in a cost-effective manner was proving difficult, forcing the company either to subsidize massively the operation or to set prices for rides too high for the market. Yet, in some other markets, the company was able to provide wheelchair-accessible ride hailing at affordable prices. The executive and his team were struggling to understand why that was the case, when the former student had a flash of insight and blurted out: "This is just like Cemex!"

The other members of his team were befuddled. What did a Mexican cement company have to do with wheelchair-accessible ride hailing? The alumnus explained the lesson of the Cemex case as it had been taught in our class: that when the ratio of the minimum efficient scale to the total size of the market approached one, it formed an effective barrier to entry into the market. Any firm considering entry would be deterred by its bleak chances to unseat the efficient incumbent who controlled the entire market. Compared with conventional ride-hailing services, wheelchair-accessible services required drivers to make large capital investments in vans with ample doors, ramps, locks for chairs, etc. If the demand for wheelchair-accessible services was too low, not enough providers would enter to induce the competition on the driver side of the market needed to keep costs low.

Such stories vindicate the theory-based approach to strategy. What the alum had grasped was a fundamental economic mechanism, established through years of scholarly theory, research, and debate. Although taught using the case method, the core instructional purpose was to illustrate the economic mechanism.

Yet the use of analogical reasoning in the construction of theories is often discouraged by logicians and philosophers. In terms of formal logic, analogical reasoning is considered weak and prone to erroneous conclusions. Although we would doubtless prefer a stronger logical framework for developing strategy ideas and making strategy decisions, the technical and communication hurdles to doing so on a widespread basis are perhaps insurmountable.

In contemporary business practice, executives and others widely use analogies to illustrate, understand, and explain the strategies of startups and established firms. Our alumnus at the ride-hailing company exemplifies this practice: he remembered a specific case (Cemex) from the class and compared its strategic situation to that of his firm rather than recalling and applying the economic mechanism(s) operative in the case. His use of the Cemex analogy helped him and his colleagues understand their experiences of attempting to provide services to wheelchair passengers. It also helped them design an effective strategy for that market for the future. Although we and other social scientists might have seen and described the challenges of this firm in more abstract theoretical terms, we doubt that our articulation would have mattered more to these executives. Indeed, describing the company's situation in terms of the operative economic mechanism(s) to these lay persons may have hindered understanding and communication.

Reliance on global analogies is widespread, sometimes without even recognition that an analogy is being made. For instance, this is often the case with online consumer reviews on platforms like Yelp (restaurants)

and Steam (games).¹³ Reviewers often compare the company (or food or game) being reviewed with another specific competitor company (or food or game). The analogy is usually incomplete and underarticulated in these cases, with the reviewer simply mentioning some aspect of the competitor as better or worse. But it does often carry social and economic implications (see Haans and Rietveld 2023) as well as serving to reenforce the analogical mode of reasoning in business culture (Sharkey et al. 2022).

Business school faculty, especially those trained as social scientists, may bemoan the use of widespread analogies rather than theoretical mechanisms by executives and students. But we cannot help but wonder if maybe the traditional business school curriculum may have generated this analogy-driven world, or at least offers it support and legitimation. We refer in particular to the ubiquitous use of cases—documented descriptions of companies and managerial problems—to teach business material, especially strategy. Of course, we recognize that most strategy courses these days use theoretical frameworks to organize material and to guide much thinking and discussion. But cases are still very popular as part of the usual strategy course. Why? The main justification for using cases is that business students learn best by going from the concrete to the abstract rather than the reverse (another justification is that cases convey a great amount of institutional detail (see Gilboa and Schmeidler 2001). If so, we wonder if executives without MBA degrees might be less likely to rely on analogies in their own reasoning. We also wonder if maybe those with deeper knowledge of a context, so-called experts, might also be less likely to rely on analogies, at least compared with novices (Schoenfeld and Herrmann 1982).

As a workhorse of everyday strategy decision making and communication, analogies appear here to stay, at least in the near term. Accordingly, it would behoove everyone if the properties of analogies were better understood and some general guidance developed about their ideal usage. In this article, we attempted to get a conversation started about these issues; we aimed to demonstrate how to strengthen build theory-based analogies.

Specifically, we tried to show some basic ways to use and evaluate analogical reasoning in strategy formulation and analysis. Our discussion focused on elements of analogical reasoning that we do not think are widely known in strategy circles of executives or academics. These involve (1) identifying and articulating many specific features (premises) of an analogy, (2) using negative analogies in addition to positive analogies, (3) assessing the horizontal (identity) relationships between paired features in an analogical argument, (4) evaluating the vertical (causal) relationships among features in the source and targets of an analogical argument, and (5) specifying and assessing the level of background

knowledge implicit in an analogy. We articulated a step-by-step process by which analysts can build and evaluate strategy analogies. Finally, we considered how analogies might work within the firm-specific arguments advocated by proponents of the theory-based view of strategy.

We conclude by suggesting that analogies rightfully deserve a place in the strategist's toolkit, albeit one requiring skill in application and a measure of caution when used. But the message need not be only about limits and dangers of analogy. It may be worth contemplating in the future how to educate strategy students to use analogies. Already, the best MBA students show amazing abilities in remembering numerous cases and being able to recall and apply them in appropriate situations. Perhaps the skills involved in these processes can be systematized and taught on their own.

We aimed here to demonstrate how to build strong theory-based analogies. In closing, let us say clearly that we believe analogies can improve communication and understanding about a theoretical argument, especially to a broad audience of nontechnical executives, managers, and employees. Moreover, analogies can lead to new ideas and stimulate fresh insights, thereby offering a way to develop and advance theory about strategy. Analogies may also be a good way to “pressure test” a theory, probing a theory's limits and scope conditions to determine where it applies and does not. Finally, strategy scholars may recognize that even analogies can provide motivation for advancing explicit theory in research.

Acknowledgments

This article benefitted from the comments of participants at the Conference on Theory-Driven Strategy at Bocconi University, Milan, in October 2023. The authors appreciate other comments they received from Teppo Felin, Alfonso Gambardella, Mike Hannan, Balázs Kovács, Helena Miton, Phanish Puranam, László Pólos, and Todd Zenger on earlier drafts.

Endnotes

¹ For example, you will frequently hear people in Silicon Valley talk about their startup as “Uber for [context] X” or “Airbnb for [context] Y,” where X and Y are services or specific domain contexts other than those targeted by Uber and Airbnb. To wit, with little search effort, we found many online analogical pitches for potential ventures claiming to be “like Uber” for dog walking, hair, airplanes, photographers, doctors, drones, laundry, pizza, and even marijuana (Sankin 2014). Accordingly, many advisors and consultants tell entrepreneurs to develop and communicate a good analogy as part of their pitch for funding to venture capitalists and other investors (see Sandlin 2016).

² It has been suggested to us that entrepreneurs use analogy mainly for communication in funding pitches, whereas business strategists are more likely to use it for analysis. Possibly, but we know of no conclusive data on the matter, and our own observations do not obviously support this neat division.

³ Gensler (2010, p. 96) offers a slightly different, somewhat probabilistic formulation of the argument: *Premise 1*: Most things true of A also are true of B. *Premise 2*: A is C. *Premise 3*: That is all we know about the matter. *Conclusion*: Probably B is C. For reasons that will become apparent, we prefer to decompose the global analogy into component subanalogies, a process that we think facilitates deeper strategic analysis using analogies.

⁴ A similar jobs site in the UK can be found at <https://www.thejobcrowd.com/>.

⁵ Ezra (2023) gives the following example of a structural analogy: “The Eiffel Tower’s design is like that of a spider web, as they both exhibit strong, interconnected patterns.”

⁶ For example, at the Stanford Graduate School of Business, oral history says that certain faculty openly dismissed out of hand as impractical then-MBA student Jeff Skilling’s ideas about what became eBay.

⁷ For a nuanced objection to the causal condition as too limiting, see Nappo (2021) and also Bartha (2019). The objection does not undermine the value of seeing vertical relations as causal for strategy.

⁸ Drake and Kramer (2012) continue with a more detailed example of an analogy relying on theoretical ideas about the carrying capacity of biological populations.

⁹ Tripadvisor also spends considerable resources attempting to identify and ferret out fake, fraudulent or improperly induced reviews.

¹⁰ The question of where specific analogies come from—what causes an individual to think of particular comparisons—is a fascinating one but beyond the scope of this article (see Blanchette and Dunbar 2000). The theory-based view of strategy may develop possible answers based on potential research about how an individual’s experience leads him or her to develop a particular unique theory of the product market (Gavetti and Menon 2016).

¹¹ Although there may be instances where it makes sense to use a negative outcome (say, market failure), based on current practice, we doubt that this will be the case in the usual strategy analogy. In cases where it might be useful, we imagine it might be as a secondary analysis.

¹² For instance, in our examples of Tripadvisor and Glassdoor, a reviewer has suggested that Premise I may go against Premises B and C, thereby threatening the conclusion (see Table 5).

¹³ For an entertaining list of startup pitch analogies, see <https://www.visualcapitalist.com/startup-idea-already-taken/>.

References

- Bartha P (2015) Analogy in the natural sciences: Meeting Hesse’s challenge. *Philos. Inquiries* 3(1):47–68.
- Bartha P (2019) Analogy and analogical reasoning. Zalta EN, Nodelman U, eds. *The Stanford Encyclopedia of Philosophy*, fall ed. (Metaphysics Research Lab, Stanford University, Stanford, CA), https://plato.stanford.edu/entries/reasoning-analogy/?fbclid=IwAR0PyC-AfpV1zqTv0GTa6ChoGilG_ZMkH34l3tLtsAH6bvOI-zoJtFPh8uY.
- Blanchette I, Dunbar K (2000) How analogies are generated: The roles of structural and superficial similarity. *Memory Cognition* 28(1):108–124.
- Chen A (2021) “Is your startup idea taken?”—And why we love X for Y startups. Accessed May 10, 2023, <https://andrewchen.com/x-for-y-startup-ideas/>.
- Chou A, Shu LH (2015) Using analogies to explain vs. inspire concepts. *Artificial Intelligence Engrg. Design Anal. Manufacturing* 29(2):135–146.
- Clement CA, Gentner D (1991) Systematicity as a selection constraint in analogical mapping. *Cognitive Sci.* 15(1):89–132.
- Drake JM, Kramer AM (2012) Mechanistic analogy: How microcosms explain nature. *Theoret. Ecology* 5:433–444.
- Drucker P (1994) The theory of the business. *Harvard Bus. Rev.* (September/October):95–106.
- Duit R, Treagust D (2003) Conceptual change: A powerful framework for improving science teaching and learning. *Internat. J. Sci. Ed.* 25(6):671–688.
- Dul J (2016) Necessary condition analysis: Logic and methodology of “necessary but not sufficient” causality. *Organ. Res. Methods* 19(1):10–52.
- Dul J, Hak T, Goertz G, Voss C (2010) Necessary condition hypotheses in operations management. *Internat. J. Oper. Production Management* 30(11):1170–1190.
- Ehrig T, Schmidt J (2022) Theory-based learning and experimentation: How strategists can systematically generate knowledge at the edge between the known and the unknown. *Strategic Management J.* 43(7):1287–1318.
- Ezra A (2023) Analogy: Definition and examples—Explained simply. Accessed August 28, <https://enlightio.com/analogy-definition-examples>.
- Felin T, Zenger T (2009) Entrepreneurs as theorists: On the origins of collective beliefs and novel strategies. *Strategic Entrepreneurship J.* 3(2):127–146.
- Felin T, Zenger T (2017) The theory-based view: Economic actors as theorists. *Strategy Sci.* 2(4):258–271.
- Felin T, Zenger TR (2020) Open innovation: A theory-based view. *Strategic Management Rev.* 1(2):223–232.
- Franke N, Poetz MK, Schreier M (2014) Integrating problem solvers from analogous markets in new product ideation. *Management Sci.* 60(4):1063–1081.
- Gary MS, Wood RE, Pillinger T (2012) Enhancing mental models, analogical transfer, and performance in strategic decision making. *Strategic Management J.* 33(11):1229–1246.
- Gavetti G, Menon A (2016) Evolution cum agency: Toward a model of strategic foresight. *Strategy Sci.* 1(3):207–233.
- Gavetti G, Rivkin JW (2005) How strategists really think: Tapping the power of analogy. *Harvard Bus. Rev.* 83(4):54–63.
- Gavetti G, Levinthal DA, Rivkin JW (2005) Strategy making in novel and complex worlds: The power of analogy. *Strategic Management J.* 26(8):691–712.
- Gensler HJ (2010) *An Introduction to Logic*, 2nd ed. (Routledge, New York).
- Gentner D (1982) Are scientific analogies metaphors? Miall DS, ed. *Metaphor: Problems and Perspectives* (Harvester Press, Sussex, UK), 106–132.
- Gentner D (1983) Structure-mapping: A theoretical framework for analogy. *Cognitive Sci.* 7(2):155–170.
- Gentner D (2017) Analogy. Bechtel W, Graham G, eds. *A Companion to Cognitive Science* (Wiley, Hoboken, NJ), 107–113.
- Gilboa I, Schmeidler D (2001) *A Theory of Case-based Decisions* (Cambridge University Press, Cambridge, UK).
- Gilovich T (1981) Seeing the past in the present: The effect of associations to familiar events on judgments and decisions. *J. Personality Soc. Psych.* 40(5):797–808.
- Goodrich P (1986) *Reading the Law: A Critical Introduction to Legal Method and Techniques* (Blackwell, London).
- Green KC, Armstrong JS (2007) Structured analogies for forecasting. *Internat. J. Forecasting* 23(3):365–376.
- Haans RFJ, Rietveld J (2023) Is comparison the thief of joy? Antecedents and consequences of getting compared by information intermediaries. Presentation, Nagymaros Conference, May 22, University of Amsterdam, Amsterdam.
- Harrison AG, Treagust DF (1993) Teaching with analogies: A case study in grade-10 optics. *J. Res. Sci. Teaching* 30(10):1291–1307.
- Harrison AG, Treagust DF (1994) Science analogies. *Sci. Teacher* 61(4):40–43.

- Hesse MB (1966) *Models and Analogies in Science* (University of Notre Dame Press, Notre Dame, IN).
- Hofstadter DR (2001) Analogy as the core of cognition. Gentner D, Holyoak KJ, Kokinov BN, eds. *The Analogical Mind: Perspectives from Cognitive Science* (MIT Press, Cambridge, MA), 499–538.
- Hofstadter DR, Sander E (2013) *Surfaces and Essences: Analogy as the Fuel and Fire of Thinking* (Basic, New York).
- Holyoak KJ (2012) Analogy and relational reasoning. Holyoak KJ, Morrison RG, eds. *The Oxford Handbook of Thinking and Reasoning* (Oxford University Press, New York), 234–259.
- Holyoak KJ, Thagard P (1996) *Mental Leaps: Analogy in Creative Thought* (MIT Press, Cambridge, MA).
- Holyoak KJ, Thagard P (1997) The analogical mind. *Amer. Psychologist* 52(1):35–44.
- Hunter D (2001) Reason is too large: Analogy and precedent in law. *Emory Law J.* 50(4):1197–1265.
- Indurkha B (1989) Modes of analogy. Jantke KP, ed. *Internat. Workshop Analogical Inductive Inference* (Springer, Berlin), 217–230.
- Lamm H, Trommsdorff G (1973) Group vs. individual performance on tasks requiring ideational proficiency (brainstorming): A review. *Eur. J. Soc. Psych.* 3(4):361–388.
- Lamond G (2006) Precedent and analogy in legal reasoning. Zalta EN, ed. *The Stanford Encyclopedia of Philosophy*, spring ed. (Metaphysics Research Lab, Stanford University, Stanford, CA).
- Martin R (2022) Exploiting analogy: The underdeveloped strategy skill. *Medium* (March 28), <https://rogermartin.medium.com/exploiting-analogy-501e531f93ec>.
- Nappo F (2021) Close encounters with scientific analogies of the third kind. *Eur. J. Philos. Sci.* 11(3):1–20.
- News Desk (2023) Google & OpenAI vs. fruit stands: A Walmart analogy. Accessed May 5, <https://www.globalvillagespace.com/tech/google-openai-vs-fruit-stands-a-walmart-analogy/>.
- Patel D, Ahmad A (2023) We have no moat and neither does OpenAI. Accessed May 5, <https://www.semianalysis.com/p/google-we-have-no-moat-and-neither>.
- Poetz M, Franke N, Schreier M (2014) Sometimes the best ideas come from outside your industry. *Harvard Bus. Rev.* (November 21), <https://hbr.org/2014/11/sometimes-the-best-ideas-come-from-outside-your-industry>.
- Posner RA (1990) *The Problems of Jurisprudence* (Harvard University Press, Cambridge, MA).
- Ross BH, Kilbane MC (1997) Effects of principle explanation and superficial similarity on analogical mapping in problem solving. *J. Experiment. Psych. Learn. Memory Cognition* 23(2):427–440.
- Rumelt RP (2011) *Good Strategy, Bad Strategy: The Difference and Why It Matters* (Crown Business, New York).
- Rumelt RP, Schendel D, Teece DJ (1991) Strategic management and economics. *Strategic Management J.* 12(S2):5–29.
- Sandlin K (2016) Are you “Uber for this” or “Match.com for that”? Use an analogy to describe your startup. *Medium* (June 5), <https://medium.com/pitch-practice/are-you-uber-for-this-or-match-com-for-that-use-an-analogy-to-describe-your-startup-669512433860>.
- Sankin A (2014) Every tech startup is like Uber but for (something). *Daily Dot* (August 7), <https://www.dailydot.com/debug/its-like-uber-but-for/>.
- Schauer F, Spellman BA (2017) Analogy, expertise, and experience. *Univ. Chicago Law Rev.* 84(1):249–268.
- Schoenfeld AH, Herrmann DJ (1982) Problem perception and knowledge structure in expert and novice mathematical problem solvers. *J. Experiment. Psych. Learn. Memory Cognition* 8(5):484–494.
- Sharkey A, Kovacs B, Hsu G (2022) Expert critics, rankings, and review aggregators: The changing nature of intermediation and the rise of markets with multiple intermediaries. *Acad. Management Ann.* 17(1):1–36.
- Sørensen JB, Carroll GR (2021a) *Making Great Strategy: Arguing for Organizational Advantage* (Columbia University Press, New York).
- Sørensen JB, Carroll GR (2021b) Why good arguments make better strategy. *MIT Sloan Management Rev.* 62(4):47–53.
- Sunstein C (1993) On analogical reasoning. *Harvard Law Rev.* 106(3):741–791.
- Sunstein CR (2017) Incompletely theorized agreements. Bellamy R, ed. *The Rule of Law and the Separation of Powers* (Routledge, New York), 187–226.
- Teece DJ, Pisano G, Shuen A (1997) Dynamic capabilities and strategic management. *Strategic Management J.* 18(7):509–533.
- Zenger T (2016) *Beyond Competitive Advantage: How to Solve the Puzzle of Sustaining Growth While Creating Value* (Harvard Business Review Press, Boston).

Glenn R. Carroll is the Adams Distinguished Professor of Management at the Stanford Graduate School of Business. His research addresses questions about organizations, strategic management, and industrial evolution. A recent major project studies socially constructed authenticity—how consumers and others value authenticity, how consumers search for authenticity in products and services, and how consumers interpret organizational behavior and structure as reflecting authenticity.

Jesper B. Sørensen is the Robert A and Elizabeth R Jeffe Professor of Organizational Behavior at the Stanford Graduate School of Business. His research has focused on innovation, organizational learning, culture and entrepreneurship, among other topics. He is, with Glenn R. Carroll, the author of *Making Great Strategy: Arguing for Organizational Advantage*.