

# The Design of Firms: Part 2 - Competitive Advantage

Andy Dong, Maaike Kleinsmann,  
Dirk Snelders

## Introduction

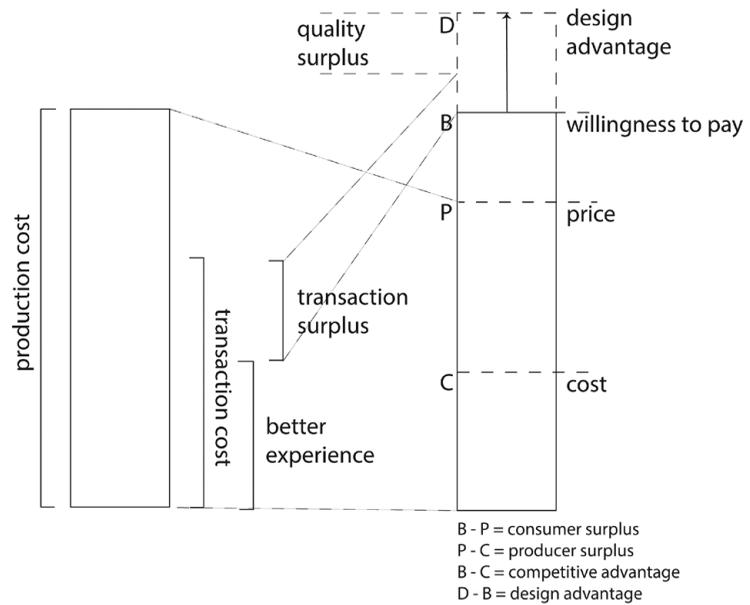
Debate around the contribution of design thinking to the competitive advantage of firms began at about the time Roger Martin proposed that managers ought to take a design approach to management problems.<sup>1</sup> Martin made the bold assertion that firms that “balance analytical mastery and intuitive originality in a dynamic interplay that I call design thinking... will gain a nearly inexhaustible, long-term business advantage.”<sup>2</sup> In this use of “business advantage,” Martin refers to the fundamental concept of a competitive advantage. Firms create economic value when the difference between the customer’s perceived benefit (generally measured by their willingness to pay) and the firm’s cost to deliver this perceived benefit is positive. A competitive advantage exists when firms create more economic value than their rivals can replicate. When firms own superior resources and deploy skills to deliver superior customer value at lower relative costs, they also should be generating superior profits that are above the average for the industry.<sup>3</sup>

The managerial implication is therefore that firms should implement a design strategy—“the effective allocation and coordination of design activities and resources”—to achieve superior designs.<sup>4</sup> Design scholars and practitioners claim that a superior design is a resource owned by the firm that contributes to its competitive advantage.<sup>5</sup> By “superior design,” we mean a plan for production of an object or environment that is intentionally realized “to be understandable and meaningful to someone.”<sup>6</sup> The claim of superior design as a resource is based on the hypothesis that “good” designs for products and services raise the benefit perceived by customers (superior customer value), which in turn raises their willingness to pay and thereby contributes to what we describe as the design advantage. Figure 1 illustrates the economic concept of competitive advantage and the contribution of a design advantage. A design advantage comprises two components: a quality surplus and a transaction surplus. The quality surplus is the superior economic value delivered by the quality of industrial

- 1 Roger L. Martin, *The Design of Business: Why Design Thinking Is the Next Competitive Advantage* (Cambridge, MA: Harvard Business School Press, 2009).
- 2 *Ibid.*, 6.
- 3 George S. Day and Robin Wensley, “Assessing Advantage: A Framework for Diagnosing Competitive Superiority,” *Journal of Marketing* 52, no. 2 (1988): 1–20. doi:10.2307/1251261.
- 4 Eric M. Olson, Rachel Cooper, and Stanley F. Slater, “Design Strategy and Competitive Advantage,” *Business Horizons* 41, no. 2 (1998): 55–61. doi:10.1016/S0007-6813(98)90035-0.
- 5 *Ibid.* Rajendra S. Sisodia, “Competitive Advantage through Design,” *Journal of Business Strategy* 13, no. 6 (1992): 33–40, doi:10.1108/eb039525.
- 6 Klaus Krippendorff, “On the Essential Contexts of Artifacts or on the Proposition That ‘Design Is Making Sense (of Things),’” *Design Issues* 5, no. 2 (Spring 1989): 9–39.

Figure 1

Schematic showing relationship between a good design and a design advantage.



- 7 Jeneanne Rae, "Design Value Index Exemplars Outperform the S&P 500 Index (Again) and a New Crop of Design Leaders Emerge," *Design Management Review* 27, no. 4 (2016): 4–11. Keith Goffin and Pietro Micheli, "Maximizing the Value of Industrial Design in New Product Development," *Research-Technology Management* 53, no. 5 (2010): 29–37; Vivien Walsh et al., *Winning by Design: Technology, Product Design, and International Competitiveness* (Oxford: Blackwell Business, 1992); Vivien Walsh, Robin Roy, and Margaret Bruce, "Competitive by Design," *Journal of Marketing Management* 4, no. 2 (1988): 201–16. doi:10.1080/0267257X.1988.9964069; Julie H. Hertenstein, Marjorie B. Platt, and Robert W. Veryzer, "The Impact of Industrial Design Effectiveness on Corporate Financial Performance," *Journal of Product Innovation Management* 22, no. 1 (2005): 3–21. doi:10.1111/j.0737-6782.2005.00100.x.
- 8 Toni-Matti Karjalainen and Dirk Snelders, "Designing Visual Recognition for the Brand," *Journal of Product Innovation Management* 27 (2010): 6–22. doi:10.1111/j.1540-5885.2009.00696.x.
- 9 Paul van Schaik and Jonathan Ling, "Modelling User Experience with Web Sites: Usability, Hedonic Value, Beauty and Goodness," *Interacting with Computers* 20, no. 3 (2008): 419–32. doi:10.1016/j.intcom.2008.03.001; Marian Petre, Shailey Minocha, and Dave Roberts, "Usability Beyond the Website: An Empirically-Grounded E-Commerce Evaluation Instrument for the Total Customer Experience," *Behaviour & Information Technology* 25, no. 2 (2006): 189–203. doi:10.1080/01449290500331198.

design. A number of empirical studies have confirmed the influence of high-quality industrial design on the overall economic performance of firms.<sup>7</sup> A transaction surplus is the economic value of a better experience gained by customers in transacting with a company and its products and services before, during, and after the sale of the product or service. Customers always incur a production cost when buying a product or service; embedded within the production cost is a transaction cost associated with the purchase and use of a product or service. The firm delivering the product or service can reduce a customer's *ex ante* and *ex post* transaction costs and capture some of that transaction surplus in its design advantage. Tactics to reduce the *ex ante* transaction costs include simplifying selection—for example, by reducing the number of steps needed to negotiate the sale (e.g., Amazon's 1-click) or by enhancing the visual recognition for a brand's core values (e.g., Volvo's value of "premium safety"<sup>8</sup>). Firms can reduce the *ex post* transaction costs by designing a higher quality user experience with the product and, by extension, the firm.<sup>9</sup> For example, they can use conversational AI assistants to tie the process of addressing product or service performance issues more directly to the context of the customer's problem.

Design scholars would further claim that the processes associated with the deployment of a design draw together superior skills that contribute to competitive advantage, even if the firm does not produce a design *per se*. Design-oriented capabilities (as superior skills) allow firms to tolerate ambiguity, see possibilities, and generate alternative solutions to problems, with each as a

- 10 A number of scholars have commented on the need to elevate the status of the design function within firms and tactics to do so. Bettina von Stamm, "Innovation—What's Design Got to Do with It?," *Design Management Review* 15, no. 1 (2004): 10–19, doi:10.1111/j.1948-7169.2004.tb00145.x; Jeanne Liedtka, "In Defense of Strategy as Design," *California Management Review* 42, no. 3 (2000): 8–30, doi:10.2307/41166040; Michael B. Beverland and Francis J. Farrelly, "What Does It Mean to Be Design-Led?," *Design Management Review* 18, no. 4 (2007): 10–17, doi:10.1111/j.1948-7169.2007.tb00089.x; Pietro Micheli, Helen Perks, and Michael B. Beverland, "Elevating Design in the Organization," *Journal of Product Innovation Management* 35, no. 4 (2018): 629–51, doi:10.1111/jpim.12434; and Richard J. Boland Jr. et al., "Managing as Designing: Lessons for Organization Leaders from the Design Practice of Frank O. Gehry," *Design Issues* 24, no. 1 (Winter 2008): 10–25.
- 11 Beatrice D'Ippolito, "The Importance of Design for Firms' Competitiveness: A Review of the Literature," *Technovation* 34, no. 11 (2014): 716–30, doi:10.1016/j.technovation.2014.01.007
- 12 Roberto Verganti, *Design-Driven Innovation: Changing the Rules of Competition by Radically Innovating What Things Mean* (Boston: Harvard Business School Publishing, 2009).
- 13 See, e.g., Tülin Erdem, "An Empirical Analysis of Umbrella Branding," *Journal of Marketing Research* 35, no. 3 (1998): 339–51, doi:10.2307/3152032; Rajeev Batra, Peter Lenk, and Michel Wedel, "Brand Extension Strategy Planning: Empirical Estimation of Brand–Category Personality Fit and Atypicality," *Journal of Marketing Research* 47, no. 2 (2010): 335–47, doi:10.1509/jmkr.47.2.335 and Frank Goedertier et al., "Brand Typicality and Distant Novel Extension Acceptance: How Risk-Reduction Counters Low Category Fit," *Journal of Business Research* 68, no. 1 (2015): 157–65, doi:10.1016/j.jbusres.2014.04.005.
- 14 Donald A. Norman and Roberto Verganti, "Incremental and Radical Innovation: Design Research Vs. Technology and Meaning Change," *Design Issues* 30, no. 1 (Winter 2014): 78–96, doi:10.1162/DESI\_a\_00250.

dominant logic and a set of attitudes.<sup>10</sup> In sum, the contributions that high-quality designs and design skills make are important determinants in the competitive advantage of firms.<sup>11</sup>

At the core of these design-based claims to competitive advantage is a prescription for user-centeredness, wherein user-centeredness is the strategic posture of the firm. Although a user-centric view can engender appropriate advice, it cannot offer firms normative advice because users cannot tell firms how to create a competitive advantage, including where firms should head or how to position themselves favorably relative to competitors. Scholars such as Verganti already have questioned the primacy of user-centeredness if it implies basing design strategy only on a close observation of end-user needs and desires.<sup>12</sup> If anything, user insights are often found to favor incremental innovations that make sense only in existing market structures, with existing competitive positions, product categories, or brands.<sup>13</sup> They mostly confirm current competitive positions, rather than help firms to improve or escape them. According to Norman and Verganti, "[b]ecause HCD [human-centered design] is a form of hill-climbing, it is only suited for incremental innovation."<sup>14</sup> However, if user-centeredness is not the prescription, then what else could act as a design strategy to move toward the competitive advantage of firms? An expanded paradigm is needed as the basis of a competitive advantage associated with design activities and resources—one that incorporates a more general prescription for the strategic posture of the firm.<sup>15</sup>

In this article, we propose that design strategy could prescribe a descriptive and normative claim to competitive advantage at the level of the firm when it is liberated from its dominant association with product and service innovation and from the prescription of user-centeredness. Our unit of analysis for assessing firm-level competitive advantage is of course the firm. We assert that, at the firm level, executives should be asking scale and scope questions, such as "What is the firm and what are its key functions?" rather than "What are the features and qualities of the firm's next product?"

### Design Strategy as the Foundation of Competitive Advantage

If one of the key functions of a firm is to perform better than competitors, then if a firm wishes to survive, our design-based answer is *to focus on shaping the heterogeneity of the firm in ways that its paying customers would deem valuable*. Put more succinctly, design strategy should claim that competitive advantage accrues to firms that shape and sustain heterogeneity. We propose that heterogeneity should be a firm's high-level normative goal frame.<sup>16</sup> That value accumulates in response to genuinely better designs has already

- 15 Liedtka, "In Defense of Strategy as Design," 28.
- 16 Nicolai J. Foss and Siegwart Lindenber, "Microfoundations for Strategy: A Goal-Framing Perspective on the Drivers of Value Creation," *Academy of Management Perspectives* 27, no. 2 (2013): 85–102, doi:10.5465/amp.2012.0103.
- 17 Herbert A. Simon, "The Science of Design: Creating the Artificial," *Design Issues* 4, no. 1/2 (1988): 67–82; Ingo Oswald Karpen, Gerda Gemser, and Giulia Calabretta, "A Multilevel Consideration of Service Design Conditions: Towards a Portfolio of Organisational Capabilities, Interactive Practices and Individual Abilities," *Journal of Service Theory and Practice* 27, no. 2 (2017): 384–407, doi:10.1108/JSTP-05-2015-0121; Roy Glen, Christy Suci, and Christopher Baughn, "The Need for Design Thinking in Business Schools," *Academy of Management Learning & Education* 13, no. 4 (2014): 653–67, doi:10.5465/amle.2012.0308.
- 18 Kathleen R. Conner, "A Historical Comparison of Resource-Based Theory and Five Schools of Thought within Industrial Organization Economics: Do We Have a New Theory of the Firm?," *Journal of Management* 17, no. 1 (1991): 121–54, doi:10.1177/014920639101700109.
- 19 Michael E. Porter, "What Is Strategy?," *Harvard Business Review* 74, no. 6 (1996): 61–78.
- 20 David J. Ketchen, James B. Thomas, and Charles C. Snow, "Organizational Configurations and Performance: A Comparison of Theoretical Approaches," *The Academy of Management Journal* 36, no. 6 (1993): 1278–313, doi:10.2307/256812.
- 21 Edith Penrose, *The Theory of the Growth of the Firm*, 4 ed. (Oxford: Oxford University Press, 1995), 84.
- 22 David Gartman, "Harley Earl and the Art and Color Section: The Birth of Styling at General Motors," *Design Issues* 10, no. 2 (Summer 1994): 3–26, doi:10.2307/1511626.

been established, and these designs are, by definition, heterogeneous and superior to what previously existed.<sup>17</sup> Extrapolating from this product-level claim to the level of the firm, the design-based view on competitive advantage speaks to the need for a strategic emphasis on coordinating resources and processes toward firm-level heterogeneity across all the characteristics of the firm that paying customers would deem valuable, including its business model, operations, culture, and products and services. In the rest of the article, we explicate a design-based view on competitive advantage, or design strategy. We conclude with propositions to test the claims of heterogeneity as a basis for competitive advantage.

### A Design-Based View on Competitive Advantage

The field of competitive strategy assumes that firms possess heterogeneous asset bases that are more suited to one firm than to another; in other words, firms are bundles of pre-existing heterogeneous and heterogeneously distributed valuable resources.<sup>18</sup> Porter's view on competitive strategy constructs heterogeneity simply as the outcome of firms "deliberately choosing a different set of activities to deliver a unique mix of value" relative to their competitors.<sup>19</sup> In this view, any value of any different solution can be communicated to prospective markets to help position the firm. As a result, in this positioning view, heterogeneity is simply a relative difference in organizational strategies, structures, and processes created for prespecified, often unsurprising effects in the market.<sup>20</sup> The notion is one of degrees rather than of kind. As such, strategy simply requires differentiation as specialization, or becoming more differentiated in factors of production and products and services. Such factors might include products used in ways with which consumers are not yet acquainted, "which consumers (whether households or other firms) would find useful and would be willing to buy at prices and in quantities that would be profitable to the producer."<sup>21</sup> This form of differentiation is the strategy Alfred Sloan pursued to sell General Motors cars across all price segments. To enact this business policy, Sloan leveraged the design expertise of Harley Earl to differentiate structurally similar cars through styling. Although this form of design-driven differentiation has been criticized as only "superficial disguise and individuation of a mass-produced machine,"<sup>22</sup> it lies at the core of the field of strategic management.

In the design-based view we present, heterogeneity is not assumed to be a pre-existing condition. In other words, resources are not assumed to be heterogeneously distributed or even valuable *per se*. Instead, in the design-based view, heterogeneity is

based on the axiom of subjective reality being more relevant to shaping heterogeneity because “alternatives are not given in any constructive sense but must be synthesized, ...[and] new forms of reasoning are involved in the synthesis.”<sup>23</sup> In this sense, the emergence of heterogeneity in a firm might resemble a process of synthesis, in which the mixture of uncommon but still valuable combinations or exclusions of basic elements generates variation. Driving this process of excluding and combining and making it valuable are three elements: a vision of a desirable and/or preferred situation, guiding principles for integration, and a daring intuition. Without these types of mechanisms, no guidance toward heterogeneity occurs that can be observed (assessed by) customers and that has value to them.

An example of a company that (implicitly) applied this design-based view on competitive advantage is Marvel Studios—the producer of blockbuster franchises such as *The Avengers*, *X-Men*, and *Spiderman*. Marvel was nearly bankrupt in the mid-1990s, at which point executives radically—and successfully—changed their strategy. By 2019, its 22 films had generated more gross revenue than any movie franchise in history.<sup>24</sup> After looking at this example in greater detail, we concluded that Marvel succeeded in creating competitive advantage because the firm aimed, at the firm-level, to generate heterogeneity in kind; for example, it hired new creative talent for each film, even while retaining a small percentage of people from one film to the next. These firm-level policies were intended to ensure the formation of a Marvel franchise that would produce novelty in films while retaining a recognizable coherence, even if this came at the expense of a central industry value of having a strong plot and storyline.<sup>25</sup>

Another design-based view example is the introduction of the iMac G3 in 1998. Apple tried to “make it [the PC] less exclusive and more accessible” for consumers. This vision changed the PC *at several different levels* (e.g., the lack of a floppy disk drive in exchange for a network connector, its bright color, new shape, integration of monitor and PC, the silent fan, and the handle). Jonathan Ive, the former Chief Design Officer at Apple, in commenting about the addition of the handle, stated the following:

[W]hile its primary function is obviously associated with making the product easy to move, a compelling part of its function is the immediate connection it makes with the user by unambiguously referencing the hand. That reference represents, at some level, an understanding beyond the iMac’s core function. Seeing an object with a handle, you instantly understand aspects of its physical nature – I can touch it, move it, it’s not too precious.”<sup>26</sup>

23 Herbert A. Simon, *The Sciences of the Artificial* (Cambridge: MIT Press, 1969).

24 Spencer Harrison, Arne Carlsen, and Miha Škerlavaj, “Marvel’s Blockbuster Machine: How the Studio Balances Continuity and Renewal,” *Harvard Business Review* 97, no. 4 (2019): 136–45.

25 Harrison et al., “Marvel’s Blockbuster Machine,” 140–43.

26 “Jonathan Ive: Former Chief Design Officer at Apple,” The Design Museum, <https://designmuseum.org/designers/jonathan-ive>.

Commenting on these policies, Don Norman stated their effect as making the iMac “cute and it’s yours.... It’s not about technology.”<sup>27</sup> The outcome of the included and excluded policies of the iMac led to its extraordinary value: Apple went on to sell more than 2 million units in the first year, despite forecasts of about 800,000 units.<sup>28</sup> The fact that this new iMac G3 incorporated policies that infuriated some technology commentators—in fact, sufficiently so that some predicted that it would fail to win over existing Windows-based PC users<sup>29</sup>—suggests the use of differentiation of kind, as in not a PC, rather than of degree, as in a friendlier PC. This example (of the Apple iMac G3) shows that the competitive advantage for Apple came from the differentiation of the firm, away from “an agenda set by an industry that had never shared its goals,” and was partially enacted through “product qualities [that] are really consequent to the bigger goals [at the intersection of technology and the arts] that were established when the company was founded.”<sup>30</sup>

What do Marvel Studios and iMac G3 have in common in relation to competitive advantage? In both cases, no pre-existing condition of heterogeneity was emphasized; instead, heterogeneity emerged as a result of a new insight about the problem space or as a result of having the guts to bring a solution to the market that was so different that it invited new interpretation of both the problem and solution. In other words, both companies’ policies were to secure the heterogeneity of the firm, the *sine qua non* to secure a distinctive, novel outcome in products (films and computers).

### Heterogeneity-Based Advantages

Firm-level heterogeneity is an outcome of discrete policy choices that executives make about their firm. These policies cluster together in a complementary and synchronous way to define the structure and activities of the firm. In conventional designs, these policies, enacted at various levels, define the firm’s forms and features. In product portfolios, the analogue of heterogeneity includes market, technology, firm-internal, and environment-related factors.<sup>31</sup> For example, Patagonia brings together the policy of “green goods” to the market for outdoor sportswear (novel market) and signals itself as a socially conscious provider (novel organizational culture); these two firm-level policies produced a heterogeneous firm to which customers are willing to pay substantial price premiums.<sup>32</sup> Table 1 describes different firm-level characteristics: organizational structure, organizational routine, organizational culture, market, industry, product portfolio, and geography. Each of these characteristics has a source of heterogeneity and a firm-level policy.

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- 27 Carol Vinzant, “The iMac: Fast Like Cheetah, Cute Like Kitten,” *Fortune*, November 9, 1998, 46.
- 28 Design Museum, “Jonathan Ive: Former Chief Design Officer at Apple”; Joel Dreyfuss, “The iMac: Not Quite Cool Enough,” *Forbes*, November 9, 1998. see [https://archive.fortune.com/magazines/fortune/fortune\\_archive/1998/11/09/250847/index.htm](https://archive.fortune.com/magazines/fortune/fortune_archive/1998/11/09/250847/index.htm) (accessed May 1, 2020).
- 29 Dreyfuss, “The iMac,” 239–40.
- 30 Design Museum, “Jonathan Ive: Former Chief Design Officer at Apple.”
- 31 Carsten Schultz, Søren Salomo, and Katrin Talke, “Measuring New Product Portfolio Innovativeness: How Differences in Scale Width and Evaluator Perspectives Affect Its Relationship with Performance,” *Journal of Product Innovation Management* 30, no. S1 (2013): 93–109, doi:10.1111/jpim.12073.
- 32 Ramon Casadesus-Masanell et al., “Households’ Willingness to Pay for “Green” Goods: Evidence from Patagonia’s Introduction of Organic Cotton Sportswear,” *Journal of Economics & Management Strategy* 18, no. 1 (2009): 203–33. doi:10.1111/j.1530-9134.2009.00212.x

A novel policy or policy combinations results in heterogeneity in kind rather than by degree. For example, Zara (a division of INDITEX) built a new type of fashion company based on a product portfolio policy of a continual, rather than seasonal, flow of novel clothes and ushered in the concept of “fast fashion” as a type of fashion company.<sup>33</sup> Zara hypothesized that rapid, periodic shipments of limited quantities of trendy clothing (i.e., new articles several times a week) could increase the value of clothing. American Airlines (AA) and Southwest Airlines (SWA) are differentiated in kind, but not because AA operates a hub-and-spoke network with multiple types of aircraft, whereas SWA operates a point-to-point network with a single aircraft type; these differences are factors of production. Instead, they differ in kind because SWA enacts policies targeted toward novelty of market, industry, and organizational culture. Hallowell notes that Southwest assiduously enacts policies that include “the conscious creation of an environment that encourages all employees to have fun on the job”<sup>34</sup> and the “standardization of machinery, adherence to published schedules, extensive selection and training of all employees, and restriction of service to those airports characterized as uncongested. In contrast, less disciplined carriers (such as the now defunct People Express) focus on only a few of these principles and often apply them inconsistently.”<sup>35</sup> Facebook and Snap (formerly Snapchat) were heterogeneous in kind. Facebook at its core operates a “system of record” of social interactions, hypothesizing that users prefer to recall memories from many years back. In contrast, Snap hypothesizes that customers prefer an “ephemeral record of incidental and spontaneous events,” based on the belief that any form of recording faces possible social opprobrium. Their policies toward the market for “social media” led to a divergence in products.

### The Forces Shaping the Degree of Heterogeneity

Although a firm might seek heterogeneity through management actions, its customers and industry can hem in its ability to shape the level of heterogeneity. Firm-level heterogeneity cannot fully depart from the firm’s grounding in an industry or prior competitive positions. In short, firms cannot be infinitely heterogeneous. This firm-level principle stems from the idea that a superior design initiates changes both in and outside its category but does not completely depart from the category. This claim has been made in relation to products in cultural industries. For example, organizations such as operas, film studios, record studios, and television studios must “seek novelty that differentiates their products without making them fundamentally different in nature from others in the same category.”<sup>36</sup> Raymond Loewy coined the industrial design principle as “most advanced yet acceptable,” using the acronym

33 Ana Martínez Barreiro, “Hacia Un Nuevo Sistema De La Moda. El Modelo Zara (Toward a New System for Fashion. The Zara Model),” *Revista Internacional de Sociología* 55, no. 51 (2008): 105–22, doi:10.3989/ris.2008.i51.111.

34 Roger Hallowell, “Southwest Airlines: A Case Study Linking Employee Needs Satisfaction and Organizational Capabilities to Competitive Advantage,” *Human Resource Management* 35, no. 4 (1996): 513, doi:10.1002/(SICI)1099-050X(199624)35:4<513::AID-HRM5>3.0.CO;2-Z.

35 *Ibid.*, 515.

36 Joseph Lampel, Theresa Lant, and Jamal Shamsie, “Balancing Act: Learning from Organizing Practices in Cultural Industries,” *Organization Science* 11, no. 3 (2000): 263–69, doi:10.1287/orsc.11.3.263.12503.

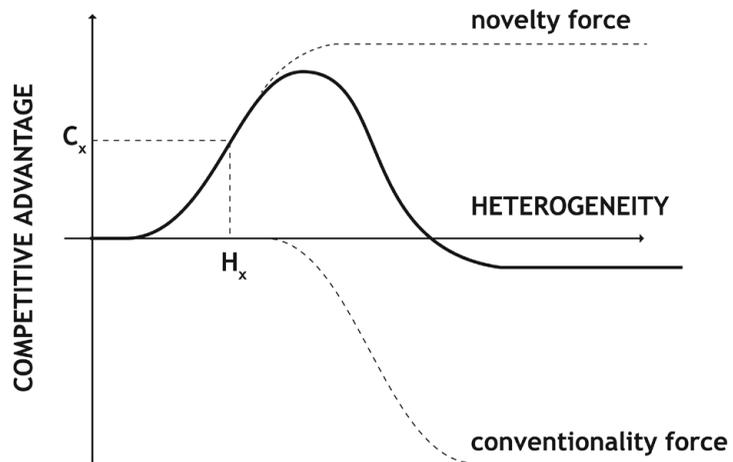
- 37 Raymond Loewy, *Never Leave Well Enough Alone* (New York: Simon and Schuster, 1951).
- 38 Paul Hekkert, Dirk Snelders, and Piet C. W. van Wieringen, "Most Advanced, yet Acceptable": Typicality and Novelty as Joint Predictors of Aesthetic Preference in Industrial Design," *British Journal of Psychology* 94 (2003): 111–24.
- 39 Krippendorff, "On the Essential Contexts of Artifacts or on the Proposition That 'Design Is Making Sense (of Things),' " 9.
- 40 Ken G. Smith et al., "Organizational Information Processing, Competitive Responses, and Performance in the U.S. Domestic Airline Industry," *Academy of Management Journal* 34, no. 1 (1991): 60–85, doi:10.5465/256302.
- 41 Krippendorff, "On the Essential Contexts of Artifacts or on the Proposition That 'Design Is Making Sense (of Things),' " 36.
- 42 Catherine Shoard, "Martin Scorsese Says Marvel Movies Are 'Not Cinema,'" *The Guardian*, October 4, 2019; "Francis Ford Coppola: Scorsese Was Being Kind – Marvel Movies Are Despicable," *The Guardian*, October 21, 2019.
- 43 Satyam Mukherjee et al., "A New Method for Identifying Recombinations of Existing Knowledge Associated with High-Impact Innovation," *Journal of Product Innovation Management* 33, no. 2 (2016): 224–36, doi:10.1111/jpim.12294.
- 44 Kaimann Daniel, Stroh-Maraun Nadja, and Cox Joe, "Variety in the Video Game Industry: An Empirical Study of the Wundt Curve," *Managerial and Decision Economics* 39, no. 3 (2018): 354–62, doi:10.1002/mde.2909.
- 45 Hekkert, Snelders, and van Wieringen, "Most Advanced, yet Acceptable": Typicality and Novelty as Joint Predictors of Aesthetic Preference in Industrial Design."
- 46 D. E. Berlyne, *Conflict, Arousal, and Curiosity* (New York: McGraw-Hill Book Co., 1960), 201.

MAYA.<sup>37</sup> The principle asserts that commercially successful designs have a form that is both recognizable as something familiar and also is unique—that is, designs that are as innovative as possible while preserving, as much as possible, the family resemblance of the design to a set of products.<sup>38</sup> Krippendorff drew a similar conclusion in explicating the dialectic in his definition of *design* as a plan for something new and different that also has meaning: "[T]he former calls for innovation, while the latter calls for the reproduction of historical continuities."<sup>39</sup> In achieving the status of being something new that has meaning, designs do more than simply displace what preceded them; they "initiate shifts within their cultural complexes"<sup>40</sup> (evoke a competitive response) but also "withstand the self-protective responses by those affected"<sup>41</sup> (maintain a competitive advantage). Such shifts can be recognized and disputed by competitors, even while the ones inducing the shift extend their grip on markets. For example, despite its market success, Marvel Studios is not without controversy. At the instigation of film director Martin Scorsese, others in the film industry have even started debating whether the franchise produces real cinema, or instead creates "despicable" theme park rides.<sup>42</sup> The MAYA principle also could suppress firms' strategic renewal. To illustrate, Disney explored the possibility of having one of its major animated princesses—Elsa—be openly gay but, for now, decided to keep her as a happy bachelorette who nevertheless has no need for a prince.

Two forces therefore influence the level of heterogeneity: novelty and conventionality. These same forces are at play in Loewy's MAYA principle: "Advanced" is equivalent to novelty, and "acceptable" is equivalent to conventionality. Novelty and conventionality are therefore the primary forces governing the trajectory of the heterogeneity of firms. We do not expect either force to be monotonically increasing (novelty) or decreasing (conventionality) in relation to their influence on heterogeneity and, by extension, on competitive advantage. For example, at the product level, customers prefer a certain level of novelty and conventionality.<sup>43</sup> These preferences have been related to a desire for modest levels of variety.<sup>44</sup> They can present difficulties for designers who seek to enhance levels of novelty and conventionality at the same time.<sup>45</sup> Similarly, at the firm level, these two forces, novelty and conventionality, determine the extent to which, and the rate at which, firms can push heterogeneity.

This idea is conceptualized in Figure 2, which was adapted from the Wundt curve by D. E. Berlyne to explain the response humans have to "the degree of change, novelty, surprisingness, or complexity that it [a stimulus] introduces."<sup>46</sup> The shape of the novelty and conventionality forces determines the extent to which

Figure 2  
Novelty and conventionality as opposing forces that hem in the potential competitive advantage from heterogeneity.



firms can gain a competitive advantage ( $C_x$ ) at some level of heterogeneity ( $H_x$ ). Although the curve depicted is two-dimensional, novelty and conventionality vary over time. Therefore, managerial focus must necessarily focus on getting the right balance of novelty and conventionality and understanding the rates at which these two forces change.

#### Propositions to Test Design Strategy as Competitive Advantage

Based on the foregoing discussion of a design-based view of competitive advantage, this section presents three propositions that, when testable and proven, would provide the empirical evidence to substantiate the theory.

The design-based view suggests that heterogeneity emanates from a novel policy or combination of policies of a firm. The new policy drives the design of new products and processes of production, and the full implementation of the policy, in turn, provides a logic for changes in work routines and organizational structure. In addition, the design-based view accentuates that the resources of a firm ultimately rely on such policies, and that it is not the resources *per se* that make or break the firm. Companies such as Airbnb and Uber held very little in the way of resources in the conventional view of tangible or even intangible resources. Firms *ab initio* may not have anything in the way of valuable resources, regardless of how value is defined, because they are unable to price something for which no demand curve or cost of production is known. In fact, for many start-ups, resources barely (or do not) exist at the time of the actualization of the firm. What ultimately created a competitive advantage for Airbnb and Uber was its unique policy of using and organizing underused residential accommodation and private vehicles, respectively. Identifying novel policies thus can result in a competitive advantage

for firms because they implement a value creation strategy that cannot be mindlessly copied by other firms.<sup>47</sup> A consistent empirical finding in cognitive design research is that the novelty and potential value created is inversely correlated; that is, high levels of novelty tend to lead to infeasible solutions.<sup>48</sup>

### Proposition 3.1

The novelty of a firm's policy correlates positively with the value of heterogeneity up to a point and then correlates negatively thereafter.

Firms must invent and enact highly interdependent firm-level policies to achieve heterogeneity. However, what a policy should be cannot be deduced. The value of one novel firm-level characteristic might also depend on the novelty or policy-setting of another firm-level characteristic.<sup>49</sup> The implication is that determining what is or is not going to become a novel policy is not a matter of an *a priori* analysis of fully formed strategic options. Rather than relying on existing hypotheses, the firm "must invent, or at least assume with a degree of arbitrary initiative, a premise which, if available to [the individual], would complete the basis of a demonstrative argument.... Probable inference is inference based on improvised, suppositious premises, which, when added to those derivable from what is taken to be knowledge from the field, compose a demonstrative argument."<sup>50</sup> This hypothesis might turn out to be false. Nonetheless, the practices of hypothesizing, experimentation on the hypothesis, and interpretation of the outcomes prevent premature fixation on a single policy, while leaving space for practitioners to exploit contingencies as they are discovered.<sup>51</sup> Indeed, the firm might not necessarily have a particular or optimal embodiment of a policy in mind. Whether any set of policies will definitely create a shift in the current situation toward heterogeneity cannot be known. Instead, firms should try to create hypotheses to provide a new logic for addressing existing problems.<sup>52</sup>

### Proposition 3.2

Successful competitors in an industry are more likely to have developed novel hypotheses about strategic options that, at inception, were neither empirically nor logically true.

Companies can experiment with novel policies that might lead toward novel agglomerations of firm-level characteristics. These policies are not meant to pre-produce a set of mutually exclusive options, followed by the selection of a utility-maximizing one. Instead, experimenting is intended to effectuate a solution from a given problem that can, in turn, direct and motivate the renewal and reallocation of resources toward higher-yielding

47 Giovanni Gavetti, Daniel A. Levinthal, and Jan W. Rivkin, "Strategy Making in Novel and Complex Worlds: The Power of Analogy," *Strategic Management Journal* 26, no. 8 (2005): 691–712, doi:10.1002/smj.475.

48 Joel Chan et al., "On the Benefits and Pitfalls of Analogies for Innovative Design: Ideation Performance Based on Analogical Distance, Commonness, and Modality of Examples," *Journal of Mechanical Design* 133, no. 8 (2011): 081004–04, doi:10.1115/1.4004396; Katherine Fu et al., "The Meaning of 'Near' and 'Far': The Impact of Structuring Design Databases and the Effect of Distance of Analogy on Design Output," *Journal of Mechanical Design* 135, no. 2 (2013): 021007–07, doi:10.1115/1.4023158.

49 Daniel A. Levinthal, "Adaptation on Rugged Landscapes," *Management Science* 43, no. 7 (1997): 934–50, doi:10.1287/mnsc.43.7.934.

50 George Lennox Sharman Shackle, *Imagination and the Nature of Choice* (Edinburgh: Edinburgh University Press, 1979), 75.

51 Masaki Suwa, John Gero, and Terry Purcell, "Unexpected Discoveries and S-Invention of Design Requirements: Important Vehicles for a Design Process," *Design Studies* 21, no. 6 (2000): 539–67, doi:10.1016/S0142-694X(99)00034-4.

52 Donald A. Schön, *The Reflective Practitioner: How Professionals Think in Action* (New York: Basic Books, 1983); Herbert A. Simon, "Problem Forming, Problem Finding, and Problem Solving in Design," in *Design and Systems: General Applications of Methodology*, ed. Arne Collen and Wojciech W. Gasparski (New Brunswick, NJ: Transaction Publishers, 1995), 245–57.

activities.<sup>53</sup> In other words, experimenting enables firms to learn about the conditions under which their hypotheses about policies leading toward heterogeneity hold true or false.

According to Levinthal, the greater the number of policy interdependencies, the greater the number of alternative organizational forms.<sup>54</sup> As such, if firms want to explore a large space of possible organizational forms, they need to produce and test an increasing number of novel policies. Because experimentation is not cost-free, excessive capital allocation by testing firm-level characteristics that are too novel or testing too many combinations of novel characteristics could negatively affect performance, for two reasons. First, a high degree of reallocation creates substantial disruption in the firm's operations as it moves people and non-financial resources around to test new hypotheses. Second, a higher level of investment could also disrupt the status quo in the industry, thus drawing a competitive response. Apple is reported to have reallocated its top executives and engineers to its own autonomous vehicle project, possibly in response to Google.<sup>55</sup> Too much novelty also might signal a higher degree of risk for the company as additional investment goes into riskier propositions. Heterogeneity in this case is no longer valuable because it does not make sense or is too far from conventionality (see Figure 2). Nonetheless, without experimentation or a propensity for experimentation, the novel hypotheses cannot support the formation of growth opportunities.

### *Proposition 3.3*

Successful competitors in an industry are more likely to devote more resources toward testing novel hypotheses, but after a certain threshold, increasing resource allocations for hypothesis testing diminishes competitiveness.

### **Conclusions**

This article has articulated a design-based view of competitive advantage. In short, the claim prescribes that firms gain competitive advantage through heterogeneity-based advantages. If the firm can secure its heterogeneity, it will continue to exist and can be viably adapted to the competitive landscape, relative to other firms. If not, other firms will erode its value. Heterogeneity accrues to firms that continually create desired situations based on novel policies, and the full implementation of the policies, in turn, provide a logic for changes in work routines and organizational structure. The heterogeneity of the firm is determined by management action, constrained by the novelty and conventionality forces in its market. However, decisions regarding what the firm can do

53 Saras D. Sarasvathy, "Causation and Effectuation: Toward a Theoretical Shift from Economic Inevitability to Entrepreneurial Contingency," *The Academy of Management Review* 26, no. 2 (2001): 243–63, doi:10.2307/259121.

54 Levinthal, "Adaptation on Rugged Landscapes."

55 Daisuke Wakabayashi and Mike Ramsey, "Apple Gears up to Challenge Tesla in Electric Cars," *Wall Street Journal*, February 13, 2015.

and where it can go need not (and should not) fully upend the entire firm. In addition, the design-based view accentuates that the resources of a firm ultimately rely on such policies and that the resources *per se* do not make or break the firm.

An important difference between the design-based view and other strategy frameworks is worth emphasizing. The design-based view promotes a strategic shift in managerial focus—away from coordinating resources and toward producing heterogeneity. It suggests that as firms evolve, they ought to seek their firm’s appropriate heterogeneity of kind. The claim to competitive advantage that we have put forth suggests that strategists should pay attention to competitive moves to increase heterogeneity. Meanwhile, strategists also should recognize that methods of design translate into activities that similarly drive success in achieving heterogeneity.

Our design-based view on competitive advantage enters a contested space in which strategy scholars and practitioners at times question even the existence of anything more than temporary competitive advantage.<sup>56</sup> Another claim is that competitive advantage is simply the result of diligent application of business fundamentals.<sup>57</sup> However, if our case for a design-based view on competitive advantage proves true, it further underscores the importance of firm-level shaping of heterogeneity both within the firm and outside it (e.g., as market creation). Expanding the time-varying heterogeneity between the firm and the industry norm becomes a business fundamental requiring diligent management focus.

In our context, barriers to entry are particularly low as a result of digitization<sup>58</sup>; competitors can come from anywhere geographically; and external environments challenge multiple elements of firms’ business models simultaneously.<sup>59</sup> Given these factors, re-assessing the evidence to determine whether alternative explanations can account for competitive advantage is particularly appropriate. In particular, the emergence of new firms that created new markets and new industries with few assets and capabilities, at least at their inception and relative to incumbents (e.g., compare Amazon to Barnes and Noble, Netflix to Blockbuster, or Google to WPP), calls into question explanations for competitive advantage that assume an industry comprising a small and oligopolistic set of similarly-sized firms in an essentially isolated market, that assume existing heterogeneously distributed valuable assets and capabilities, or even that assume existing opportunities are to be sensed and seized rather than created and shaped.<sup>60</sup> We claim that, for the

56 Rita Gunther McGrath, “Transient Advantage,” *Harvard Business Review* 91, no. 6 (2013): 62–70; *The End of Competitive Advantage: How to Keep Your Strategy Moving as Fast as Your Business* (Brighton: Harvard Business Review Press, 2013).

57 Thomas C. Powell, “Strategy as Diligence: Putting Behavioral Strategy into Practice,” *California Management Review* 59, no. 3 (2017): 162–90, doi:10.1177/0008125617707975.

58 Anat BarNir, John M. Gallagher, and Pat Auger, “Business Process Digitization, Strategy, and the Impact of Firm Age and Size: The Case of the Magazine Publishing Industry,” *Journal of Business Venturing* 18, no. 6 (2003): 789–814, doi:10.1016/S0883-9026(03)00030-2; Giulia Calabretta and Maaike Kleinsmann, “Technology-Driven Evolution of Design Practices: Envisioning the Role of Design in the Digital Era,” *Journal of Marketing Management* 33, no. 3-4 (2017): 292–304, doi:10.1080/0267257X.2017.1284436.

59 Wendy K. Smith, Andy Binns, and Michael L. Tushman, “Complex Business Models: Managing Strategic Paradoxes Simultaneously,” *Long Range Planning* 43, no. 2 (2010): 448–61, doi:10.1016/j.lrp.2009.12.003.

60 Sarasvathy, “Causation and Effectuation: Toward a Theoretical Shift from Economic Inevitability to Entrepreneurial Contingency.”

field of design to contribute more fully to the competitiveness of firms, design strategy needs to move beyond product-level strategy and tools that bring design practice to management problems, such as prototyping a business model.<sup>61</sup> In the design-based view on competitive advantage, heterogeneity is the definitive metric of competitive performance. With heterogeneity as a highlighted metric of the firm, the firm seeks the right degree of novelty in its organizational routines, product portfolio, and elsewhere, relative to current firms. The design-based view on competitive advantage is intended to capture the key role of strategic management in directing attention toward shaping novel and desirable concepts—heterogeneity-based advantages—at all levels of the firm.

61 Alex Osterwalder and Yves Pigneur, *Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers* (Hoboken, NJ: Wiley, 2010).

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