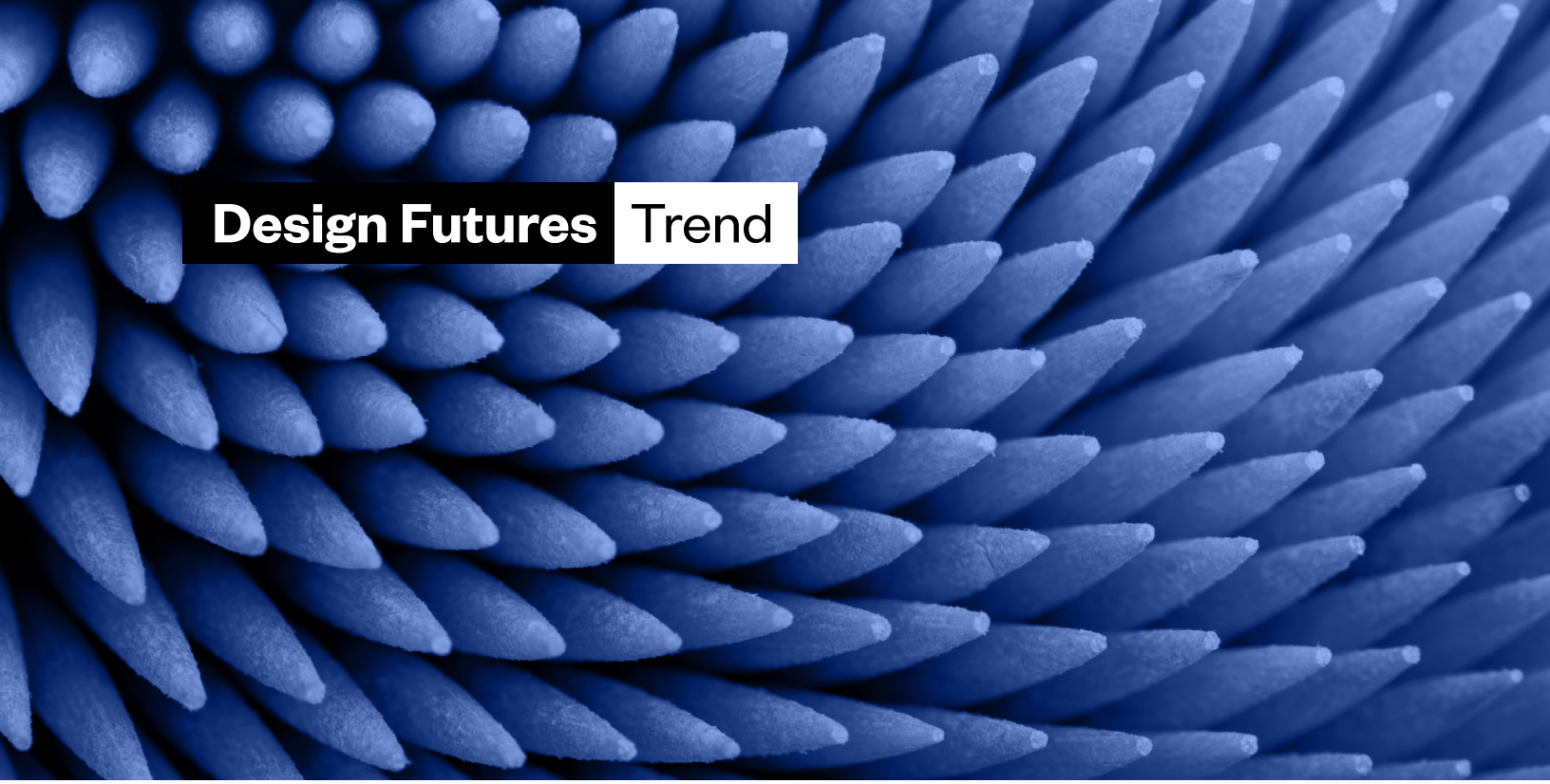


Design Futures Trend

Resilient Organizations

Meredith Davis and Moira Cullen

This is one of a series of briefing papers on trends shaping the context for design in the coming decade. It is intended to inform design professionals and educators of processes and concepts adressed by successful design practices.

AIGA the professional association for design

Successful organizations respond flexibly to change and disruption through distributed responsibility for innovation. Innovation addresses how organizations are configured, the products and services they offer, the delivery channels they use, and how they represent themselves in touch points with various stakeholders. Systems, assets, and activities converge in the concept of "enterprise." Work in today's successful organizations is built on agreement rather than decisions, stewardship rather than the owner ship of ideas, continuous updating rather than editions, and a stopping condition that is "good enough for now."[1] New approaches to anticipating change, structuring strategic conversations, innovating business models, and making sense of research data comprise an essential toolkit for designers.

1. Dubberly, H. (2008). "Design in the Age of Biology: Shifting from a Mechanical-Object Ethos to an Organic-Systems Ethos." *Interactions* magazine.

Recent AIGA surveys show designers' strong interest in business-related issues. However, what AIGA members mean by "business" is unclear. In some cases, designers want to improve the operation and marketing of their professional offices. In other instances, they want to include the development of business strategy as a service for clients. And recent work in software development argues for skills in the time- and budget-sensitive processes for bringing products to market.

Colleges and universities also equivocate regarding business education for designers, which ranges from low-credit certificate programs and undergraduate minors, to dual degrees that combine graduate study in design with an M.B.A. While some of these curricula profess to produce design generalists who can influence upper-level business strategy, there is no consensus in higher education regarding the content of an undergraduate design degree that prepares graduates for work in the C-suite.

The evolution of the field depends on demonstrating the value of design in addressing complex problems under a climate of increasing uncertainty and rapid social and technological change. In describing the context for design practice for the future, therefore, AIGA focuses this discussion of business on two related forces: continuing demand from management for innovation, and leadership qualities necessary to innovate through design.

It is important to note that while this briefing paper focuses on the problems of commerce, many of the same concepts and principles apply to work in social innovation. There is a distinction between designers simply doing work in support of good causes and maintaining economically viable design practices that bring about change in complex social systems. Therefore, readers may interpret "value" in these discussions in a number of ways.

The demand for innovation

It is difficult to find a mission statement today that does not use "innovation" in positioning a company, organization, or institution in the marketplace. Once defined by the appearance of products and messages, public perceptions of innovative companies increasingly depend on the quality of experiences they offer. Eighty percent of American business is in services alone, not in the design and manufacture of physical things. These circumstances suggest that successful businesses must continually align internal and external systems in developing and maintaining a competitive advantage.

Hugh Dubberly and Paul Pangaro describe innovation as a managed process in which observation leads to insights that create an effect with consequences for the community.[1] Innovation challenges conventions that no longer seem to fit the context or community. Doblin strategist Larry Keeley identifies ten types of innovation, grouping them as inward and outward facing activities.[2]

1. Dubberly, H. and Pangaro, P. (2008). Innovation concept map.

2. Keeley, L. (2013). *Ten Types of Innovation: The Discipline of Building Breakthroughs*. Hoboken, NJ: John Wiley & Sons, Inc.

Internal systems:

- How businesses make their money—the profit model
- How they connect with others to create value—the network
- How they organize and align their talent and assets—the structure
- How they use signature or superior methods to do their work—the process

Product and service offerings:

- How businesses develop distinguishing features and functionality in their products and/or services—product performance
- How they create complementary products and services—the product system

Consumer experience:

- How businesses support and amplify the value of their offerings—service
- How they deliver and present their offerings to customers and users—channel
- How they represent their offerings and business—brand
- How they foster compelling interactions—customer engagement

The story of Apple innovation is well documented, and the company's attitude toward user-friendly interfaces, product aesthetics, and creative branding are responsible for much of its historical success. Apple iTunes, however, illustrates innovation in the company's profit model and network. Small devices for listening to music did not originate with Apple. The Sony Walkman and portable CD players were available as early as the 1970s, and Apple's 2001 iPod was not the first MP3 player. But to sell more devices at a higher price than competitors, Apple paired the product with a corresponding content management system (iTunes), reconfiguring the economic relationship between record labels and music fans, and creating new value for consumers. From its original focus on music, iTunes expanded offerings to include movies, videos, and books, and moved the system across complementary products (iPhone and iPad). In other words, an innovative service drove the sale of products in a company that was previously known for hardware.

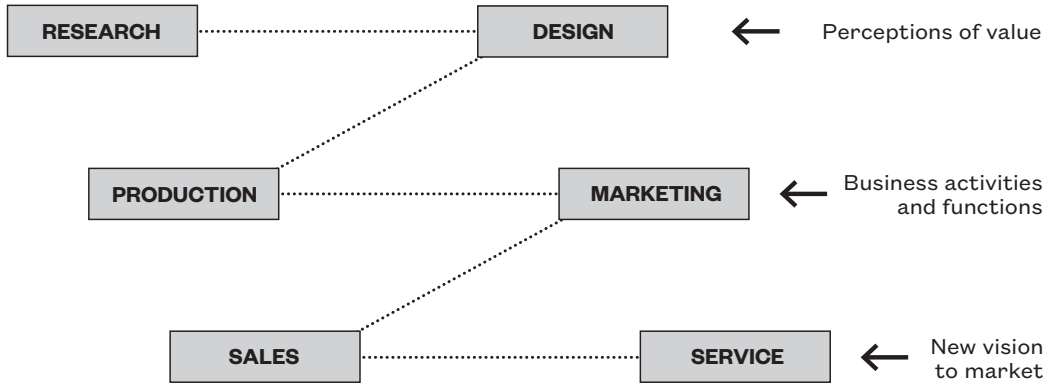
By 2015, however, streaming subscription services had grown the recording industry for the first time in four years. An alternate service model redefined how consumers listen to music. Spotify, for example, provides open access to thirty million albums for as little as $9.99/month, rather than Apple's $1.29/song. Spotify supports social media sharing, curated playlists, and limited offline access. To compete, Apple was forced to follow with Apple Music subscriptions in 2015.

Innovation, therefore, requires more than a change in the outward messaging of a company or organization. A resilient organization responds to internal and external opportunities. It meets challenges with new ideas and processes that come from anywhere in the organization. It relies on collaboration across various types of expertise. And it recognizes that the lifecycle of a product or service is getting shorter and shorter because of competition, rapid technological change, and disruptive forces in the marketplace.

Core concepts and principles

Value chain — A value chain is the sequence of activities through which a company or organization delivers a valuable product or service to people. It is a process-oriented view of the organization. In analyzing the value chain, companies and organizations determine how activities differentiate the company and contribute to its competitive advantage. Design management expert Brigitte Borja de Mozota describes design as acting at three levels in the value chain: in people's perceptions of value, in the coordination of functions and activities within the company, and in generating a new vision of the product or service category in the industry.[1] Problems in the value chain can jeopardize design success at any of the three levels.

The Value Chain



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Electronics company Philips approached the College of Design at NC State University with a problem: 40 percent of its television service requests resulted in "no service necessary" because customers did not understand installation manuals. The company asked graphic design students to make recommendations on manual design. Students quickly determined that one-color printed manuals, no matter how well designed, were inadequate in describing television wires, connectors, and buttons that were all the same color and shape. They also found that the people who designed the manuals were in the service department and the people who designed the televisions were in the design department. A simple redesign of manuals could not solve the service problem. The solution was to reorganize the two groups of designers under the same operation, designing manuals and televisions in the same place at the same time—to shift the position of manual design in the company's value chain.

Strategic positioning — The goal of business innovation is to achieve a sustainable advantage over competitors. In today's dynamic markets, branding is necessary but insufficient for accomplishing this task. It is too easy for competitors to copy the attributes of products and messages. Think about how most smartphone appearance and advertising mimics the Apple iPhone.

1. Mozota, B.B. (2003). "Design and the Competitive Edge." Reprinted by the *Design Management Institute from Academic Review*, Volume 2.

Harvard business professor Michael Porter described strategic positioning as "performing different activities from those of rivals, or performing similar activities in different ways." Simply doing the same things better isn't enough. Porter used IKEA as an example. The company's brand experience is "high style at low cost." Its strategic position, on the other hand, is defined by a collection of specific activities that trade off service for cost reductions. IKEA sells its own stylistically compatible products through a self-service warehouse, rather than through showrooms of third party products staffed by salespeople. It packages items as flat parts, offloading delivery and assembly to customers. Each of these activities is specifically designed to contribute value to both the company and consumers in some sense. Branding tells the story of an organization's position in the marketplace. Strategy is how it achieves and maintains that position.

Porter describes three types of strategic positioning. The first addresses some subset of products or services available in the industry. Jiffy Lube specializes in automotive lubrication but not in other maintenance, providing faster service at a lower cost than full-service repair shops and dealerships. The second type of strategic positioning focuses on serving the needs of a particular group of customers. In addition to its products, IKEA's in-store childcare and extended hours align with its young, middle-class customers. The third strategy segments customers based on access. Merry Maids, a domestic and commercial cleaning company, services 300,000 homes a month through franchises located almost exclusively in small towns.[1]

Many college-level branding assignments focus only on visual identity or on hypothetical organizations for which there are no backstories. For designers to play leadership roles in business, they must understand how all activities of the company or organization contribute to its strategic position. Even when the specific design task is branding, it is strategic position that guides decisions about messages.

Innovation in the business model — A business model is an abstract representation of the activities and financial relationships through which a company or organization does business. Management consultant Peter Drucker described a business model as "the assumptions about what a company gets paid for." These assumptions define the organization's structure and core competencies, its decisions about what to do and what not to do, and what it considers as significant results. Drucker argued that this theory of business must be understood throughout the organization and tested constantly.[2]

Keeley advises that innovation in the business model is appropriate when the company or organization needs to change how value is created, especially when there is little opportunity for further improvement in the products themselves.

1. Porter, M.E. (1996). "What is Strategy?" *Harvard Business Review OnPoint*

2. Drucker, P. (1994). "The Theory of Business." *Harvard Business Review*. September-October 1994. Cambridge, MA: Harvard University.

Mark W. Johnson, cofounder of growth strategy consulting firm Innosight and author of *Seizing the White Space*, described a number of business models driving innovation:

Affinity club	Pays royalies to some large organization for the right to sell products exclusively to their members
Automated-enabled processes	Harnesses software that automates processes previously requiring human labor/cognition to reduce operating costs (IBM Watson)
Brokerage	Brings together buyers and sellers, charging a fee per transaction to one or another party (Orbitz)
Bundling	Packages related goods and services together (iTunes)
Crowdsourcing	Outsources tasks to a broad group that contributes content for free in exchange for access to other users' content (Wikipedia)
Data-into-assets	Uses data management and analysis processes to capture value
Digital platforms	Enables value-creating interactions between external producers and consumers through an open, participative infrastructure with set governance conditions
Disintermediation	Delivers directly to the customer a product or service that has traditionally gone through an intermediary (WebMD)
Fractionalization	Allows users to own part of a product of service but enjoy many of the benefits of full ownership at a fraction of the price (time shares)
Freemium	Offers basic services for free but charges for upgraded or premium services (LinkedIn)
Leasing	Rents rather than sells high-margin, high-priced products
Low-touch	Lowers prices by decreasing services (IKEA)
Negative operating cycle	Generates high profits by maintaining low inventory and having customers pay up front for a product or service to be delivered in the future (Amazon)
Pay as you go	Charges for metered services based on actual usage rates (electric companies)
Razor/blades	Offers the high-margin "razor" for low or no cost to make profits by selling high-volume, low-margin "blades" (printers and ink)
Reverse razor/blades	Offers the low-margin blades at low or no cost to encourage sales of the higher-margin razors (Kindle, iTunes)
Product to service	Rather than sell a product, the company sells the service the product performs (Zipcar)

Johnson, M. W. (2018). *Reinvent Your Business Model: How to Seize the White Space for Transformative Growth*. Cambridge, MA: Harvard Business Review Press

Each of these models suggests slightly different opportunities for growth. Some depend on adding customers for a focused offering, while others grow business by diversifying products or services. Some carefully control access to the offering and others are open with few obstacles to participation. In many of the examples, businesses innovated by rejecting the conventional model in their product or service category.

See also: *Trend — Making Sense in the Data Economy*

Innovation in the platform — A platform is a set of components and protocols through which companies and organizations deliver services to customers. The purpose of a platform is to allow the rapid development of new products or services, either by the company or by others. Platform-innovation shifts, says Keeley, reinvent or find new connections among products or services that make it easier for consumers to do hard things.[1]

The Apple and Android platforms are responsible for their success over competitors. Apple launched its App Store in 2008 with 500 applications. By January 2017, the store offered 2.2 million apps, developed mostly by third parties through access to Apple's platform. Android users have 2.8 million apps to choose from. These platforms create new value for users, but they also maintain the competitive advantage of the corresponding devices.

See also: *Trend — Making Sense in the Data Economy*

The Nike+ Fuel Lab is an effort to leverage Nike's fitness platform—which uses sensors to measure movement—with external partners in coaching, training, gaming, and analytics services for athletes. The company's development portal accepts proposals from potential collaborators who want to use the Nike platform to create something new within a well-defined consumer market.

Software designer Hugh Dubberly makes the case that content also may be a platform. Movies and television programs, for example, serve as launch points for products, websites, music, theme parks, and clothing. Video game stories and characters now serve as platforms for feature movies. As with technology, applications expand consumer experiences and create new value under third party access to the content platform.

Other platforms create value by connecting producers and consumers through data. For example, eBay collects information from participants and directs buyers to relevant products. Amazon monitors buying and browsing histories and offers suggestions for future purchases. Machine learning expands digital intelligence through collective use, making these connections increasingly accurate reflections of people's interests and behavior.

Google software architect Steve Yegge says, "A product is useless without a platform, or more precisely and accurately, a platform-less product will always be replaced by an equivalent platform-ized product."[2] John Seely Brown describes this phenomenon as a paradigm shift from a "push" to a "pull" economy.[3]

1. Keeley, L. (2013). *Ten Types of Innovation: The Discipline of Building Breakthroughs*. Hoboken, NJ: John Wiley & Sons, Inc.

2. Atzmon, L. and Boradkar, (2017). *Encountering Things: Design and Theory of Things*. London: Bloomsbury Publishing

3. Seely Brown, J. (2005). "From Push to Pull: Emerging Models for Mobilizing Resources."

A "push" economy anticipates consumer demand for a particular product and then delivers it to the right customers at the right time through standard marketing and distribution channels. A "pull" economy uses flexible networking platforms to organize resources and encourage users or third party developers to assemble and customize their own products. Etsy, for instance, brings together people with shared interests in an open marketplace of craft ideas, supplies, and handmade goods. YouTube provides an infrastructure for people who want to make and share original videos. These platforms rely on network effects; the more they are used, the more valuable they become. They shift users from passive consumers to engaged co-creators.

Academic programs that expect their graduates to work in software development need to understand processes used in the development of technological "products." Historically, communication design has been tangential to the innovation of physical products, stepping in when the task shifts to branding and advertising the results. By contrast, today's work in software, networked systems, and new technological platforms engage communication designers from product inception to launch. The design of the physical product is frequently secondary to the information and service access it provides; services are ways of delivering products. Interdisciplinary teams do this work under incremental, iterative, and evolutionary processes, where products are continually tested and refined in development sprints that can be as short as one week in length. This agile, adaptive process acknowledges the dynamic nature of complex systems and that financial, technical, and marketing predictions are difficult to make at the beginning of a development process.

In the development of software and technological systems, the designer's role is often advocating for the user and building agreement among stakeholders, not deciding. The end state of technological work is adapting, evolving, continually updating, and "good enough for now," not completed and "almost perfect" as it was under an industrial era of production. Designers are asked to analyze the current situation, represent it in a model, reconfigure the model to improve the situation, and realize the new model in tangible form.[1]

Technology designers also need to develop their critical skills in evaluating the social as well as technical biases and consequences of platform innovation. Web consultant Sara Wachter-Boettcher's 2017 book, *Technically Wrong: Sexist Apps, Biased Algorithms, and Other Threats of Toxic Tech*, cites numerous examples she attributes to the white male culture of Silicon Valley. She describes a 2015 Google Photo algorithm tagging two Black friends as "gorillas" and a smart scale telling an average-sized father holding his toddler that he can still shed those extra pounds.[2] At the same time, the dominance of a few platforms (e.g., Google, Amazon, Facebook, Apple, IBM, and Microsoft) centralizes control by requiring information and development to pass through a few central points. This consolidates power over what can and cannot be done or seen and opens issues of privacy and security regarding the user information held by these companies.

1. Dubberly, H. (2008). "Design in the Age of Biology: Shifting from a Mechanical-Object Ethos to an Organic-Systems Ethos." *Interactions* magazine.

2. Russell-Kraft, S. (2017). "Silicon Valley Is Inserting Its Biases Into Nearly Every Technology We Use." Retrieved from *Motherboard* on December 21, 2017.

Innovation in the user/consumer experience — There are two types of research that inform business decisions about the design of the consumer experience. Both are important and use quantitative and qualitative methods. Market research focuses on the sale and purchase of products and services. Design research concerns how people use and experience the organization's offerings. Market research studies demographic or behavioral groups for broad insight, while design research usually seeks the preferences and behaviors of extreme users. Market research uses large sample sizes for statistical validity. Design research needs a much smaller group of participants to inform design direction. Market research relies on what people say in surveys and interviews. Design research observes what people do. Market research identifies unmet user needs and new customers. Design research reveals specific users' motivations and behavior.

See also:
Trend — Accountability for Anticipating Design Outcomes

Numerical data drives the typical linear, logical decision-making of management. Despite increasing use of sentiment analysis tools in market research, presenting complementary forms of data falls to designers; strategic storytelling that situates design research findings in rich, nuanced descriptions of settings and users. Designers must honor the desire of management to hold on to facts, but also offer compelling visions of the future that align proposed innovation with consumers' strongly held values and beliefs.

Applied researcher Rick Robinson has pioneered evidence-based approaches to design in practice, recently in his consulting firm Iota Partners (now Sapient). He discusses changes in business expectations for returns on investment in research: "By advocating that design be considered a strategic voice in product development, communications, and marketing, the field has been asked to play by the same rules and be measured by the same yardstick as other principal business activities. Research needs to be justified on an ongoing, long-term basis, not purely on a 'see what we found!' case-by-case basis." Robinson hints at some overt friction between design research and traditional market research. Although there are instances where the two work in tandem, there can be a lag between designers' advocacy for iteration and interdisciplinarity, and the managerial outlook of a vastly larger marketing research ecosystem that holds mostly linear views of product and communication development.[1]

It is unlikely that undergraduate design students will develop sophisticated research skills, but they can learn to conduct small studies and to interpret others' findings in support of their design decisions. They can interview and observe people for insights. They can develop scenarios and personas as ways of understanding variety in people's experiences. And they can connect general education studies in the social sciences to work in design. Students should graduate "research receptive" from bachelor's programs in design.

Keeley describes innovation in the consumer experience as appropriate when research shows a service or product category has become stale or overly complicated.[2] Blue Apron, for example, reinvigorates interest and adds

1. Davis, M. (2016). "Normal Science and the Changing Practices of Design and Design Education." *Visible Language* 50.1, pp. 6-23.

2. Keeley, L. (2013). *Ten Types of Innovation: The Discipline of Building Breakthroughs*. Hoboken, NJ: John Wiley & Sons, Inc.

convenience in cooking at home by delivering ingredients and recipes that customers might otherwise overlook in supermarket shopping. Zappos makes buying shoes easier through its online access to a massive inventory and easy, no-risk return policy. Stitch Fix serves as a personal stylist for busy people who don't have time to shop in brick-and-mortar stores. With $1 billion in sales during its first six years, the company uses customers' style, size, and price profiles to select and deliver clothing for purchase or free return without a subscription. Kickstarter consolidates fundraising efforts for creative work. As a Benefit Corporation, it measures success in how it brings projects to life, not in profits. To date, Kickstarter has funded 34,000 projects through 14 million individual backers.

Design innovation leadership skills:

The Organisation for Economic Co-operation and Development, an intergovernmental economic organization of 35 countries, studied employee qualifications for work in innovation. OECD researchers asked recent college graduates in a variety of fields (product, technology, and knowledge innovation) to rank 19 skills required by their jobs. Coming up with ideas, willingness to question ideas, alertness to opportunities, analytical skills, coordinating activities, acquiring new knowledge, mobilizing the capacity of others, presenting ideas to an audience, and making clear their meaning ranked ahead of disciplinary content and skill mastery, regardless of the innovation sector in which graduates worked.

When asked how well colleges prepared them for innovation work, respondents to the OECD survey expressed satisfaction with their content expertise but said that colleges fell short in developing non-domain social skills, such as collaboration, communication, and leadership.[1]

It is likely that the studio pedagogy of design education better addresses some of these highly ranked innovation skills than other fields, but probably within the narrow framework of simple, object-centered problems. It is less clear that design education prepares students for innovating under complex challenges that have ambiguous boundaries and accountability to metrics other than those of their own field.

Design thinking — The popularization of "design thinking" (with nearly 32 million entries in a recent Google search) muddies its definition. Although currently marketed by designers as step-by-step processes particular to their offices, and as a managerial strategy by M.B.A. programs, articulation of design thinking first appeared in a 1979 report by the Royal College of Art titled, *Design in General Education*. Professor Bruce Archer and colleagues described characteristic designer behaviors as: tackling ill-defined problems, adopting solution-focused approaches to problem solving, engaging in conjecture and constructive modes of thinking, and using visual modeling.

While it is tempting to think that a broad design education produces recent graduates with this mindset, leveraging it in business is another matter. Colleges and universities must be realistic in what they promise as employment outcomes and social influence under programs that include business content, especially at the certificate and undergraduate levels. Designers must

1. Avvisati, F. et al. (2013). "Educating Higher Education Students for Innovation: What International Data Tell Us." *Tuning Journal for Higher Education*. Issue Number 1, pp. 223-240

prepare for work in innovation strategy through deep study (often at the graduate level) and/or professional experience in projects of sufficient scale and complexity. Advocacy requires vigilance in seeking opportunities for design to make a difference, eloquence and political savvy in making the case for a design-based approach to solving business problems, and respect for the values and metrics that drive leadership throughout companies and organizations.

Language — Speaking and decoding the language of business is the price of entry to problem solving at the organizational level. There are a number of online glossaries that assist designers by explaining business terms.

- *The Guardian* site provides an interactive glossary of business terms.
- Tim Berry, founder of Palo Alto Software, offers a clickable alphabetical listing of terms for small businesses.
- The business dictionary allows users to enter a term into a search engine and follows with an explanation.

Foresighting — Foresighting is the early detection of anything that is likely to disrupt business, social, or technological continuity. It includes the interpretation of consequences for the organization and its stakeholders and the formulation of effective responses to change. Foresighting is different from forecasting. Forecasting predicts that something in particular will occur. It acknowledges the area to be observed (mobile technology, for example) and arrives at a possible future. **Foresighting, on the other hand, creates large-scale understanding and appreciation of what is ahead by looking at physical, social, cultural, political, technological, and economic trends and indicators of change**. It includes not only conditions to which business and policy must respond, but also first steps in preparing for those conditions. It manages uncertainty.

See also: *Trend — Complex Problems*

Foresighting is difficult for companies and organizations. The pace of change, demand for speed in innovation, information overload that makes it difficult to recognize problems and assess their impact, and internal and external inertia are obstacles to breakthroughs.[1] Business professors Lovallo and Mendonca caution that simplistic notions of "strategic planning" can create unrealistic expectations; that real innovation depends on exploiting some change in the environment—in technology, consumer tastes, laws, resource prices, or competitive behavior—and riding that change with quickness and skill.[2] Strategy, in this sense, is about designing an enterprise, about designing the future, not about solving a discrete or short-term problem.[3]

1. Rohrbeck, R. (2010). *Corporate Foresight: Towards a Maturity Model for the Future Orientation of a Firm*. New York, NY: Springer Series: Contributions to Management Science

2. Lovallo, D. and Mendonca, L. (2007). "Strategy's Strategist: An Interview with Richard Rumelt." *The McKinsey Quarterly*, August 2007.

3. Liedtka, J. (2004). "Strategy as Design" *Rotman Management Alumni Magazine*; Stevens, J. et al. (2008). "Design and Design Thinking in .Strategy Concepts." Northumbria Research Link.

In this sense, designers who are problem seekers, not just problem solvers, have something to contribute to innovation. They recognize anomalies that call for a paradigm shift in how things are done and are comfortable with multiple scenarios. Leadership in foresighting means enlarging choices among opportunities, identifying new needs as well as new ideas, focusing on a range of impact areas, describing both desirable and undesirable outcomes, and stimulating continual discussions on the future within the organization.[1]

College projects that focus only on meeting present needs, even when defined comprehensively across the problem context, leave students unprepared for the foresighting role of design. Assignments can ask students to analyze trends and project future conditions that might define the environment in which their solutions must work.

Foresighting is also important in the curriculum work of faculty. Curricula that respond only to entry-level qualifications for current practice rather than evolving conditions for design and the strategic environment for their institutions quickly become irrelevant, regardless of the quality of instruction. Curricula must be anticipatory and agile in the face of change. They must reflect concern for the 50-year careers of their graduates.

Facilitation — Under the collaborative interdisciplinary processes of business and research, facilitation is necessary to surface and reconcile various perspectives on problems. A facilitator focuses on how people participate in planning, not just on the content of the discussion.

The goal of design is to have influence without authority, recognizing that designers rarely have decision-making or budget control over innovation; to build trust in and with people who have different incentives and values. This often involves talking to people who aren't really listening, building relationships with unlikely partners, and foregoing a personal meeting agenda in order to gain feedback. The task is to educate the organization about design in plain language while continually interweaving concern for commonly agreed-upon objectives. Designers must demonstrate contextual intelligence—reading all the resources necessary to understand the project—but also show humility about what they don't know.

Facilitation is an obvious place for design leadership and increasingly important as work involves more planning and less physical making. Designers' ability to structure and record concepts in visual form as they arise in meetings overcomes the limits of disciplinary terminology. While software engineers, psychologists, and designers may disagree on the meaning of "usability," for example, diagramming the relationships among users, actions, and outcomes allows collaborators to reach consensus. Designers' openness to multiple problem solutions can also keep teams from rushing to conclusions.

Other facilitation skills call for specific attention in design education. Students need experiences that develop active listening, effective questioning, and time management. Faculty must hold students responsible for constructing and presenting logical and compelling arguments that succeed in

1. Cuhls, K. (2003). "From Forecasting to Foresight Processes." *Journal of Forecasting*, Volume 22. pp. 93-111.

situations that include non-designers. Students need practice in leading conversations that are inclusive and that build rapport among diverse participants, taking into account feelings as well as facts. They must learn to pivot when presentations are not going well or are cut short, and to structure cohesive stories in a number of ways for different audiences. They need to anticipate follow-up activities that keep people engaged.

Running a meeting also requires preparation, clear and shared objectives, organization of workflow, and protocols for reaching closure on action items. These are not innate strengths of most college students and explicit instruction in how to facilitate group work is necessary. Rotating leadership responsibility and evaluating performance following each session can focus students on the social and managerial skills necessary to succeed in business. Most design faculty rank collaborative skills as very important learning outcomes, but don't distinguish group membership from leadership, or collaborative performance from product success in students' grades.

Lave and Wenger write about a "community of practice," about the ways novices in a field learn from experts regarding "how we do things around here."[1] Many design professionals also lack experience in facilitation and need mentoring in this skill under more senior designers. In-house design departments and consulting offices need to be mindful of bringing along junior employees in their development of soft skills necessary for success in business. By including new employees as observers in meetings and conducting a postmortem on how meetings went, senior designers can cross-train their staff for a variety of important future roles.

Prototyping — Although the ability to prototype is a traditional design skill, testing a service design can present challenges. The fidelity of a prototype in modeling the actual service experience is a consideration. Process mapping and videography can help designers replicate the customer journey, but understanding consumer motives and expectations is more difficult. Recent studies engage designers and consumers in co-creating service "performances" in video documentaries, diaries, and storyboards. These strategies go beyond market research on consumer preferences. It is difficult for people to imagine experiences that do not yet exist. Under performative research techniques, designers design *with* rather than *for* people.

Challenges for designers

Design faces challenges in framing and measuring innovation. In most companies, perceptions of innovation "success" mirror the performance of more established products and services. Innovation is evaluated in short time frames—in public companies, often on a quarterly basis—against metrics set by products and services with established histories.

Designers must craft new stories of success without losing sight of innovation objectives. Territoriality also pervades innovation activities, raising questions of where they live within a company and who takes credit for them. Designers must be resigned to success without credit, doing the right things

1. Lave, J. and Wenger, E. (1991). *Situated Learning: Legitimate Peripheral Participation*. New York, NY: Cambridge University Press.

without expectations of reward. They must also be prepared to take a candid look when something doesn't work and appreciate engagement with company management as an opportunity to learn from leaders in other fields.

Competencies:

College student competencies:

- **Students should describe primary business operations, stakeholders, and the functional relationships among them in bringing messages, products, and/or services to the public.** They should describe the role of design as part of a value chain and justify design decisions in terms of internal and external organizational factors. Student assignments should reflect concern for how various operations interact (branding and service, for example).

- **Students should conduct research to determine a range of relevant user characteristics and experiences for the development of messages, products, environments, and services.** They should engage in simple user-centered research methods to inform design decisions and justify design solutions in terms of findings. They should identify the value added by design and design research to traditional marketing strategies, especially in terms of the qualitative experiences of users.

- **Students should analyze the components of a marketing plan for clarity in describing the organization, its decision-making structure, its values, its position in the marketplace, users for its products and services, short- and long-term goals, strategies and technological platforms for reaching users, and measures and methods for monitoring results.**

- **Students should construct a workflow plan that identifies tasks, time, and resources for the completion of a project.** They should be accountable for managing project milestones and deliverables, including the quality of interim reports on progress and the assignment of tasks to group members. Students should be prepared for truncated time frames in presentations.

- **Students should collaborate in teams using specific techniques for leadership, communication, and negotiation.** Students should run teams and critique leadership outcomes. They should learn how to "read a room" in presenting to audiences of diverse stakeholders and adjust performance in recognition of criticism. Faculty should provide feedback on collaboration, facilitation, and leadership performance in the evaluation of overall group success.

- **Students should analyze the internal and external roles of technology in business.** Students should understand the difference between a platform and an application, the use of technology as a research tool, and the need for the integration of technology with a variety of business operations.

Professional continuing education should address:

- Reimagining and generating new business models that focus on the value added by design to user experiences;
- Using new research tools to identify the emotional aspects and core meanings of user experiences;
- Identifying economic forces and financial tools that shape business strategy; and
- Leading foresighting activities and strategic conversations in business.

Resources

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