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"Design Thinking as a Process to Find Relevance" from The Entrepreneur's Intellectual Property & Business Handbook

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Design Thinking as a Process to Find Relevance

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This article is part of a series of book excerpts from [The Entrepreneur's Intellectual Property & Business Handbook](#), which provides the business, strategy, and legal reference guide for start-ups and small businesses.

1. *Elements of Design Thinking.*

Tim Brown, president and CEO of IDEO, utilized the term “design thinking” to capture a number of themes implied by the social relevance discussion of Chapter 4 and the stressors outlined by Peter Drucker. Brown emphasized a “human-centered, creative, iterative, and practical approach”¹ which incorporated design at all stages of the creation process rather than relegating it to the end of a stepped process of concept, specification, pricing, and prototyping.

The design thinking approach emphasizes the importance of social relevance to creative problem solving. The relevance to the consumer comes from an emotional appeal as much as from an objective need. The delight comes from the surprise that an unknown or unarticulated problem has been solved with the new product, process, or service. Solving business challenges with these goals in mind necessarily changes the way the entrepreneur treats the process and the outcomes the entrepreneur will achieve. As Brown explains:

- **Great design satisfies both our needs and our desires**—Often the emotional connection to a product or an image is what engages us in the first place. Time and again we see successful products that were not necessarily the first to market but were the first to appeal to us emotionally *and* functionally. In other words, they do the job and we love them. The iPod was not the first MP3 player, but it was the first to be delightful. Target’s products appeal emotionally through design and functionally through price—simultaneously. ...
- **Taking a Systems View**—Many of the world’s most successful brands create breakthrough ideas that are inspired by a deep understanding of consumers’ lives and use the principles of design to innovate and build value. Sometimes innovation has to account for vast differences in cultural and socioeconomic conditions. In such cases design thinking can suggest creative alternatives. ...
- **Take a human-centered approach**—Along with business and technology considerations, innovation should factor in human behavior, needs, and preferences. Human-centered design thinking—especially when it includes research based on direct

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¹ Tim Brown, *Design Thinking*, HARV. BUS. REV., June 2008, at 85, 92. *See also* HERBERT A. SIMON, THE SCIENCES OF THE ARTIFICIAL 138 (3d. ed. 1996) (recognized for his seminal work that established the design thinking study) (“in large part, the proper study of mankind is the science of design, not only as the professional component of a technical education but as a core discipline for every liberally educated person”).

observation—will capture unexpected insights and produce innovation that more precisely reflects what consumers want. ...²

Design thinking is more than merely incorporating aesthetic design as part of initial stages rather than as the end product. Brown's first step is inspiration, which can be understood to be an illustration of using Peter Drucker's stressors, Clayton Christensen's disruptions, and C.K. Prahalad's cultural disparities as motivation to make a better mousetrap.

The second step, described more fully in the next section, calls for ideation, or the team-inspired, laterally approached, narrative-inspired process of collecting, sorting, evaluating, prioritizing, and testing potential solutions to the challenge. The project team will invariably iterate between inspiration and ideation as proposals are conceived, challenged, discarded, and recycled.

Finally, in the third step, the best ideas will be prototyped and implemented, either on a trial basis or in the marketplace. The three steps (or "spaces" as Brown describes them) are fully distinct. Each of those processes will inform the other two. And so on. "Projects will loop back through these spaces—particularly the first two—more than once as ideas are refined and new directions taken."³

2. *Framing the Right Question.*

The Hasso-Plattner Institute of Design at Stanford University (d.school) emphasizes a five-stage approach to the design process. In addition to the three stages listed above, it adds a different initial stage labeled "Emphasize" and recharacterizes the second stage as Define, meaning to define the problem. Ideate remains the middle step—the heart of the process—and the final stage is separated into "Prototype" and "Test."⁴

The d.school model makes the social relevance and human-centered design approach even more explicit by making listening, observing, and engaging a formal step (to the extent anything is formal). The d.school explains its approach: "As a design thinker, the problems you are trying to solve are rarely your own—they are those of a particular group of people; in order to design for them, you must gain empathy for who they are and what is important to them."⁵

The Define step helps unpack the learning that occurred during the active engagement involved in the Empathy step by requiring the design to create a "meaningful and actionable problem statement." But the designer should be very careful at this stage because the framing of the problem will shape the relevance of the solutions. An incomplete problem will leave the underlying issues unsolved; focusing on too narrow or too biased a definition of the problem will miss the great opportunities just out of reach. Take, for example, the illustration of the IBM Selectric and the IBM PC. If anyone at IBM had defined its problem as how to stay in the early PC market without cannibalizing the mainframe market, it may have answered with the Selectric. Had the question about the programming for the Selectric been framed to be the most versatile software solution, then the ASCII-compatible would have been a natural outcome. But when the question was framed by the

² Brown, *supra* note 66, at 92.

³ *Id.*

⁴ Hasso Plattner, Institute of Design at Stanford, *An Introduction to Design Thinking Process Guide*, D.SCHOOL, <https://dschool-old.stanford.edu/sandbox/groups/designresources/wiki/36873/attachments/74b3d/ModeGuideBOOTCAMP2010L.pdf?sessionID=8af88fee76ecd1fb7879c915073461486c425622> (last visited July 12, 2018).

⁵ *Id.* at 2.

simplest software needed to run a typewriter, the 44-key programming was adopted, and an entire marketplace was conceded by IBM.

In the practice of law, this step is known as establishing “the theory of the case.” In one famous example, after nearly a century of inadequate and discriminatory education practices, then NAACP Legal Defense Fund attorney Thurgood Marshall reframed the question in *Brown v. Board of Education*. Prior to *Brown*, every discriminatory education case focused on the reality that separate schools for white and non-white children could never be equal, and therefore the “separate but equal doctrine” established by the Supreme Court in 1896 was inherently discriminatory. Only by asking the right question and demonstrating the truth of the answer was Marshall able to convince all nine justices of the Supreme Court that separate but equal was a violation of the U.S. Constitution.

The lesson from *Brown*, IBM, and countless other examples is that the framing of the question is potentially more important than the solutions presented. Solutions are tested and reassessed throughout a design process. All too often, however, the definition of the problem to be addressed is established too early in the process and not challenged again. By incorporating this step into a broader, iterative step, this risk can be mitigated.

At its best, design thinking can push entrepreneurs and designers to find “multi-dimensional solutions,” meaning solutions that resolve the immediate need, respond to the human-centered hunger for delight or social relevance, and also create a new opportunity that emerges from the solution rather than the problem.

3. Ideation.

The middle step in every design thinking process is ideation. Ideation is the team-inspired, laterally approached, narrative-inspired process of collecting, sorting, evaluating, prioritizing, and testing potential solutions to the questions that need to be addressed. Ideation brings designers and entrepreneurs to use a wide variety of problem-solving processes to find a preferred solution.

Although the process of ideation is messy and chaotic, there are elements essential throughout the activity. A number of different strategies should be used to identify the potential solutions. Although this list suggests a structured order, effective ideation processes are not necessarily benefited from using these tools in any particular order.

- **Develop a Team**—Ideation is a messy process that involves a myriad of voices. In the typical corporate setting, there are many stakeholders who care about the final solution to the framed problem. Management, finance, marketing, engineering, human resources, and logistics departments all have perspectives on challenges that might emerge if one solution is adopted over another. As noted in the discussion on disruptive innovation, other departments and divisions within a company often block proposed solutions because the solution creates a direct competitor to the sale of existing products and services.
- Effective ideation allows the process to engage a wide, representative group of stakeholders to bring their domain expertise to the table. For at-home entrepreneurs, the process can be replicated by bringing the provisional ideas and solutions to a group of outside critics and experts. If an idea goes from the mind of the inventor directly to market, it is likely that important perspective and opportunities will be missed. Genius sometimes occurs, but by definition, it is very rare.
- **Assess the Framework**—The goals of the multi-dimensional solution should be listed explicitly for the ideation team and priorities established among the various aspects of the

solution. If there are absolute parameters, those should also be made explicit. An early d.school exercise, for example, used the ideation for solving how to put a person on the moon. The survivability of the journey sets parameters and establishes speed limits for the vehicles, equipment requirements, and many other constraints. Without these constraints, the ideation process can lose focus, time, and team energy.

- **Take Stock**—Scholars studying ideation focus on a system of “convergent thinking” to determine the verifiable truth of the underlying information, accepted facts (or premises), and normative assumptions. As with the parameters, faulty assumptions and inaccurate facts can doom a product. The accuracy of the assumptions underlying the challenge must be verified. The convergent process may sometimes generate hypotheses to be tested for possible solutions, but unlike a scientific inquiry, the ideation team is not seeking a hypothesis to be proven true but a preferred solution among many alternatives.
- **Develop Tentative Strategies**—In contrast to the convergent, scientific thought process of developing testable hypotheses, the ideation team must also be able to develop any number of possible and probable solutions to the framed challenge before it. This is sometimes referred to as divergent thinking because the ideation team builds a range of possible outcomes from its set of assumptions. Most often, each tentative solution has attributes that make it preferable and other attributes that make it less desirable. That is expected; all viable solutions should be on the table. Ideation teams sometimes struggle not to hit on a quick solution rather than looking for the optimal solution.

(Note that this is not brainstorming; there are both bad ideas and stupid questions. Solutions that violate the established parameters are not helpful. While the team can revisit the parameters; it must acknowledge that step explicitly. Change the parameters and an entirely new class of solutions may emerge. Strategies to place people on the moon using teleportation are quite efficient, but they violate a parameter of physics. Such strategies will work in a film plot but not for NASA.)

In developing the tentative strategies, team members should suggest strategies that will address various aspects of the problem. Some teams prefer that all these partial solutions be gathered before they are evaluated while other processes emphasize a more sequential approach. Research from Horst Rittel reinforced another aspect of the Aristotelian or Socratic nature of ideation, that effective ideation team dynamics are “inherently argumentative,” pushing team members to challenge, reject, and reframe the recommendations.⁶ Good ideation teams are not afraid to raise hard questions and argue about the viability of proposals. Team members should respect each other and understand the domain expertise brought into the group by each member, but they should not be quiet about demanding good resolutions. Without the argument and challenge, group think, fear, and institutional hierarchy will define the outcome rather than the preferred solutions.

Successful designs both meet the desired outcomes and provide some novel insight or approach to the problem. After all, obvious solutions do not need ideation teams. There are many published models for how to think about the divergent step of developing potential solutions, ranging from simple brainstorming to more structured team exercises. For example, the team approach of “SCAMPER” asks the participants to complete thought experiments following the strategies of

⁶ Clive L. Dym et al., *Engineering Design Thinking, Teaching, and Learning*, 94 J. ENGINEERING EDUC. 103, 107 (2005).

substitute, combine, adapt, modify, put to another use, eliminate, and reverse.⁷ For any product, service or process, the ideation team can use these simple exercises to re-envision and iterate from the existing strategy to a possible solution. Each of these steps, of course, should be undertaken by each team member both from the perspective of their role on the team and with their capacity to empathize and take on the mindset of the consumer.

Another well-known approach is to shift the hypothetical starting point. In perhaps the most famous thought experiment in science, the sixteen-year-old Albert Einstein asked what he would observe if he pursued a beam of light.⁸ By starting his assumptions by moving outside his present world-view, he could imagine a different reality and therefore understand which solutions were viable and which solutions could not work. The simple thought experiment led Einstein to reject the theories of electromagnetism that had dominated science for half a century and led him to new approaches that developed into special relativity.

Ideation teams might ask themselves how their competitors would resolve the same dilemmas, attempt solutions as if from other countries, or from other industries. Organizations have many constraints in place and a simple thought exercise of asking how the solution would come from a competitor or another industry has the benefit of forcing the ideation team to make those constraints explicit. Some of those constraints may become parameters to be taken into account while others are artificial barriers that can be removed.

When looking to solve systematic challenges, design teams often use the “garden metaphor” in which the challenge is to identify the limiting resource. A garden will grow an infinite amount of food, constrained by the characteristics of the plants and space available, but further constrained by the amount of food, sunlight, and water available as well as diminished by weeds and pests. Each of these variables will cap or limit the potential of the garden. The U.S. State Department faced a similar issue when addressing concerns over the capacity of teletype machines to relay enough information during times of crisis. The solution focused on the teletype machine rather than the larger communication system. Line printers were purchased to replace the teletype machines and the output was increased by orders of magnitude. Yet the problem did not go away, since the issue was the capacity of the State Department staff to respond to the breadth and speed of crisis information. The new equipment merely highlighted the bottleneck was the ability of personnel to address the volume of data being received.⁹

In the same vein, many industries looked to the Internet as the solution to their information problems. Instead, the wealth of content on the Internet has multiplied the challenge of getting high quality, timely, accurate, and digestible information to the person in need of information. A search

⁷ See *SCAMPER: Improving Products and Services*, MINDTOOLS, https://www.mindtools.com/pages/article/newCT_02.htm (last visited July 12, 2018) (attributing SCAMPER to Bob Eberle).

⁸ Galina Weinstein, *Einstein Chases a Light Beam*, ARXIV.ORG, <https://arxiv.org/ftp/arxiv/papers/1204/1204.1833.pdf> (last visited July 12, 2018). The full quote: “After ten years of reflection such a principle resulted from a paradox upon which I had already hit at the age of sixteen: If I pursue a beam of light with a velocity c (velocity of light in a vacuum), I should observe such a beam of light as an electromagnetic field at rest though spatially oscillating. There seems to be no such thing, however, neither on the basis of experience nor according to Maxwell’s equations.”

⁹ SIMON HERBERT, *THE SCIENCE OF THE ARTIFICIAL* 143-44 (3d ed. 1996).

may result in millions of pages of information, but the searcher is highly unlikely to go more than a few pages into the search results.

Whether a team prefers brainstorming, SCAMPER, hypothetical models, garden exercises, or other systems for helping generate ideas, the goal remains to develop a multitude of possible solutions that meet the minimal needs of the framed problem. In the most formal of the ideation processes, the ideation team will explicitly capture the untested assumptions that make certain solutions effective to be sure that those assumptions can be empirically tested to the extent possible. The “known unknowns” are captured in writing.

Integrate—Invariably, the functional parameters used to define the framed problem are reduced to the narrowest problem at hand. So, it is incumbent on the ideation team to assess the proposed solutions against the environment in which the solution is to be launched. This is the “big picture” step or long-range horizon approach. Inventors who focus on this step are sometimes credited with genius foresight, but it is merely another set of parameters that every ideation team should be taking into account.

Among the questions to be asked, here are a few:

- *Is the solution sustainable?* This returns to the question of exclusivity, because if the solution can be copied by all competitors, it will not create a long-term business advantage. If the solution pushes the pricing too far, it will result in a fork in the market, losing a segment of the market. If the resources needed for the solution are limited, the business may not be able to support and supply the solution.
- *What other departments and functions in the enterprise will be impacted by this solution?* Had the IBM Selectric division realized it could solve the PC printer problem, perhaps the Selectric would have been based on ASCII text.
- *What are the logistical opportunities and limits?* Costs for shipping are based on weight, size, and shape. Making inventions fold, telescope, or unspool may dramatically change their usability and adoptability.
- *What problems does our solution create?* Amazon replaced packing popcorn with plastic bags that are much easier for disposal. Had Amazon shipped millions of tons of packing popcorn, the success of the company would have created an environmental nightmare.
- *What else can we solve?* While secondary to the parameters of the problem, multi-dimensional strategies can bring significant success. Apple changed the user experience by approaching product packaging from the perspective of jewelry stores, making the entire experience delightful. It nearly eliminated the useless instruction manuals and challenges its engineers to build products intuitive enough to be used without manuals.

Pre-Prototype Across Stakeholders and Modalities—A good ideation team focuses on how its preferred solutions work for all the stakeholders in an enterprise (or at least as many as possible) and across the design modalities. This is a simple but important checkpoint in the ideation process to assure that each potentially viable solution can be optimized for each of the different modalities the preferred solution might address.

The stakeholder modality loops back to the same approach used to build the ideation team. Different departments and divisions within an enterprise and throughout the entire supply chain from business to end consumer each have different needs from the proposed solution. The ideation should

develop a model to assess that the proposed solutions do not fail for any of the departments or divisions within the business enterprise or between the business and its supply chain to assure that the end consumer can benefit from the proposed solution.

This is not to say that every solution must be optimized for every division. In the face of disruptive challenges, old methods of operation and once-reliable products may need to be sacrificed, but those decisions should be explicit and intentional. At Apple, for example, the decision to integrate an MP3 player in the iPhone cannibalized the iPod market. The company benefited from an integrated tablet-in-a-phone concept, but the leadership understood that the trajectory of the iPod would be dramatically changed by the introduction of the iPhone. By having the stakeholders in the development process, the decision and its consequences could be understood and integrated into the business plan.

The design modalities provide a different matrix, designed to think operationally about all the human senses and experiences affected by the proposed solutions. The design modalities can be broken down into the following categories:

- *words and language*, with focus on accuracy, simplicity, reading level, and language choice;
- *static representations*, including graphics, icons, and typefaces;
- *audiovisual representations*, including sound, music, animation, and video;
- *physical objects*, including the materials, textures, scale, weight, strength, durability, and aesthetics of objects;
- *taste and smell*, when relevant, including the unintended effects on pharmaceuticals, foods, beverages, perfumes, incense, and consumer products;
- *time*, including the minimum time needed and the level of engagement for the user;
- *behavior*, including the needed and preferred actions of the user, learning curve for adoption, and accessibility; and
- *systems*, including intersection with other elements, resource demands, integration aesthetics, and integration effectiveness.

Among these many design modalities, behavior is often underestimated. Yet, if a product can capture the knowledge users have from experience with another product, such as a standardized keyboard or uniform commands in a spreadsheet, it becomes easier for those users to migrate to that competitor's product. In contrast, if a new product requires a new set of skills, it is harder for the public to switch.¹⁰ Both ease of use and ease of adoption emphasize incremental changes to products over time. Adobe products are notoriously poor in their integration, with the user often needing to learn different techniques to use tools common to software products in the same bundle. As a result, Adobe has a fraction of the market-share it could own if the company were more effective at improving its behavioral design.

¹⁰ Jon M. Garon, *Reintermediation*, 2 INT'L J. PRIV. L. 227, 234 (2009) ("Reintermediation relies upon customer affinity and behaviour of repeated reliance on a particular company to the exclusion of all other providers of that good or service. The exclusivity may have no legally enforceable parameters or it may be based on either exclusive dealing contracts or intellectual property protections.").

Assuming that the d.school design thinking five-stage model is used, prototyping is a discrete stage following ideation. Pre-prototyping, then, belongs properly in the ideation stage of the design thinking process. As noted throughout, however, these stages are non-linear and highly iterative, so this is a transitional phase before prototyping.

The pre-prototyping can be used to reduce the number of potential solutions down to the final three or four to fully prototype. The number of prototypes will vary, generally in relation to the cost in time, funds, and effort to create the prototype solution.

Taken together, these steps capture the chaos that surrounds ideation. A study on design theory summarized the goals of good ideation with these “skills often associated with good designers, namely, the ability to:

- tolerate ambiguity that shows up in viewing design as inquiry or as an iterative loop of divergent-convergent thinking;
- maintain sight of the big picture by including systems thinking and systems design;
- handle uncertainty;
- make decisions;
- think as part of a team in a social process; and
- think and communicate in the several languages of design.”¹¹

In practical terms, many successful entrepreneurs conflate these various steps into a working business model. Research strongly indicates three common attributes for ideation among technology entrepreneurs:

First, they all utilize complex and sophisticated social networks as sources of ideas and to test, refine, and validate trial ideas. Second, technology entrepreneurs exhibit extraordinary domain specificity by filtering ideas outside specific markets and technologies. Finally, they actively experiment and iterate ideas rather than engage in protracted conceptual analysis.¹²

Although this research focused on technology entrepreneurs, these same three steps are equally applicable to entrepreneurs in all fields. The ability to learn from their social networks but then focus on the particular area is essential to move from good idea to specific product. The third step is also highly practical, since it is better to build and refine than to stuck in a conceptual box, unable to take the leap into experimentation.

* * *

Sidebar—Failure and Resilience.

The three-step and five-step models of design thinking both rely heavily on iteration, prototyping, testing, and refinement. Inherent in these processes is the understanding that the first version will not be a successful product, service, or design, and that through testing and conversation, something good will come out of the initial efforts. Though designers need not use the word, these early versions are essentially “failed efforts” that help propel the process towards later success.

¹¹ Dym et al., *supra* note 71, at 104.

¹² Robert M. Gemmell, Richard J. Boland, & David A. Kolb, *The Socio-Cognitive Dynamics of Entrepreneurial Ideation*, ENTREPRENEURSHIP, THEORY, & PRACTICE, Sept. 2012 at 1260.

For new innovators, it is helpful to understand that the process of failure is an expected—if not required—interim step between concept and success. Only if the innovator is sufficiently resilient and dogmatic regarding the steps beyond the early prototypes towards the eventual success, can the process succeed.

The need for resilience and the ability to “fail forward” are both necessary skills for any business owner, but they are particularly important for entrepreneurial and innovative projects.

At the same time, many commenters often refer to resilience and the ability to fail forward as personality traits or even generational traits. Entrepreneurs are often described as resilient while millennials are often chastised for not being culturally competent to overcome setbacks and failures. This suggestion, that these are traits rather than skills, misplaces the ability to learn design thinking and to contextualize setbacks.

Certain failures cannot be overcome. For example, Blockbuster’s demise was tied to its investments in retail locations. Those locations made it highly profitable in one era and overburdened with overhead in another era. A company reliant on a patent will lose its exclusivity when the patent expires. A company built around the publicity and goodwill of its owner or of a celebrity will take a market hit if that person behaves in a criminal or immoral manner. Many, many companies fail when they run out of financing.

Many other failures are much less catastrophic but will still require the company rethink and redesign to be successful. Missing product features, excessive cost, confusing operations, and many other challenges doom products. An entrepreneur can be taught to expect these challenges and to have a plan to improve the product with each prototype or shipment. Making this strategy explicit enables the entrepreneur to be resilient and prepared to face failure. If the failures are more unexpected, then the same training will enable the entrepreneur to analogize to other forms of iterative planning and still pursue long-term success. In this way, resilience is merely a skill to be learned just like the other steps for successful business ownership and leadership.

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4. *Design Thinking’s Relationship to UX (User Experience).*

As with any discipline, there is a great deal of domain jargon, and entrepreneurship is no different. The approach focusing on UX—User Experience—can be considered a component of the broader design thinking approach developing social relevance in all product and business strategies. UX tends to be used most often in the fields of computer hardware and software. The field may have been birthed from the war between the beige square boxes that defined PCs when compared to the candy-colored Macs; the black phones and tablets of Google and Microsoft compared to the pure white devices of Apple; and the general lack of aesthetic focus by any major tech company other than Apple. As Apple grew to become the most valuable company in the world, Steve Jobs’ insistence on elegance and simplicity in design became noticeable.

Apple’s focus on design became even more famous when Samsung leapfrogged over the dozens of phone and device manufacturers by adopting a strategy of copying Apple’s proprietary design approaches. Steve Jobs’ obsession with rounded edges had resulted in both the software interface for the Mac and the shape of the iPhone. Samsung copied the patented corner design—and many other design features—to successfully reposition itself as a leader in the Android phone market. Apple won the initial lawsuit and was awarded \$1 billion (which was then reduced to \$399 million) in damages for the design patent violation, though even that result was ultimately overturned.¹³

¹³ Samsung Elecs. Co. v. Apple Inc., 137 S. Ct. 429 (2016) (Following seven years of litigation, the parties eventually settled the dispute for an undisclosed amount and ended all patent claims against each other.)

The focus of UX highlights the importance of human-centered, socially relevant design thinking and the need to delight as well as to serve. In the Basics of User Experience (UX) Design, the Interaction Design Foundation suggests that UX focuses on seven factors: “1. Useful; 2. Usable; 3. Findable; 4. Credible; 5. Desirable; 6. Accessible; and 7. Valuable.”¹⁴ Some of these factors, including useful, desirable, and valuable, have been explored throughout the book as essential for relevant product development.

As used by the Interaction Design Foundation, usable focuses on the ability of the consumer to easily understand and master the interface of the product. Early MP3 manufacturers were keen to add significant functionality in their tiny machines, rendering them utterly obtuse for the user. Apple’s iPod locked the machine to the computer, offloading most of the controls and making the user experience much simpler and more pleasurable.

As a category, findable is really a sub-species of usable. Still, since device navigation is so often a problem, focusing on the findability of functions and the organization of data and commands represents such a significant focus on the usability of these machines, it makes sense to treat this category separately.

Credibility or trustworthiness is an attribute of the user experience that generally lives outside the product and instead focuses on the communications, responsiveness, warranty, and reliability associated with a product or service. While the trustworthiness of a product or service is unrelated to its design, attributes such as durability and repairability can be incorporated into the design itself. All these factors are important to the overall user experience. Hype can destroy a good product. For example, a weight-loss product that allowed users to lose twenty pounds in a year would be a scientific breakthrough. But if the company tried to peddle it by promising the loss of twenty pounds in a month, the credibility of the product would be destroyed and few, if any, consumers would recognize it for the value it actually held.

Accessible is a UX factor that ties back in important ways to the design thinking step of empathy. All products should be designed to be integrated into existing accessibility tools and functional for the greatest percentage of the public. Designing products and services to take wheelchairs, limits on physical motion, hearing and sight impairments, and other such challenges should be foundational to product and service design. Accessibility challenges also represent stressors that create business opportunities for entrepreneurs who understand how to empathize and design to make their products uniquely relevant and beneficial to this population.

5. *The Universe is Made of Stories: Crafting and Shaping Narrative.*

Independent of the formal design thinking, a successful entrepreneur must understand the importance of empathy and actively engaging with clients and the public. When looking to develop new products, services, and processes, a company’s customer base will generally focus on what it hopes to get to iterate the product, usually at little or no cost.

The discussion the entrepreneur needs to have is with the non-customer, to find out from those not interested in a firm’s products or services what would make that firm’s competencies suddenly of interest. The customers of direct competitors will disclose useful information for modest process or product improvements, but these will not typically result in profound disruptive innovation.

¹⁴ Interaction Design Foundation, *The Basics of User Experience Design* 22, <https://tofasakademi.com/wp-content/uploads/2018/06/the-basics-of-ux-design.pdf> (last visited July 12, 2018).

The most valuable information will come from utterly disinterested individuals who had not previously considered the products or services in question. Given their lack of engagement, most of those conversations are irrelevant and the exercise is unlikely to succeed. But within the non-customer population are the members of an entrepreneur's new market. The key is not to sift through the throngs in hopes of finding one new customer. Rather, the key is to identify what would drive new populations to goods and services that can be made profitably by the entrepreneur.

Just as “the universe . . . is made of stories, not of atoms,”¹⁵ so is the world of business and commerce. The story defines the social narrative which provides the context for interactions. Social relevance prioritizes these interactions. Empathy makes them understandable.

Narrative is inherently social. As the public increasingly accepts a social narrative, the network effect consolidates the impact. The theory of social relevance predicts that a person is rewarded simply for adhering to the accepted narrative.¹⁶ “All of us are prisoners of our own socialization. The lenses through which we perceive the world are colored by our own ideology, experiences, and established management practices.”¹⁷

Culture has numerous threads, weaving narratives together. Many are surprisingly resilient to change. Education, training, media, and other tools reinforce these tropes and do little to affect them when advocates challenge particular stories or customs. The story—more than any objective truth—ultimately dominates the social narrative. The story shapes the relationships among its adherents and defines the boundaries of the shared culture.

Successful new stories have a common method for distribution and sustenance. Cultural shifts tend to come from a concerted effort of a school, group, or cult. For example, “the determining factors that influence innovation are the cognitive frames that shape what types of information are perceived relevant to the individual, and the cultural constraints that lead an individual to question if change is even possible.”¹⁸ Groups often use major events as an inflection point to highlight the shift from the old meme to the new one, though the importance of the event may grow as the story is retold.

For investors, identifying goods or business models that embody this pattern will help capture the most profound disruptive innovation. Powerful stories disintermediate preexisting relationships and reintermediate them with the new narrative and new transactional relationship. It affords opportunities for horizontal growth into new markets as the meme disrupts neighboring relationships.

Events like the TED conference and the Apple Worldwide Developers Conference are not coincidental to the growth of certain technologies and platforms. By recognizing the power of the story and the role of a shared narrative—observing the rise of schools (or cults) that cohesively advocate for a particular platform or service—investors can identify the potential authors of the next social narrative and entrepreneurs can develop solutions that reinforce that narrative.

¹⁵ F.S. MICHAELS, *MONOCULTURE: HOW ONE STORY IS CHANGING EVERYTHING* 7 (2011) (quoting poet Muriel Rukeyser) (internal quotation marks omitted).

¹⁶ PRAHALAD, *supra* note 58, at 30.

¹⁷ *Id.*

¹⁸ TODDI A. STEELMAN, *IMPLEMENTING INNOVATION: FOSTERING ENDURING CHANGE IN ENVIRONMENTAL AND NATURAL RESOURCE GOVERNANCE* 16 (2010).

If stories, not atoms, make up the universe, then today these stories are linked by social media. Social media and other new technologies have reshaped consumer behavior, empowering the audience to share, retell and even adapt the story. The many-to-many environment pushes certain stories while retelling others. For the entrepreneur, crafting a compelling, authentic narrative is an essential first step. The story must be accurate and fully understood by everyone in the company responsible for communicating that story. Once the narrative is made public, the company must be ready to support the expansion of that story throughout the social media ecosystem and equally ready to respond to harmful distortions and intentional hijackings. If the public's acceptance of a compelling narrative is the ultimate user experience, then an effective design model must incorporate the power of the storytelling into every element of the design process.

Design thinking, to be fully successful, requires the last step of understanding the story to be communicated through the design process and how that story shapes the perception of the products, services, or processes being developed. For all its prior success, Apple's simultaneous launch of the iPhone 8 and iPhone X hurt its narrative. The pricing and dual product launch became characterized as elitist rather than cool. The self-imposed scarcity that suggested public demand disappeared because the market was sated with two products at once. And the one-choice modality that created a story wherein Apple knew better than the public what it wanted was pierced because suddenly the consumer had choices. In one small business decision, many of the previously protected narratives were unintentionally undone.

While shaping the narrative could be considered as one of the design modalities, an entrepreneur is better served considering it independently. In many cases, the narrative can be crafted independently of the preferred design solution. Having a compelling narrative helping drive the design, however, will result in a more resilient market solution. Regardless of the sequence of development, the resulting product, service, or process must be communicated with the story and the story-telling process in place if the entrepreneur wishes the new product to be successful in the marketplace.