

Design at Stanford: The D.school's Daddy

S. McCarthy

University of Minnesota, USA

ABSTRACT: “Design thinking” has emerged as one of the discipline’s key movements, and is typically associated with having roots at the d.school at Stanford University. Its founder, and also the creative force behind global design company IDEO, is alumnus David Kelley, who has achieved legendary status. Prior to formation of the Hasso Plattner Institute of Design (the d.school’s formal name), however, since the 1950s design education at Stanford consisted of many lesser known, but still influential, faculty members and an innovative curriculum combining engineering and art. This paper exposes the “founding fathers” of design education at Stanford (many of whom were David Kelley’s professors), and reveals two curricular proposals that preceded the d.school.

“Design thinking” is often associated with the Hasso Plattner Institute of Design – the “d.school” – at Stanford University for its emphasis on teaching creative problem-solving methodologies and the iterative process to those from disciplines other than design. Design thinking has also been sold to the corporate world and other institutions through the consulting work of IDEO, a global design company. Both enterprises share a co-founder: David Kelley, himself a graduate of Stanford’s Joint Program in Design. (McCarthy, 2017) But what preceded Kelley’s global influence, and by association, that of Stanford in creating a fertile ground for creativity, expression, problem-solving, need finding and entrepreneurial ventures in design?

The Joint Program in Design at Stanford was founded in 1958 when faculty from mechanical engineering and art decided to collaborate on a joint graduate program in a “mercenary academic way.” (Kahn, 2009) Each department facilitated a specific pathway through the program: mechanical engineering students earned a Master of Science degree and focused on product design; art students completed a Master of Fine Arts degree and created primarily visual designs. They shared coursework, faculty and a year-long thesis experience. Thesis projects were functioning designs that were experimental, human-centered and varied. Due to Stanford’s integrated approach, it was not always clear who did their degree in which department.

Stanford design graduates went on to create Apple Computer’s early products and graphics – besides Apple co-founder Steve Jobs, US Patent D268584 for the product design of a “personal computer” has three Stanford design alumni on it, including David Kelley. Other grads went on to design the water fountain at the base of the Burj Khalifa tower, design Google and Twitter’s logos, create typefaces for Adobe, write a history of Buckminster Fuller, found and staff IDEO, patent and design the Koosh ball, serve as director of the Design Research Council at Northwestern University, and much else.

Besides the typical structures of academia – the campus resources, courses, faculty, facilities, studios, projects and so on – what was Stanford’s “secret sauce”? There were two main ingredients: one, a philosophy of “creative disobedience” as embraced by key faculty, and two, tangible environments, programs and facilities that enabled creativity, collaboration and transformation. (McCarthy, 2019)

The notion of “creative disobedience” is attributed to the legendary professor Matt Kahn, a Cranbrook-trained designer who taught in Stanford’s Department of Art from 1949 to 2009. Kahn maintained a wide creative practice, both professional and personal: interior design, graphics, photography, jewelry, fine art painting. His work was exhibited at the nation’s top venues, like the Museum of Modern Art and at the Cooper Hewitt. As a teacher he was provocative, contrarian, inspirational and challenging, and through this transformed his students. In a hand-written note to Kahn from 1977, David Kelley wrote, “You have been such an inspiration to me. You see things the rest of us never will – and say things I only wish I could. You have changed me. Thank you.” (Kelley, 1977)

Another unorthodox contributor to design education at Stanford was John Arnold, a mechanical engineering professor who was hired mid-career from the Massachusetts Institute of Technology (MIT) in 1957. He pioneered a concept called “creative engineering” – a blend of psychology, business, science fiction, invention and synthesis. Arnold used sci-fi prompts in his teaching, such as creating a fictitious planet and its inhabitants, to challenge his product design students to not take the “real world” for granted. He named Stanford’s Department of Mechanical Engineering’s “Design Division” by printing that term on letter-head (has was an amateur printer and had a press in his home basement). He was a maverick, he didn’t wait for permission.

This philosophy of creative disobedience encouraged – even demanded – risk and experimentation, personal transformation, “bias through action” (physically creating designs in a studio or machine shop) and the consideration of the user at all scales, from individuals to humanity. Stanford’s autonomous graduate student studio – “The Loft” – was the laboratory and playground for this approach. The culture at Stanford was permissive – *do anything*, just do it really well and cause no harm! Conversely, some university cultures value consensus, tradition and caution, with rules, policies and procedures that potentially circumscribe creativity.

Another stake holder to the notion of creative disobedience was mechanical engineering professor Bob McKim. His 1972 book *Experiences in Visual Thinking* was seminal in getting engineers to use sketching as an ideation tool. Thus, McKim asserted, analysis would combine with synthesis, objectivity with subjectivity, and rationality with expression in an integrated design education. (McKim, 1972) The book, which drew on perceptual psychology, neurology, semantics and art, became the bible of the program. McKim also exposed students to hallucinogens with the hope of increasing creativity, and he and other faculty became involved with the “human potential movement” as proffered by the Esalen Institute in Big Sur, California. He was also an active design consultant to technology companies in Silicon Valley.

Shockingly, neither Professor Kahn nor Professor McKim had a graduate degree (Kahn didn’t even have a bachelor’s!). Kahn finished three years at the Cranbrook Academy of Art before being hired by Stanford at age 21, while McKim earned a BS in industrial engineering from Stanford and a post-baccalaureate certificate in industrial design from the Pratt Institute in New York. Yet both men were professors, and key influencers, of David Kelley, who has gone on to be one of this generation’s design giants.

Cranbrook faculty and students in the mid-twentieth century, however, included architects and designers Eliel Saarinen, his son Eero, Charles and Ray Eames, Harry Bertoina, Florence Knoll, Marianne Strengell, Jack Lenor Larsen and many others – these giants of design were Kahn’s teachers, compatriots and the inspiration for his design practice. McKim worked for the famous industrial designer Henry Dreyfuss. Perhaps these exposures, to the practices of leading designers, were more important than graduate degrees then.

Of course, times have changed, and today, in most cases, graduate degrees represent increased knowledge and experience. A terminal degree is the typical minimum requirement for a faculty position at a research university. But graduate education is also a form of institutionalization and can limit one’s creativity to the conventional expectations of the academy. For design faculty, the very process of going through tenure is anathema to creativity – judgment by staid senior colleagues, requirements to follow established procedures and policies, and pressure to conform to the institution’s culture run counter to risky, innovative, truly creative behaviors. To this pressure, add today’s campus milieu: an epidemic of mental health

issues, student hyper-sensitivity, an unfortunate focus on identity politics, stringent financial limits, a bloated corporatist and bureaucratic approach to the “business” of education, and an uninspiring work environment. It is hardly surprising that some faculty and students come nowhere near their creative potential.

Another potential limitation is the traditional scholar’s purely academic training – “book smarts” instead of “street smarts.” Stanford professor David Kelley asks of this breed of faculty: “are they a designer or designologist?” (David Kelley conversation with author, June 9, 2016) Designers have applied creative experience making things for users; designologists merely study and write about design processes, artifacts and systems. While professional experiences are not the sole determinant in making designers superior faculty over designologists, the expanded experiential toolkit that comes from working in the field adds to the person’s ability to solve problems creatively, to think laterally, and, it gives them professional credibility. Working materially in a studio (with a medium, tool, process, craft, etc.) gives the designer as professor additional haptic knowledge and enables them to better teach those methods to students. This is not to say that professional practice is necessarily intellectually enlightening; an engaged creative production of self-initiated, speculative works of critical design can also be a legitimate form of scholarly inquiry.

The faculty and interdisciplinary collaboration mentioned above helps provide context for Stanford’s association with design thinking and doing today. Few are aware of Stanford’s successful Joint Program in Design formula, that art + engineering = design. Many are aware of the popularity of Stanford’s “d.school” but only in a superficial way (for example, it is not one of Stanford’s seven official schools but a poke at the Graduate School of Business, the “b.school;” the d.school does not grant degrees, and did not even offer for-credit classes until 2017).

The d.school was founded by professors David Kelley and Bernie Roth in 2005 with a \$35,000,000 gift from German industrialist Hasso Plattner. It is primarily a project-based connective tissue to students from all corners of campus. Students coalesce around topics, problems or opportunities in small, agile teams that are led by faculty facilitators. In this context, they are introduced to “design thinking”: empathetic need-finding, brain-storming and conceptualizing, deferring judgment, sketching and visualizing, the iterative process, prototyping, user testing, refining and being entrepreneurial. Some teams’ projects advance to attracting venture capital or to manufacturing and marketing.

After starting out in a trailer, the d.school is now housed in a new facility that is just off of Stanford’s iconic quadrangle that was designed in the 1880s by the eminent landscape architect Frederick Law Olmstead. It is around the corner from the graduate studio, the Loft, and the Product Realization Lab. The exposed sandstone walls, black I-beams, glass ceiling, and red stairs and bannister envelope a modular and informal workspace. In one area, a 1950 Chevrolet panel van serves as d.school-branded mascot and mini-lounge, with its interior turned into a carpeted room with throw pillows. Post-It notes festoon its windows. A black and white banner with a John Cage quote hangs in the d.school atrium: “Nothing is a mistake. There’s no win and no fail. There’s only make.” The places buzzes with creative energy.

Prior to the founding of the d.school in 2005, two competing curricular proposals were advanced. In 1999, mechanical engineering professor and director of the product design program Rolf Faste advocated for creating a college-level School of Design that would include engineering, art, architecture, human factors, cultural anthropology and psychology “as applied to design.” (Faste, 1999) A devotee of Eastern philosophies and pioneer of a concept he called “Zenengineering,” Faste sought to create a school that valued balance and “ambidextrous thinking”: “The School of Design would value form as much as content. Thus concerns of aesthetics, symbiotics, [sic] etc. would be as important as utility.” (Faste, 1999) It was an ambitious proposal that was not implemented, yet it opened the conversation about the future of design education at Stanford.

Professor Larry Leifer’s research unit, the Center for Design Research’s Design Theory and Methodology group, created a degree proposal titled “Comprehensive Design Engineering” (CDE) in 2003. It was admittedly influenced by Kelley’s ideas related to design thinking; plus, the term “comprehensive design” harks back to John Arnold’s concept of the creative engineer

in the 1950s. The CDE curriculum proposal drew less from Stanford's longstanding engineering and art relationship, and more from the intersection of business, technology and human issues.

The Comprehensive Design Engineering plan borrowed from corporate hierarchy to equate bachelors students with being apprentices, masters students as mentors, and doctoral students as leaders. The apprentice would equate with being a "Designer, Engineer," the mentor with being a "Manager," and the leader with serving as "Educator, CTO [Chief Technical Officer], Entrepreneur." (Cockayne & Feland, 2003) Yet these types of pyramid-like organizational structures can be at odds with creative learning environments. Stanford mechanical engineering professor Jim Adams sums up this condition well in his book *Conceptual Blockbusting*: "The natural tendency of organizations to routinize, decrease uncertainty, increase predictability, and centralize functions and controls is certainly at odds with creativity, and conceptual blocks can abound." (Adams, 1974, p. 143)

For educational institutions anywhere to effectively use design thinking – both in teaching and in faculty research and creative production – they should encourage *creative disobedience*, evolve thinking into making through *bias towards action* (or "demo or die," the slogan attributed to the Media Lab at MIT), and balance its faculty *designologists* with *designers* – because hierarchy, inaction and theory alone will not do. Stanford's success in achieving renown through the d.school was predicated on decades of its faculty, curricula, facilities and students as engaged in world-influencing product and visual design.

Kelley's vision – as articulated in an email sent from his @ideo.com address (Kelley, 2002) – for establishing an institute that would emphasize design thinking across disciplines – was realized as the Hasso Plattner Institute of Design at Stanford University. Elements of Faste's and Liefer's curricular proposals influenced the d.school, directly and indirectly, through ideation and framing. The "founding fathers" (to borrow a cliché) of design education at Stanford from the 1950s forward – professors Matt Kahn, John Arnold and Bob McKim – must be acknowledged too.

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