21. Innovation

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Definition and Background

Derived from a Latin verb meaning "changed" or "renewed," ***innovation*** is an intentional break from established practice that addresses a problem in a novel or unexpected way. As a process for finding creative solutions to ***wicked problems***, design thinking is often presented as a replicable method to achieve innovative results. Innovation can be positive for individuals, communities, and the environment by increasing quality of life and improving efficiency, but there is also a more troubling sense of innovation that foregrounds rapid deployment of new technologies without considering individual lived experiences and communities. We should keep both senses in mind as we work to foster constructive design thinking and positive innovation.

A great example of positive innovation is the curb cut, or the little ramps built into curbs at intersections (99 Percent Invisible, 2021). Curb cuts address the challenge of sudden elevation changes in the built environment by breaking with traditional curb design through removing material from curbs to create gentle inclines at regular intervals that afford increased mobility. This design intervention supports disabled individuals as well as other people, such as those riding bikes, pushing strollers, or making deliveries using hand trucks. Curb cuts solve the real problems of a diverse community of users, and they do so not through the addition of some new technology but rather through the modification and maintenance of existing infrastructure (Chachra, 2015).

Products described as innovative, however, do not always share such positive qualities. Lately, innovation has become a buzzword, eliciting vague visions of new technologies and streamlined processes without accounting for the impact of technological changes on the lives of users (Zhexembayeva, 2020). Matthew Wisnioski (2015) argued that the sense of innovation primarily as delivery of a new and financially lucrative technology product arose in part from a cadre of industrialists, technologists, and policymakers who launched a networking organization called The Innovation Group in 1969. The group produced a magazine called *Innovation*, boasting a subscription price that placed it among the most expensive periodicals of the time, which "chronicled with gusto how a select few could achieve astonishing levels of creative and financial success" (qtd. in Wisnioski, 2015, p. 61). Targeted toward technologists, who were predominantly White and male, the magazine offered interviews and articles that painted a picture of the innovator as a man who leveraged social and technological change and

took creative risks to achieve financial success. This kind of innovation centers the development and marketing of new technology products, especially digital products that "disrupt" existing practices or even entire industries.

As a result, a tension exists between innovation as an outcome of creative and thoughtful design practice and innovation as a buzzword reflecting Silicon Valley cynicism, a tendency to "move fast and break things," driven by financial gain and a cursory (at best) consideration of how technologies actually impact people and communities (Taneja, 2019). We would do well to keep in mind that what counts as innovation always lies at the intersection of what is understood as a worthwhile problem to solve, what constitutes a valuable solution, and who derives value from a particular solution. These ethical and political dimensions of innovation should inform how we approach design. To foster positive innovation, we should adopt design frameworks that focus on people and communities and challenge assumptions about new technologies and marketability.

▉ Design Implications

The design methods that we use are critical to developing an ethical and reflexive approach to innovation that seeks to realize changes to existing systems that will deliver real benefit to users. To address the assumptions inherent in any design process, design firms like IDEO (2015) champion human-centered design. Human-centered design is one approach to design thinking that seeks to address the ethical and political aspects of innovation by involving individuals and communities throughout the design process. Through methods that emphasize interaction with potential users, such as structured interviews, open conversations, and immersive participation in common activities, human-centered design establishes *empathy* as the cornerstone of an effective design process. By building empathy through research, designers can realize positive innovations that empower members of a community.

Similar to human-centered design, technical and professional communication research in *participatory design* suggests that innovative solutions should reflect social and cultural context and incorporate "the tacit knowledge developed and used by those who work with technologies" (Spinuzzi, 2005, p. 165). Participatory design reimagines design as research that combines the tacit knowledge of individuals and communities with the analytic and theoretical knowledge of experts through cooperative work. Here again, positive innovation emerges as the collaborative realization of shared community concerns, values, desires, and dreams.

Outside of such a critical and constructive approach, innovation quickly regresses toward technical gimmicks, where the term might describe something like the Juicero, the $400 juicer produced by a Silicon Valley startup that did little more than squeeze a juice box into a glass. Evgeny Morozov (2013) critiqued this kind of innovation as technological solutionism, which he defined as "an intellectual pathology that recognizes problems as problems based on just one

criterion: whether they are 'solvable' with a nice and clean technological solution at our disposal." For Morozov, solutionism encompassed not only banal consumer products but also trite, one-off solutions to **wicked problems**, such as global warming, that fail to appreciate the social and technological complexity of these kinds of design challenges.

Human-centered design, participatory design, and related methods and methodologies help to avoid solutionism. These frameworks broaden design practice to include diverse individuals and stakeholders in order to help ensure that the value realized by a solution accrues to all members of a community. Using a process-based approach, designers seeking positive innovation form diverse cross-functional teams, brainstorm together, work with participants from relevant communities through **contextual inquiry**, complete **rapid prototypes** and **testing**, and practice **iteration** as they move through the different stages of their projects. In these moments, a design team can learn where the value lies in a given solution, who is included, and who is potentially left out. This design mindset can be developed in the technical and professional writing classroom.

■ Pedagogical Integration

To teach positive innovation strategies, instructors can assign problem-based, long-term group projects using a student-centered course structure. Projects should center on communities outside of the classroom rather than specific deliverables, and assignments should help students engage collaboratively with design thinking methods, ethical commitments, and community contexts. Early project phases should involve students working within their communities using **contextual inquiry** to build **empathy** with potential users. Rather than go into a project with a fixed idea of the solution, students should practice **problem definition** based on their insights from contextual research and use **rapid prototyping** and **testing** to validate that their solution works for users.

Problem-based projects that students address through design thinking and **iteration**, however, can be challenging to implement. Students will need appropriate scaffolding and daily activities as they determine potential communities to work with, identify relevant sites for contextual inquiry, and develop and test their solutions. This is a great opportunity to practice working in technical genres such as memos, proposals, and progress reports. But because work outside of the classroom is unpredictable, each phase of these projects also presents the possibility of failure.

Failing is common in design work. Embracing failure and understanding it as a learning opportunity can help us recognize areas where we do not completely understand the community where we are working and can lead us toward more productive solutions to consider. In the classroom, cultivating a mindset accepting of failure requires not only developing allowances in assessment but also contending with a broader academic culture where failure is simply not tolerated.

Accommodating failure requires flexibility so that students who put a great deal of effort into a project that does not work out are not penalized. For example, this could include modifying assignment sequences if a research site falls through or changing a deliverable from a report to a reflective "postmortem" for a prototype evaluation session that did not go as planned. In addition, emphasizing the design process rather than specific products can be beneficial given that products may not work out and may need to be changed during a real-world design project.

Practices to document the design process include writing or drawing on Post-it notes during **ideation**, affinity diagramming, wireframing, **rapid prototyping**, and the Visible Thinking Tools developed by Harvard's Project Zero (2017). Working in different modalities, such as handwriting rather than typing, sketching, or creating 3D models, can help to promote different ways of approaching a given topic while at the same time generating design thinking artifacts that trace the history of a project. Journaling throughout the design process helps to surface insights that may otherwise be forgotten and to consolidate new information. All of these resources can also be used to gain insight into a design group's work and overall progress (and factored into assessment).

Taken together, practices focused on process not only support pragmatic considerations like documentation and assessment but also encourage regular collaboration, introspection, and reflection. Throughout their design work and reflections, students can practice design methods, develop their own design thinking process, and build a human-centered theory of innovation.

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