Faculty of Design

2014

Wicked design 101: Teaching to the complexity of our times

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Teaching to the complexity of our times

Design is increasingly involved in the discourse around so-called "wicked" problems – either because we are complicit in their creation or drawn to the complexity of design opportunity that surrounds them. These are the Lernaean Hydrae of design challenges – for every tangible facet of the problem we address an increasingly complex web of both tangible and intangible problems grows in its place. The potential contexts of design action within these wicked problems are dynamic, characterized by complex interdependencies, and difficult to identify.

But these are the opportunities of our times - ones that exist outside the clean confines of disciplinary design understanding. They are the experiences that exist in the interstitial spaces between disciplines and in larger domains such as healthcare, education, government, food systems, social welfare, urbanism, and climate change. These problems manifest not as isolated designed experiences but as social, human and environmental systemic realities that define our place in history as well as the futures we will inherit

The expansion– and in some cases, dissolution – of traditional design disciplines, the wide adoption of sustainability as a base standard for contemporary design, and the increased visibility of service design and social innovation as growing fields of practice suggest that indeed the culture of design recognizes the inherent systems-orientation of our field(s). Yet a design education grounded by systems thinking is far from typical. This paper calls for a systems approach to design as the most basic of pedagogical objectives in the design academy, making a case for the need, the historical legacy and the methods of systems-oriented design education.

The imperative of systems-oriented design education

A shift from object-oriented pedagogy towards a systems-based approach to design education is not only suggested by today's complexity of economic, information, human, material and natural flows, but essential if design practice to remain relevant as a 21st century practice. Just as design movements of the past leveraged the political, economic and technological opportunities of the time, so must today's designers. And as a politically entangled, economically bound and technologically connected global community, we must use the complexity we are born into as an opportunity to make historic change that was not possible in decades before ours. We must begin to orient our understandings away from objects and toward systems.

 This imperative is seen through the lens of four basic assertions about the intrinsic relation of contemporary design practice to systems thinking.

Assertion #1: One cannot design *sustainably* outside the space of systems.

The mere acknowledgement of sustainability as a necessary requisite of design intervention is a recognition of the systemic, scaled and long-term impacts that our actions have. Designing with so-called green materials alone is not a practice of sustainability. We cannot sustain the environment

without sustaining the *society* – in order to do this design must nurture systems that promote healthy economics, social welfare, and natural resources.

Assertion #2: One cannot design *empathically* outside the space of systems.

Empathy in design is not a new concept, but much like the challenge of true sustainability true empathy cannot be achieved without a shift in our ways of understanding our connectedness to each other and the other actants that occupy our planet and contribute to our experiences thereon. Only if we understand, care about and leverage our connectedness to these other characters in life's narrative will we truly be able to design for a better future for the many.

Assertion #3:: One cannot *innovate* outside the space of systems.

Design that has the capacity to change us – as individuals, communities, organizations, economies, and ecosystems – behaves in the space of systems. This is clearly the case in the practice of social innovation, where a smart, well-meaning and capable team with a lack of systems understanding leads to cases of so-called design imperialism. But it is also true of material innovation, business innovation and civic innovation. True innovation does not happen in a myopic frame of reference, it happens when we zoom out, understand the flows, the actants, the impacts, and the intents – and then change the assumptions under which those systems are functioning. This how everything from the iPod which transformed how hardware, software and commerce overlap, to the sharing economy which values service over ownership, become transformational cultural interventions.

Assertion #4: One cannot teach design *for this century* outside of the space of systems.

Design has always responded to and shaped systems at various scales. Systems of building, manufacture, distribution, communication, status, commerce, and power are all embodied in the work we look at as most historically relevant. The 20th century proved that design's influence and impact –for better and for worse – could be scaled dramatically. Design movements migrated from one continent to another, design aesthetics became adopted internationally, individual designers gained a larger geographic footprint, and designed products were extracted, assembled, distributed and disposed of across a global network. These flows were tied to politics, technology, and commerce at unprecedented scales of influence and impact.

Today, we are more dependent on complex systems than ever before —systems of communication, production, of distribution, and of identity. While industrial times called for more material and process-oriented interventions to help achieve the goals of geographically defined industrial societies, our post-industrial realities are systemic, scaled and complex.

To ignore this complexity in the design academy would be akin to teaching design in the early 1900s without an understanding or recognition of the machine age.

We need to move away from the objects of design as our focus and focus on the objectives of design action within social, environmental and social systems.

Methods of a systems-oriented design education

There is a clear disconnect between the scale of impact that designers are typically taught to accept responsibility for and the scale of impact that design work truly has. The disconnect stems from a myopic belief that the objects of design are the objective of design actions. It is time for design education to reframe the fundamental purpose of design.

Designers create experiences. Through those experiences, we frame participation within systems. Through participation, we enable futures.

When we recast the objects of design (buildings, products, garments, interfaces, etc.) as supporting actors in the grander narrative of design transformation, we see that though necessary tools to shape experiences, the objects of design are not the results of design action. The outcomes are the experiences we create in order enable the preferred futures towards which we are working.

How do we work toward collective and preferred futures in a complex world?

Scalar Thinking: questions of intervention and impact

Scalar thinking is not a new concept in design. *Powers Of Ten: A Film Dealing with the Relative Size of Things in the Universe and the Effect of Adding Another Zero* by Charles and Ray Eames (1977) – was a powerful and intellectually accessible lesson of how we exist at different scales. This seminal introduction to scalar thinking is often used in design school to show how things are *represented* at different scales. But the lesson that can also easily be gleaned is that there is a powerful interconnectedness between the knowledge communities that work at each of these scales, and the problems that result from not being able to shift from one scale to the other.

The more wicked the problem, the more important it becomes understand and design for interventions and impacts at various scales. By mapping the relationship of intervention to impact, we can teach designers to best identify the opportunities and vehicles for change within a complex system.

Fig 1: Scalar Framework : Change/Intervention

Design for systems experience

Systems-oriented design is often mistaken as the antithesis of empathic design: a way of looking at complexity as a network diagram. However, when we neglect to think in systems, and to draw the boundary of systems as far-reaching as possible, we miss the opportunity to consider the various experience that make 21st century problems so wicked. By understanding systems as complex webs

of causal relationships that create experiences for the actants in that system, opportunities for change become more tangible and impactful.

Fig 2: Mural depicting neighborhood children who have been killed by vehicular traffic in Brooklyn, NY

Futuring as a foundational design skill

In order to reverse what Tony Fry refers to as the "de-futuring behaviors" that designers increasingly engage and promote through their work, the capacity of futuring must begin to take root in the context of design education. Designers have long used future scenarios as ways to respond to current trends or to offer visions of what could be, but futuring and speculative design can also serve as tools for critical discovery, strategic design, prototyping, experience and service design. *Speculative design* should not be presented to emerging designers as a niche design practice, but as a necessary skill for producing sustainable and relevant design.
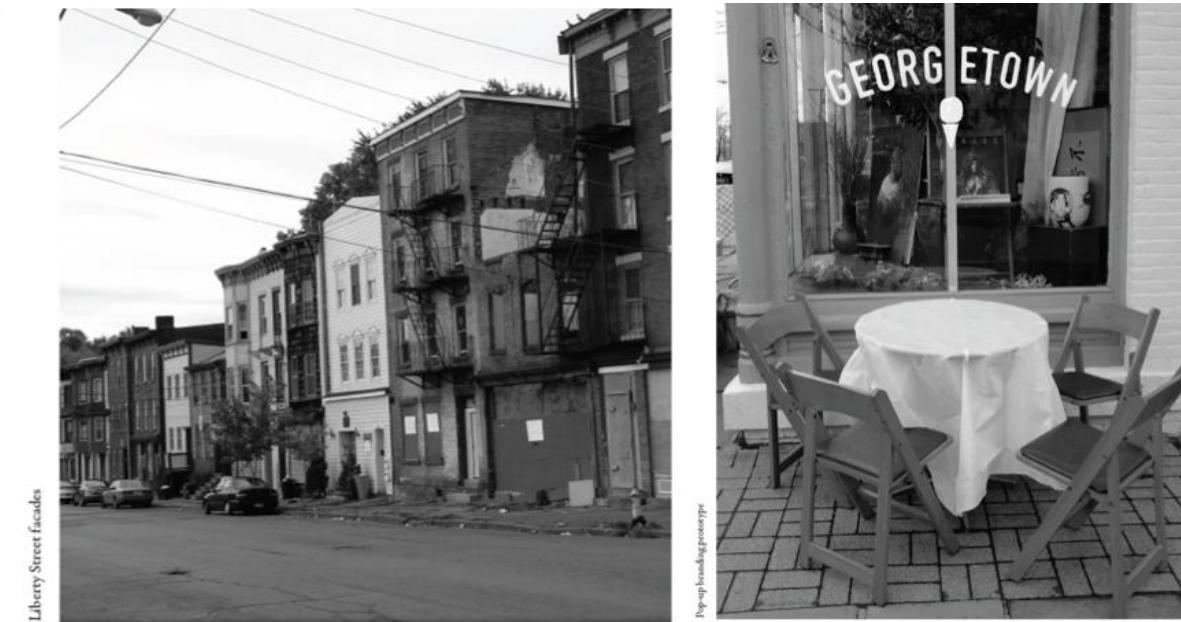
from **The Newburgh Project** Amanda Greenough, Michale Varona, Sean Baker; MFA Transdisciplinary Thesis Project 2014. The Newburgh Project used futuring as a prototyping strategy to envision and experience strategic and locally-driven economic development.

Objective over Object

As long as educators value the supporting objects in the design narrative above the fundamental purpose that those objects serve, we will produce generations of designers that are ill equipped to meaningfully contribute to a truly sustainable future. By foregrounding scalar thinking, futuring, and design for systems experience as fundamental transdisciplinary design capacities that leverage the disciplinary tools we employ to answer design challenges, we enable 21st century designers to engage 21st century problems.

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