Using Rural Innovation Principles for University Renaissance

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For the past 30 years, rural development scholars and practitioners have lamented the huge, unrealized potential of a university-enabled rural renaissance. Cooperative Extension was often center-stage during these conversations. However, this is too limiting, especially when Cooperative Extension is compartmentalized as a distinct component of the university mission, often suffers from disciplinary divisions, and is consistently downsized (McDowell, 2001). More importantly, the full range of higher education's capabilities must be part of the solution, especially the research enterprise and the education of students—undergraduate and graduate students alike—who aspire to work on such an important but complex issue as a rural renaissance.

> To state the case as succinctly as possible: We are convinced that unless our institutions respond to the challenges and opportunities before them they risk being consigned to a sort of academic Jurassic Park—of great historic interest, fascinating places to visit, but increasingly irrelevant in a world that has passed them by. —*Kellogg Presidents' Commission 1996*

The current challenges facing higher education may create a fortuitous opening for mobilizing higher education's resources in support of a rural renaissance. There was a time when it was publicly acceptable for higher education to simply keep classes filled and for the silos of disciplinary-based and curiosity-driven science to address narrowly defined or "tame problems." Today, much more is expected from higher education. Society now demands dynamic, warp-speed application of pragmatic, applied knowledge to attack "wicked problems" and to produce graduates who are innovative, comfortable, and adept at working in such a dynamic environment.

What is a Wicked Problem?

Wicked problems are problems 1) that cannot be adequately understood until after a solution to the problem is formulated, 2) characterized by stakeholders having widely different perspectives regarding the very nature of the problem, and 3) whose solutions do not emerge from a straightforward progression but are characterized by failed or aborted attempts that provide opportunities for learning and reorienting interests (Rittel and Webber, 1973).

Obviously a huge shift in the disciplinary-driven culture underpinning most of higher education, especially within major research universities, will be needed. Although the openness and willingness to experiment with a different or parallel approach may exist, it is difficult to do so without a concrete focus.

We argue that a rural renaissance can be thought of as such a focal point in that (a) it represents a wicked problem; and (b) the intellectual pathway or framework for addressing this particular problem already exists, namely, design thinking. By moving forward successfully on this basis, the result will be a convincing "proof of concept" that higher education can, indeed, produce the creative and innovative graduates that the new millennium requires and, simultaneously, help resolve wicked problems. This may help avoid

the amusement park scenario alluded to in the opening quote.

What is Design Thinking?

Leading design schools and innovation exemplars such as Apple, Proctor & Gamble, and the IDEO design consultancy have identified three distinct pillars of design thinking (Luma Institute, 2014):

1) Looking and listening better;

2) Methods for analyzing challenges before you; and

3) Making—envisioning—future possibilities.

At first glance, these pillars are so general as to appear unremarkable. However, reflection reveals that conventional modes of thinking in science and education are heavily dominated by pillar 2. Of course, there are exceptions. For example, two recent winners of the Nobel Prize in Economics (Elinor Ostrom and Daniel Kahneman) place a huge emphasis on pillar 1. Pillar 3 is typically thought of as pure speculation.

"Design thinking starts with divergence, the deliberate attempt to expand the range of options rather than narrow them." (Brown, 2009) However, as a pragmatic discipline, it must eventually winnow unproductive options and must willingly embrace constraints. It is the switching between divergent and convergent thinking through the stages of the design process, and the freedom to revert to earlier stages as new discoveries warrant, that characterizes the entire process, a process of holistic rather than compartmentalized thinking.

Within higher education, this approach has been largely limited to professional education tracks in design and, to some extent, in business administration programs. However, design thinking has been successfully demonstrated in educational settings other than higher education, including K-12, often to stunning effect.

This suggests wider applicability is feasible, but it is still curiously limited to date. Previous calls by rural development scholars for a rural renaissance have implicitly appealed to a way of thinking that comports with design thinking.

Design Thinking vis-à-vis Wicked Problems and Innovation

Although design thinking may—or may not—be the framework needed to address ALL wicked problems, it does make immeasurable sense in many cases, including in the case when a rural renaissance is cast as a wicked problem. Batie (2008) makes the case that wicked problems are becoming more prevalent and prominent, that other disciplines are finding ways to tackle such problems, and that applied economics—as a field that exists to inform decision-making—risks irrelevancy if it fails to bring its insights to this multidisciplinary table. Batie (2008) goes on to place wicked problems within the juxtaposition of normal and post-normal science: in contrast to objective truth (read "normal science"), "wicked problems always occur in a social context…with no unique 'correct' view" where "identification of solutions becomes as much a social and political process as it is a scientific endeavor." Engagement, which is deemed essential in post-normal science, has no precursor in normal science. However, design thinking involves more than engagement and should not be thought of as simply an extension of post-normal science. Post-normal science does not specifically include the step of envisioning a better future and the innovative thinking associated with "learning by building" or "learning by making." In essence, design thinking needs to be thought of as complementing both the science and post-science cultures with a third culture that is much more likely to lead to innovation and inroads in resolving wicked problems.

The act of creating something that did not exist reveals the very nature of most any design problem, including a rural renaissance. Prototypes point to aspects of the problem that were unknown or poorly understood. There is likely to be disagreement over the requisite and desired capabilities, purposes, and uses of the newly created thing. The purported "finalized" design may substantively alter the stakeholders' interests and desires. Since designers have been struggling with these problems for centuries it would follow that they may have developed some protocols that are useful to a variety of fields, including applied economics, that need to come together to focus on rural and regional innovation. Learning by building provides a means for exploring the "adjacent possible." The "adjacent possible" is a key concept best described as "a kind of shadow future, hovering on the edges of the present state of things, a map of all the ways in which the present can reinvent itself." (Johnson, 2010.) Whether referring to the chemical and biological evolution surrounding the origins of life as originally conceived by Stuart Kauffman, or referring to technological or cultural innovation, exploring the adjacent possible is the source of all innovation. Exploration requires divergent thinking or consideration of alternatives that currently do not exist. This contrasts with the default mode of convergent thinking or the selection of the best available option. If universities are to produce literate innovators who break out of the default mode of thinking to explore the adjacent possible, then these methods must be far more widely taught, not merely used by design students.

Design Thinking vis-à-vis a Rural Renaissance

The two most dominant ways of thinking within the university begin from a grounding in either the natural world (scientific thinking) or

human experience (humanistic thinking). In the modern university, each has its own set of norms and values. The primary values in the sciences are "objectivity, rationality, neutrality, and a concern for 'truth'" and in the humanities "subjectivity, imagination, commitment, and a concern for 'justice.'" (Cross, 2006.)

Rural development practice has a much closer affinity to the primary values of design: "practicality, ingenuity, empathy, and a concern for 'appropriateness'" (Cross, 2006.) Indeed, these very elements are embedded or implied in the following statement by Pulver (1997, pp. 111-112), arguably rural development's most celebrated scholar:

"[R]ural policy must exhibit five critical characteristics. *Targeted*… properly address unique concerns found in diverse rural situations… *Flexible*… accomodat[ing] continuing changes in production technology and national and global economic structures …*Accountable*… produc[ing] real results with no overlap or fiscal waste…*Sustainable*… provid[ing] a positive rate of change in the quality of life of both rural and urban people…to be maintained indefinitely…[and] *Politically supportable*…fit[ted] within the framework of a set of broad national, state or local goals (Castle, 1993)."

When aligned against the deepest crises of our nation's most challenged rural areas, these tasks appear nearly impossible. These challenges include the tension between developing enhanced human and social capital, while simultaneously slowing or reversing depopulation; investing in the critical infrastructure necessary for increasing economic opportunity but which is inert as a stand-alone for promoting development; and maintaining a critical mass for the efficient provision of public services despite the concentration of sectors characterized by rapid labor-saving productivity increases. An honest assessment of these compounding challenges makes it clear there are no silver bullets and no universal paths to progress. Instead, the rich diversity of rural contexts and regional aspirations suggest a multifaceted array of design problems best suited to practitioners operating in specific, particular locales.

Herbert Simon's (1969) simple definition of design—devising courses of action aimed at changing current situations into preferred ones—evidences that rural development scholars have struggled tirelessly with a design problem.

Design Thinking in Rural Practice

One of the most concrete demonstrations of design thinking transforming both educational experience and community action needed for a rural renaissance comes from the poorest county in North Carolina (Pilloton, 2012). Bertie County, in the eastern part of the state, has a dispersed population of 20,000 and more buildings vacant or in disrepair than in use on the county seat's main street. Yet a strategy to align education experience and community action to improve a struggling public education system incorporated numerous design perspectives. Design for education focused specifically on improving the learning environment within the school grounds. Design as education reinvented the traditional shop class, enabling students to learn design thinking along with construction and fabrication, skills to satisfy a real community need.

A shop class became the equivalent of a design studio and was set up as a one-year curriculum for high school juniors. Fall and spring semesters were spent applying the three pillars of design thinking to a particular problem. This included ethnographic research and need finding exercises to develop students' abilities for looking and listening better, brainstorming and design visualization methods for analyzing the problem, and prototyping for envisioning the possibilities of the proposed structure. Students were offered jobs in the summer as part of the construction crew that would bring their design to fruition. Projects completed or proposed include an open-air farmers market, bus shelters for the school system, and home improvements for the elderly.

Design proved to be an inspired vehicle for education and design-imbued education, in turn, proved to be an inspired vehicle for community development. Most fundamentally, the process resulted in progress that was real and visible. And while "small wins" may be seen as crucial for sustaining momentum of an effort over time, the small win here was foundational: instilling a sense of self-efficacy in the community that now recognized youth as the critical resource for imagining a better future.

Design Thinking in Rural Innovation

The Bertie County enterprise married design-infused learning experiences and community action to enrich and enhance both. We are not suggesting this one example offers universal applicability of any kind. But an example such as this offers insight regarding the university's adjacent possible. University initiatives such as Minnesota's Center for Rural Design and Auburn's Rural Studio provide concrete examples of design thinking applied to rural problems in the built environment. Engagement, problem-solving, and knowledge creation by these initiatives illuminate how design thinking might be explicitly incorporated into a rural and regional innovation venue.

In fact, we would argue that some of the most innovative adjacent possible thinking, acting, and evaluating are occurring within the space historically known as rural development, now more commonly referred to as rural and regional innovation. This

innovation, while much more difficult in a rural setting, is also more necessary and, therefore, more aspirational, generative, and exploratory than analogues in an urban setting.

For example, place-based, asset-based, and arts and culture centered innovations are flourishing across today's rural landscape, as is growing interest in new ways of thinking about entrepreneurship development. New considerations of security, resiliency, and equity within these frameworks are forging new approaches to our understanding and assessment methods regarding rural and regional wealth and prosperity. This is what defines the practice of rural and regional innovation. Innovation is not merely about technology; rather, it is about a change in human behavior.

Mainstreaming the principles of design thinking in university education does not necessitate the building or making of physical things. The "things" of interest are not farmers markets or bus shelters but constructs, ideas, potentialities, or emergent phenomena. This means the cultural shift of applying design thinking in a more deliberate fashion to rural and regional innovation will require new tools for learning by building. The tools of "generative social science" represent such an approach of linking design thinking to the array of possibilities associated with a rural renaissance, especially in the digital age. Such tools are often dismissed by "normal science" as too subjective to provide reliable predictions (Epstein, 2006). But that misses the point in that the goal is not prediction but a deeper understanding.

When design thinking is combined with generative social science it becomes much easier to open up and integrate the traditional social science silos and also link them to other areas of study. The ability for rapid prototyping encourages consideration of alternatives, does not privilege one alternative over others,

and thus provides a powerful tool for interdisciplinary learning by building. This prescription will not seem radical to current and future students who become interested in learning about rural and regional innovation because they are likely to be adherents of *Minecraft, Simcity* or other role-playing or simulation digital games. For this generation of students, the proposition is quite simple. For example, if you want to understand the economy or a "new rural," build it!

The Missing Legacy: Innovation

Innovation is not merely about technology. It is about a change in human behavior. As policymakers and rural development practitioners have embraced regional innovation as a central component of their work, the field is mirroring the innovative systems thinking that also needs to become reflected in the university's engagement with this wicked problem.

The historical terms of reference of the university—to expand scientific knowledge and humanistic understanding—do not present a very hospitable environment for assimilating design thinking. But to remain relevant in the 21st century those terms may need to be expanded to include tackling society's wicked problems and producing graduates with the skills needed for exploring the adjacent possible. And, university-based rural development scholars, especially extension personnel, have a demonstrated affinity for this mode of thinking. After all, the pragmatic terms of reference of Cooperative Extension—to aid constituents in finding solutions to local problems—have reinforced practices that comport with design thinking.

Community assessment, community economic analysis, strategic planning, and community visioning have their parallels in the three pillars of design thinking. The cross-fertilization of ideas from fields that emphasize the processes of origination,

such as architecture and industrial design, has already begun (Thorbeck, 2012). The wicked problem of fostering a rural renaissance can provide an enviable proof of concept for the broader application of design thinking within higher education. And the quip that "rural innovation" is an oxymoron bolsters the demonstration: if the university can help promote innovation there, it can surely help promote innovation anywhere. But an even more difficult challenge may be the willingness of higher education to first engage in its own institutional innovation. Failure to do so means we are now 18 years closer to the Jurassic Park scenario envisioned by the Kellogg President's Commission in 1996.

For More Information

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