

## From Fountain to Firehose

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As scholars working within disciplines, we ascribe to certain theories, assumptions, and tools that position us within an intellectual community. As scholars working within fields, we focus our inquiry on specific interactions between the natural world and elements of human endeavor.

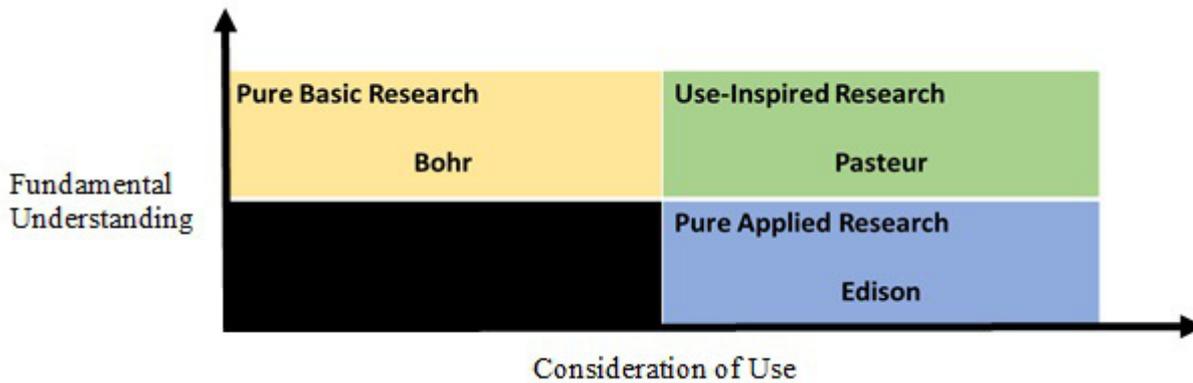
Being situated within these two spheres – as translational ecologists and other translational scientists are – carries with it certain tensions that can be challenging to navigate: Ultimately, who constitutes our target audience? How do we balance contribution to discipline through the development of theory with contribution to the field through recommendations for practice? Perhaps most importantly, how do we maximize our impact?

To some extent, these tensions reflect the historic differentiation between basic and applied research framed by Vannevar Bush in *Science, The Endless Frontier* (1945). Traditionally, these forms of scholarship are viewed along a continuum with the implicit assumption that work toward one end of the spectrum inherently moves it farther from the other. However, a decade ago, Donald Stokes reframed this perspective in his book, *Pasteur's Quadrant* (1997). In it, he argued that relevance for theory and relevance for practical application were not mutually exclusive and, in fact, served as independent dimensions that could coexist. Thus, the traditional one-dimensional framing was more accurately and productively framed in two dimensions.

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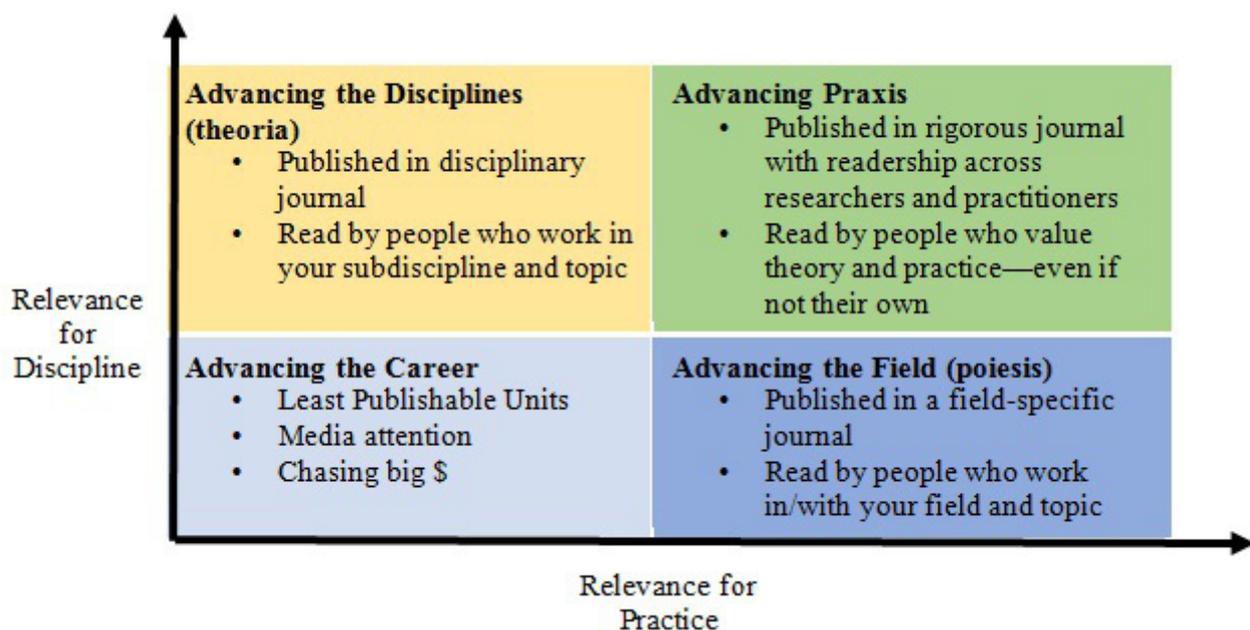
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He labeled three of the quadrants with iconic scholars of each genre: Bohr, the atomic physicist; Edison, the inventor; and Pasteur, whose work contributed fundamentally to both theory and application (use-inspired basic research). Stokes argues convincingly that all are important but that contributing to both theoretical and applied realms offers the most value. Further, this value translates to impact in policy terms through government support for use-inspired research targeting priority issues.

It may be through a similar lens that translational ecology can reconcile the tensions of work valued by discipline and work valued by field to establish a stronger identity as a scholarly community and maximize the direct impact of our work. Rather than framing research through understanding and use, we might conceptualize translational ecology along the axes of relevance to discipline and field, respectively.

Aristotle suggested that the basic activities of humankind could be described as *theoria* (developing theory [i.e., discipline]), *poiesis* (developing technology [i.e., field]), and *praxis* (developing practice [through the integration of *theoria* and *poiesis*]). Using these labels, we might consider the optimal balance of engagement in translational ecology as *praxis*:



Here, I am not advocating for only operating within one quadrant—the professional pressures and personal efforts that drive individuals’ research are often too broad for such a narrow pursuit. Rather, I suggest that translational ecologists weight the prioritization of their work and community value toward praxis.

Engaging praxis suggests that we target bigger, more complex problems that impact human lives and policy in our work. To do so with impact, we may need to move away from traditional disciplinary and scholarly production models. Typically in academe, the practice of scholarship can be represented through the metaphor of a fountain: As we publish, we launch individual droplets of knowledge into a particular line of inquiry that exists in parallel to many others.



The aesthetic is elegant, but to what end? I suggest that a central tenet of translational ecology is that knowledge does not equate to impact. To facilitate praxis, the practice of scholarship may need to take on a different form that imbues our work with great impact. Consider as an alternative, this metaphor:



As metaphorical firefighters, scholarship takes on a diverse team structure, where the scholarly droplets are no longer simply moving in parallel, but instead converge in a very focused way to accomplish an impact of shared value.

What might a transition from fountain to firehose look like in the context of translational ecology? It might entail courses or modules that span disciplines and degree programs to provide common points of focus and skills for bringing specializations to bear in a collaborative way. It might also entail deeper structural partnerships within and across academic and non-academic institutions, such that students and faculty engage as a matter of practice with the diverse group of stakeholders who contribute to and interact with ecological systems of broad impact, spanning research, communication, and management responsibilities.

### **References:**

Bush, V. (1945). *Science, the Endless Frontier: A Report to the President*. OCLC 1594001, U.S. Government Printing Office: Washington, DC, USA.

Stokes, C. (1997). *Pasteur's Quadrant: Basic Science and Technological Innovation*. Brookings Institution Press: Washington, DC, USA.

**Biography:** *David Feldon is an associate professor of Instructional Technology and Learning Sciences and director of the STE2M (Science, Technology, Engineering, Education, Mathematics) Center at Utah State University. His research examines the development of expertise and research skills within STEM disciplines as a function of instruction and other educational support mechanisms. He also conducts some research into technology-facilitated instructional approaches and research methods for examining them. He was a member of the Translational Ecology pursuit funded by the US National Socio-Environmental Synthesis Center (SESYNC).*

### **Associated Project:**

[Translational Ecology: A Pedagogical Framework to Integrate Natural & Social Sciences](#) [2]

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**Source URL:** <https://www.sesync.org/from-fountain-to-firehose>

### **Links**

[1] <https://i2insights.org/2016/07/12/from-fountain-to-firehose/>

[2] <https://www.sesync.org/project/pursuit/translational-ecology>