Unpacking the construction of epistemological monocultures is key to understanding the barriers individuals face as they travel to new knowledge production communities. As sociotechnical communities grow and develop, they naturally create their own ways of speaking and interacting with each other. These technosocial shorthands are visible in Cohn ("It's a boy") and Nafus ("flame wars[1]") and a key contribution to the technosocial monoculture. The monoculture is a boundary work organism that grows as new concepts are introduced, and it purifies and accepts them or rejects them and fortifies its boundaries.

Gieryn's conception of boundary work is central to exploring the epistemological monoculture that is present in Cohn and explicitly named in Nafus. Gieryn presents boundary work as ideological battles in which the weapons that both sides use are ever-evolving and context-sensitive.

In Victorian England, John Tyndall helped to draw boundaries around science to distinguish it from religion and mechanics. According to Tyndall, the aspects of science that make it scientific include its empirical nature, skepticism, objectivity and practical usefulness. In contrast to religion, says Tyndall, science is *useful* (Gieryn, 785). In a different battle, Tyndall described another picture of science's intrinsic science-ness: science is knowledge that is grounded in experimentation, valuing discovery for its own sake. Science doesn't have to worry about being *useful*, he says, it has nobler concerns (Gieryn, 787).

Tyndall's contradictory descriptions of science and scientific knowledge give great weight to Gieryn's argument that even as we try to draw boundaries around "science" there is actually no objective science to which we can point. Science itself is conceptualized as a monolithic ideological concept that we can skew and manipulate for our ideological and rhetorical (and political, and strategic…) goals.

The uses and results of boundary work are not only ideological. Gieryn identifies real-world purposes of boundary making - and these are the boundaries that are evident in expansion of a field of study, monopolization of knowledge creation, protection of research autonomy, creation of scapegoats. Part of boundary making involves creating a technically-knowledgeable elite separate from the general population. This separation means that only those with adequate training can evaluate technical claims - there is no need to poll an uneducated populace to see if a claim is scientifically valid. By virtue of being a scientist doing work in a boundaried area, the scientist's claim is given respect and is thus unchallengeable by non-scientists. As a result, scientific knowledge makers are insulated from public interrogation and from the impacts and implications of their knowledge.

The boundaries between which workers performed development tasks and which workers performed "support" tasks like documentation or QA was divided almost perfectly along gender lines. However, the women were hesitant to "acknowledge the materially obvious ways in which their participation had been socially shaped" (Nafus, 676).

A key concept (Gieryn) is that science carries its own intellectual authority.

This is consistent with nafus and Cohn. In Nafus, code has agency and "technology [has] its own moral imperative." Discussing projects, engineers talk about how "code runs," as though the code itself can choose to do so and they "grant code its own agency" (Nafus,

[1] Flame wars are battles fought, typically on message boards, over a contested issue. They are aggressive and designed to end in the complete surrender and apology of one side.

678). The defense intellectuals also use language as a manifestation of agency/positionality when "the speakers technostrategic language are positionally allowed, even forced, to escape" the idea of themselves as victims of nuclear war.

Code produces "transformative knowledge of self" in the same way that technotrategic language use produces a great sense of agency.

All speakers of the defense language are unified by their transformed sense of agency and their positionality as the only ones who can control the bombs. Similarly, FL/OSS programmers are unified by their control of code and ability to produce technological artifacts.

In this paper, I explore the variegated boundaries that we create - between disciplines (Gieryn), between fields of expertise (Cohn) and between participants (Nafus) - and the myriad ways that we use them for power, control and clarification.

Gieryn argues that language is used to create shifting disciplinary boundaries depending on the circumstance. Boundary-making is a key part of discipline identity and is the work that divides astrology from astronomy. However, in Cohn, the role of language in boundary work serves as an ingroup boundary. If you are able to speak the language of the defense intellectual, then you are able to engage in meaningful (to them) ways. So it is in open source (DEFINE OSS) software (OSS) and this is part of what Nafus argues in "'Patches don't have gender:' What is not open in open source software."

Nafus includes a three important concepts that I want to explore using the ideas presented in Cohn and Gieryn. First "epistemological pluralism" accounts for the myriad of ways that one can solve a problem. This is in contrast to the language of the defense experts who were inflexible about the way their subject was discussed.

Second, "epistemological intolerance" includes Gieryn's boundary work and the way that we exclude concepts and practices to create certainty in an uncertain or evolving discipline. It also invokes the myth of the "meritocracy" so rampant in OSS and which Nafus renames the "pushyocracy."

Third, an "epistemological monoculture" reinforces boundaries and, paradoxically, is a way to create an "open culture" by purifying what counts as valid and open contributions. In many ways, this serves as a unifying concept between Gieryn and Cohn. Both illustrate a way that a container is fortified by purification and distillation of it's contents; the resulting monoculture stands in direct contrast to anything claiming to belong inside.

In open source, Nafus argues that language is also used to draw boundaries between those who "can take it" and those who cannot. This is inherent in Cohn's analysis of defense language - if you can't handle the sexual overtones, then you're not serious enough to be a part of the conversation. Similarly, if you can't handle the issue queue flame wars, you're not serious enough to be an open source programmer.

Nafus, Gieryn and Cohn all describe methods and results of boundary-makings. The implications are different for each, but I see commonality in motivations and justifications. In sociotechnical contexts, speaking the language is, on one hand, an indicator of technical skill and on the other hand, a way to exclude newcomers. Being able to use technical terms

to describe how to roll a patch[2] can signal your technical competence to those around you and can exclude novices from the conversation.

I believe that thinking about open source politics and barriers as a form of boundary making will help draw them out of background activity- bringing attention to the actions that many participants take for granted as how things are done. When we are consciously aware of boundary-making activities (as Gieryn asserts we are), we can alter them as our needs for power, control and clarification evolve.

Cohn, C. (1987). Sex and Death in the Rational World of Defense Intellectuals. *Signs*, *12*(4), 687–718.

Gieryn, Thomas F. (1983). Boundary-Work and the Demarcation of Science from Non-Science: Strains and Interests in Professional Ideologies of Scientists. *American Sociological Review*, *48*(6), 781–795.

Nafus, D. (2012). "Patches don't have gender": What is not open in open source software. *New Media & Society*, *14*(4), 669–683. https://doi.org/10.1177/1461444811422887

[2] To "roll a patch" is to prepare a text file that will be applied to a file containing code. It "patches" a hole in the code file.