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Bait and Switch: When a Fight about Fish is Actually a Fight about Ontology

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The Kickapoo River watershed in southwestern Wisconsin hosts one of the most popular salmonid fisheries in the United States, with over 400 km of designated trout waters driving the economy in this otherwise rural, under-resourced region. Because of an abundance of coldwater streams driven by groundwater, across what's known as the wider Driftless Area, this hilly, naturally lake-less corner of the Midwest is cited as one of the last best hopes for protecting native brook trout—a species of conservation concern—at the western edge of their range in the face of increasing water temperatures associated with climate change. At the same time, climate change is also driving an unprecedented increase in precipitation and subsequent flooding in the region, complicating efforts to protect brook trout and restore area streams, while pushing local municipalities and organizations to their limits as they work towards adaptation in floodplain communities.

A central node in these ongoing discussions about how to "restore" streams in this biophysically and socially volatile context is the role of streamside—or "riparian"—vegetation. The intensity of ongoing debates in the region about grassed vs. woody riparian areas—and the roles they might play in regulating stream temperature into a warming future in the context of the increasing precarity of native brook trout—drove me and my long-time collaborator, hydrologist Eric Booth, to start investigating this issue back in 2017, when we heard that participants had nearly come to blows at a regional stream management conference when a fisheries biologist from the Wisconsin Department of Natural Resources suggested that local managers needed to stop removing streamside trees—a standard practice in restoration projects across the region—and instead embrace wooded streams to have any hope of protecting brook trout into the future.

After beginning research interviews with regional managers in early 2018, we learned that yes, this debate was highly polarized and highly contested. And so we kept interviewing, and kept asking—more on that in a few minutes—while doing what any good hydrologist partnered with a rhetorician with a masters in stream ecology would do: we reviewed the scientific literature. And it turns out this debate seems fueled, in part, by the lack of a definitive answer in the literature about the impacts of grassy vs. woody riparian vegetation on stream temperature. What the scientific literature does seem to show is that because wooded reaches are shadier, these trees block solar radiation, which offers protection from increasing stream temperatures. But treed reaches on small and medium sized streams also tend to be wider than grassy streams, with more surface area to potentially absorb radiation in spaces without tree cover, making them warmer. And shade isn't the only issue here. Treed stream reaches, because they're wider, move water through them more slowly. This slowness offers more time for water to heat in place.

I want to extend that work here, recognizing that this is not a freshwater science conference, and focusing—mostly—on why this is interesting *rhetorically*. My work is informed by perspectives from rhetorical new materialisms—and if you saw my presentation yesterday you know that for certain—but my work also leans heavily on critical physical geography, an integrative field that insists, as my collaborator Rebecca Lave and her colleagues (2014) have written, "socio-biophysical landscapes are as much the product of unequal power relations, histories of colonialism, and racial and gender disparities as they are of hydrology, ecology, and climate change." Critical physical geography, as they described, emphasizes, "the careful integrative work necessary to render this co-production legible" (Lave et al., 2014, p. 2-3). And so, my work on this issue of brook trout conservation, streamside vegetation, and public debate builds from my attention to discourse, and relationality, and power, and also from careful attention to the biogeochemical landscape in question.

Now clearly, I don't have a huge amount of time here to get into a thick description of the Driftless Area, broadly, or the Kickapoo River watershed, in particular. Or to get into the weeds of our methodological approach, which integrates qualitative interviews and Q-method surveys, with long-term in-stream temperature monitoring, field-based and drone-based surveys of geomorphic change in flooded and restored streams, and hydrologic and hydraulic modeling of the flood impacts of various land use changes and reach-scale restoration efforts. So I'll focus here just on the interviews that we've been conducting—and many repeat interviews—with 25 stream restoration managers across the region over the last five years.

And certainly, those interviewees aligned on two sides of this grass v. trees debate, with a variety of consistent evidence to support each view.

The folks who said that **trees are bad and grass is better** tended to point to a few key reasons. They pointed to the prairie history of the region, suggesting that trees are not the appropriate historical referent. They argued that trees cause and worsen erosion. And these folks pointed to the capacity for grasses, unlike trees, to stabilize banks, create overhanging cover for large trout, and support pasture based agricultural systems.

On the other side of the debate, some managers expressed their **support for treed vegetation along streambanks**. These managers pointed to a variety of supporting claims, the idea that tree-lined banks: support various life stages of salmonids, not just mature brown trout, offer more physical habitat diversity for all fish, create roughness that slows down floods, trap sediment that has eroded upstream, offer bank stability, and create shade in the face of warming stream channels.

But our interviews also suggested that there was **more at play here**.

Some of the pro-grass folks let on that pressure from the fishing community—a community focused primarily on introduced brown trout, not brook trout—drove some of their decision-making about removing riparian trees.

As one federal-level manager detailed:

> "Regardless of what discoveries are made in terms of the original ecological site description, you must compete against people's aesthetic values of what a stream should look like, and people who wanna fish it and kind of enjoy that element of it. It's not compatible with trees and brush, you know. So yeah, they just want the babbling brook that you can see, you know. And I mean everyone can understand that, right?" (Federal 2)

And this move didn't go overlooked by folks on the other side of the debate. At least one consultant expressed frustration that if other stream managers are prioritizing brown trout and trout angler access, they should just come clean and say so. Criticizing Trout Unlimited project managers, this consultant claimed:

> "Their management is not based on good science, so the - this grass versus trees thing is just, like nonsense, I think… And I would like to see that kind of shot down. I don't care if they still wanna do prairie projects, that's fine. But don't -

> don't say things like trees cause erosion and stuff like that kinda nonsense… It's really easy for people, for laypeople, I think, to go out and see a tree falling in and say that, you know, trees are causing the erosion. 'Look at that.' You could just as easily say that trout stream fishermen are causing the erosion, 'cause I see them on streams all the time." (Consultant 1)

Others **questioned the foundations of the pro-grass claims**, reminding us that the Driftless tended to feature a mosaic of prairie alongside forested patches. As one state-level manager noted:

> "That open-meadow condition and - and there's a set of folks that would argue that's the natural community pre-settlement condition. I would say that's hokum. When I go to pre-settlement and I look at 1837, uh, where the surveyors intersected the valley floors. Many of these valley floors were forested. Yes, those south facing slopes were goat prairies and there was a lot of oak savannas but they weren't in the valley floors."

Importantly, and he was not alone in this, he suggested this past reference condition shouldn't set the terms of how to manage into the future:

> "What does it really matter today what pre-settlement is? The question is -- what should it be in the future? There's very little pre-settlement conditions that exist anywhere anymore in the Driftless and so we would ask the question -- it's good to know what pre-settlement was but that doesn't mean we're gonna manage towards it anymore." (State 3)

And finally, while not deterministic, this same manager emphasized the importance of understanding past change for addressing the future:

> "You get all this sediment that's being deposited in the valley floor and what do you do with that? Do you let that stream re-meander through thousands of years to try and create this new floodplain or what do you do? That's the question because, you know, in the end we may be slowing that process down, by trout habitat work, actually of reconnecting these streams to their floodplains." (State 3)

In short, what seemed like a debate between grass vs. trees—an attempt to determine the best approach to warming stream channels to protect a sensitive trout species in a warming climate—seemed to actually be about all of these other things! Erosion, in-stream habitat, access, bank stabilization, historic references, future goals, time.

So what to make of all this?

Well, after mulling it over for five years, I want to argue that this intense debate about brook trout conservation—and about the grass or trees on which the conservation of brook trout presumably depends—serves as a proxy debate. Jennifer Malkowski defined "proxy debate" as "a rhetorical process wherein overt public attention paid to distinct individuals and/or particular issues within situated contexts creates and conveys meaning about larger, nebulous social concerns." In that same text, she suggests that "proxy debate" is "a public argument strategy whereby the language of one issue or topic stands in for and distracts from other, recurrent system-level problems" (Malkowski, 2014). And that attention to the idea of a "proxy debate" can turn our attention to "gridlocks and standstills," to arguments engaged "strategically, suggestively, and sometimes distractingly," and arguments that are used to speak about "other anxieties more generally."

Now, Malkowski leveraged the term to talk about vaccine hesitancy, but I want to pick up the term here to consider the ways that grass vs. trees, and their reliance on tropes of brook trout conservation—belie competing ontologies of stream stability, impermanence, and time. In other words, I argue this grass vs. trees debate is not really about brook trout conservation. And it's not really even about grass vs. trees! And it's only partly about the competing perspectives that managers fight about like stream temperature, erosion, access, habitat, historical referents, and channel roughness. Instead, I want to argue here that these points of evidential leverage for championing various positions about the conservation of brook trout in the region—and the grass or trees upon which that conservation might depend—stand in as metonyms for the (in)stability of structures, sediments, perspectives, and landscapes: tangible manifestations of much more intangible and deep-seated anxieties about some central concerns: whether the scalar focus of restoration ought to be the reach or the watershed; whether the temporal focus of restoration ought to be past, present, or future; and whether stream channels should be static or dynamic. In essence, they are about very competing ideas of what a stream is and ought to be.

And I want to suggest that a huge amount of what's happening here is a result of settler colonialism—more on that in a minute—and can be explained with some attention to metonymy. And, to be clear, I think that understanding metonymy is actually centrally important for understanding how proxy debate actually works.

Now, as many of you probably know, metonymy is a common trope or figure of speech that relies on "reference to something or someone by naming one of its attributes" (*Silva Rhetoricae*). Unlike its close relative, synecdoche, in which the whole is represented by one of its parts (e.g. referring to someone's car as their "wheels"), metonymy relies on close association (e.g. referring to journalists as "the press"). Metonymy, like synecdoche, is a subset of metaphor, and, as such, its two components are what I.A. Richards (1936) identified as the "tenor"—the concept being represented—and the "vehicle"—the figurative language doing the representing. The tenors, in the previous examples, are the car and the journalists, while the vehicles are, respectively, wheels and the press. Metonymy, like other forms of metaphor, are powerful because they are capable of crystallizing or simplifying larger, more complex concepts (tenors) down to more evocative, efficient figurative terms (vehicles). Given their usefulness and power, it's no surprise that they pervade our language.

In terms of our discussion here, Kenneth Burke (1941) classically argued that science itself is the work of metonymy, in which the scientific method serves as a mechanism for reducing a phenomenal effect—the result observed in the world—to a material cause—the conditions that prompted it, as Oren Abeles, Jordynn Jack, and Sarah Singer have detailed (Abeles, et al., 2020). Viewed through this lens, the hydrologic cycle, gravity, and the laws of motion are vehicles that serve to make a relational coupling between phenomenal effect and material world. It should come as no surprise, then, that in stream restoration debates about grass vs. trees, "grass" and "trees" might serve as the vehicles—the useful, figurative simplifications—for more complex tenors, specifically calls to the known science on the issue.

And they do work this way!

But I want to argue here that there is a double metonymy at work, where appeals to grass and trees are vehicles for arguments about "the science," and also and importantly serve as stand-ins for arguments about much deeper, more nuanced anxieties about the freshwater worlds in question.

Here I turn to Scott Graham, who, in *The Politics of Pain Medicine*, highlighted that metonymy creates particular relationships between vehicle and tenor that are "the result of a reference to the larger whole of the ontology or emergent metaphysics" (p. 129). If, as Graham (2015) argued, "a metonymy reduces an intangible idea to the perspective of a tangible one" (p. 130), then virulent debates about grass vs. trees are seemingly simple, certainly tangible manifestations of much more intangible and deep-seated anxieties about whether stream channels should be static or dynamic, whether the temporal focus

of restoration ought to be past, present, or future, and how we can collectively coexist with other-than-human species into an increasingly uncertain future. Grass vs. trees stands in for ontological forms of difference that stream managers have not even begun to attempt to reconcile.

This double metonymy—the tendency for grass and trees to stand in for more complex concepts like deformability and movement, but also and especially for complex and fraught oppositional systems of values—is, I want to argue, at the heart of this proxy debate. Firmly held perspectives about grass vs. trees are weaponized in a default to "objective" science in place of "subjective" values. And that move serves as a detour around the complexity of the disturbed fluvial landscape as well as a detour around the complexity of competing sets of values and modes of temporality.

I know I'm almost at time, so I want to close by pointing to the most central, most important deflection at play in these debates about brook trout conservation, that are actually debates about grass and trees, that are actually debates about all the kinds of other things. See, the thing is, they are actually highly choreographed deflections from the central issue: settler colonialism. Ways of dancing around the settler colonial drivers of climate change, of course, as well as deflections from the settler introduction of German brown trout into the U.S. Midwest to support a more financially viable fishery, introduced brown trout that displaced native brook trout and co-created them as a cause for concern in the first place. But even more directly, highly choreographed deflections from the walls of sediment literally staring Driftless stream managers in the face. Walls of sediment 10 and even 12 feet deep that blanket valley floors through the region, prompted by farmers from Ohio and Germany and Norway farming the hell out of Driftless hills.

Yes, climate change-induced flooding is the present and future of these precarious streams, and of the precarious brook trout that they diminishingly host, but it is the past that largely prompted this precarity. A past without reconciliation. An invading past.

And it is that past—and the ways it shapes ontologies of stability, temporality, and disturbance that will need to be reconciled.