Discipline is a Verb

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> "No ...project of the Bank exhibits self-sustained and high performance comparable to [the *subak* system of] Bali." —Asian Development Bank

Until it became an inflection point in anthropologist J. Stephen Lansing's critique of the modern project, this quote was buried in the archives of an otherwise routine project report.[1] Behind this simple admission, lies several decades of intense scientific efforts collectively known as "The Green Revolution," several years of widespread crop failure, and the re-discovery of remarkably sophisticated indigenous ecological symbiosis in continuous operation since at least the 11th century.

The subak water temples are a ubiquitous feature of the Balinese landscape. Wherever water enters a rice field we find a subak shrine that can consist of little more than a small shelf wrapped in cloth supported on a single bamboo pole stuck into the soft mud. More elaborate shrines are made of carved stone. Tracing a water flow uphill towards its source, larger shrines mark each branching of canals in the extensive irrigation network. At the very top of the subak network is the largest water temple Pura Batur marking the source of water feeding the thousands of rice fields downstream. Regardless of size or materiality, each temple and shrine supports a busy calendar of rituals and offerings to the gods who ensure the flow of water, protection against pestilence, and uninterrupted abundance.

In the 1970s, the scientific breakthroughs of the Green Revolution used new strains of rice, new fertilizers, and new cultivation methods to eliminate food scarcity and deliver entire societies out of food scarcity and poverty. To build enthusiasm for a more scientific approach to rice cultivation, the Indonesian government sponsored a competition in Bali with rewards going to farmers producing the most rice per hectare. Individual farmers were implored to plant, water and harvest rice according to their own needs on the premise the key to increased productivity of the whole was maximizing the productivity of each individual farm plot. As in other nations where Green Revolution methods were introduced, the first two years brought promising increases in rice yields. But the following growing seasons were unexpectedly lackluster. In response, the team of international experts prescribed more fertilizers, fungicides, and pesticides. Instead of improving the situation, yields plummeted for the next three years. The new methods brought unprecedented water shortages, plant stress, and rising soil infertility. Whole villages faced financial ruin.

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[1] "Bali Irrigation Project in Indonesia," PE-241, L-352-INO (1988), 50; as cited in John Stephen Lansing, *Priests and Programmers: Technologies of Power in the Engineered Landscape of Bali* (Princeton: Princeton University Press, 2007), Kindle location 1910.

The crisis brought a new urgency to the offerings made at the *subak* shrines in each rice field. *Subak* ceremonies in water temples at important branching points sent representatives up the system all the way to the Lake Batur temple. The priests gathered in these *subak* meetings were charged with safe-guarding the operation of the larger system and representing the needs of the communities that appointed them. They convened with a new awareness of the *subak* imperative to restore a balance between the whole and its individual parts. For over a thousand years, the consistent enforcement of *subak* arrangements had prevented any comparable large-scale test of the system. In the absence of any prior major disruption, no one participating in the *subak* system had a sufficient understanding of its workings to defend them against foreign scientific approaches. The Balinese Head of Irrigation, who grew up planting rice and adhering to the *subak* rituals, confessed that he really had no idea what it was.[2] To him, trained in the agricultural sciences, the scientific basis of the socio-religious practices of his own village life was invisible. How is it that it took a near total interruption of these remarkably resilient arrangements to demonstrate the importance of the *subak* socio-religious practices in sustaining a delicate balance among the interconnected rice fields?

Seeing Indigenous Knowledge

Scholarship on the historiography of Java and Bali note a confounding tolerance for multiple parallel accounts.[3] Outsiders attempting to answer even the simplest questions come away frustrated by conflicting stories. Far from being accidental, instead scholars have identified these slippery constructs as self-conscious strategies for forging continuity across even the most dramatic ruptures. The imperative to deny rupture is associated with Balinese and Javanese genius for producing syncretic cultural formations. These characteristic attributes are noteworthy in so far as they contrast, and come into frequent conflict with, the traditions of European academic practices grounded in an Enlightenment rationality. But this conflict is more common in foreign visitors than the Balinese themselves. As Bali rises through the ranks of top global tourism destinations, visitors simultaneously lament the imminent loss of a unique cultural treasure and express gratitude that they were among the last to witness it first hand.[4] But generation after generation of European visitors have sounded the same alarm bells of imminent loss. Through it all, the Balinese persist. The first bicycles on Bali were made Balinese in the same way cars, computers, and smart phones have been since: each day someone places an offering on the bicycle seat, the dashboard, the keyboard, or the charging plug with a whiff of incense and the sound of a whispered prayer. Through this practice, the family, its places of transition, and its tools are protected. It also inaugurates these products of global commerce into the Balinese spiritual universe.

The open embrace of the Green Revolution agricultural practices fits these practices. The foreign practice was accepted into the Balinese socio-religious system. If it had not led to the collapse of the human environment balance, it may have well been integrated into the subak system itself. Over time, it may have even been rendered indistinguishable from prior

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[2] Lansing, xx.

[3] B.J.O. Schrieke, *Ruler and Realm in Early Java* (The Hague and Bandung: W. van Hoeve, Ltd., 1957).

[4] Michel Picard, *Bali: Cultural Tourism and Touristic Culture.* (Singapore: Archipelago Press, 1997).

agricultural practices. If Green Revolution methods had failed in more subtle ways, the priests may have directed the farmers to make adjustments saving the system from failure. When the new rice strains and techniques instead led to crop failure, it is the very multiplicity of narratives that accounts for the agile recovery. The parallel world views sustained in the Balinese villages in spite of their contradictory nature offered the opportunity to select from more than one approach. European principles for maximizing agricultural production arrived not on a tabula rasa where once had stood Balinese civilization, but as one worldview among several.

Today scientists and mathematicians at the cutting edge of systems analysis still struggle to account for how the subak system works. Anthropologist J. Stephen Lansing working with computer scientists has succeeded in reproducing a rough enough model of the system, not to understand how it works, but enough to characterize it as a: Socio-religious, emergent, self-organizing, complex adaptive system.[5] To contrast what Lansing and his team came to understand in comparing the subak and Green Revolution approaches it is useful to consider the difference between a watch and a beehive. Both are complex systems in which the whole cannot be understood simply from understanding its individual parts. But take away one pin or spring or gear out of the watch and it is rendered worthless. If a bee colony were to lose half its workers, the hive would adjust. If it lost its queen, it would spawn another. If the hive were destroyed a new one would emerge. Because it exhibits the system behavior of adaptation, it is capable of restoring the interplay of its many functions, recover, and keep going.

In his recent collaboration with genomics researcher Murray Cox, Lansing has been able to extend his work to the larger social-environmental complexes of the greater Southeast Asian context. Their methods have similarly broadened the critique of overly simplistic linear management regimes like the Green Revolution to the larger political economy of the contemporary moment. Lansing and Cox point to an Anglo-American tradition of the social sciences largely blind to social orders beyond consumer economies. Like the blindness that rendered the Balinese subak invisible until it wasn't, this systematic neglect of indigenous complex adaptive systems has proven similarly disastrous but now on a planetary scale.[6]

While working on a landscape design project in Bali, the lessons of the subak was one of the growing collection of examples that catapulted Julia Watson on a journey to seek out other such "Locally Oriented Traditional Ecological Knowledge" (Lo-TEK). She has since collaborated with local experts to examine several dozen such indigenous knowledge systems. In case after case, these dynamic human-landscape systems are simultaneously under threat of displacement while also being uniquely resilient and sustainable where they are still found.[7] Watson posits landscape systems of "radical indigenism" against European Enlightenment's "mythology of technology" that dominates our educational cultures. She points out that design schools are likely to pursue sustainability with the same technological fix approaches from which they emerged. She resorts to countering the accumulated stigma of primitive practices by labeling indigenous knowledge with the term "low technology" or "soft infrastructure" operating in

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[5] Lansing, *Priests and Programmers*.

[6] John Stephen Lansing and Murray Paul Cox, *Islands of Order: A Guide to Complexity Modeling for the Social Sciences* (Princeton: Princeton University Press, 2019), 181–82.

[7] Julia Watson, *Lo—TEK: Design by Radical Indigenism* (Cologne: Taschen, 2020).

balance with natural systems. But her use of language is a vivid demonstration of what Jarzombek characterizes as "systems of articulation" that limit that which can be communicated and thus render the vast majority of human experience "inarticulate," unknown, and unknowable.[8] In the ensuing discussion, Marchand gave us a specific historical moment in the 1820s when the great white men of the discipline declared oral traditions and other undocumented evidence inadmissible.[9] To her credit, Watson convinced her publisher to make the indigenous language version of her interviews as the primary account in each of her case studies. These are baby steps. The scale of the critique dwarfs any possible measure we might imagine to meet the moment. Just as every event opens with its Land Acknowledgement, Jarzombek asks us to imagine 15 seconds of silence at the end of each lecture to mark all that has been rendered silent and invisible to history.

Critical Reframings

For rendering the subak invisible, we criticize history and seek to frame or theorize what traces of indigenous knowledge might yet be found not just in the historical record but in the world. Beyond theoretical reframings of the historical record, we are constantly uncovering new archives. Wherever there are physical traces, made visible through remote sensing, subterranean soundings, or genomic analysis in the DNA of organisms alive or dead, we bring new evidence to light that would otherwise remain buried, literally and figuratively. Before drawing the next set of battle lines for the next great reframing to end all reframings, it is worth noting that this may be more or less what the discipline has always done in large and small ways whether through subtle adjustment or one great tectonic shift. In each case, "the discipline," as an inherited framework, is subjected to intense scrutiny, critique, and a theoretical reframing. These critiques emerge when a *discipline (noun)* has missed, or tolerated, or contributed to, or actively reproduced, some harm out there beyond the disciplinary barricades in the real world. In that moment of truth, through the act of critique, *discipline the noun* is subjected to *discipline the verb*. These are the transformative moments when the *discipline* gets *disciplined*. Schools get schooled.

One of the recent reframings that is quite literally "epoch" is the ongoing climate emergency and the official designation of a new geological epoch: the Anthropocene. Later this year, the International Commission on Stratigraphy expects to identify the "great acceleration" of the mid 20th century as the point when human impacts became the dominant influence on Earth's geology and ecosystems. In this context, the environmental movement of the late 20th century was another example of a critique that dwarfed any imaginable action to push back on the unfolding devastation of earth's capacity to sustain human activity. Confirming the unquestionable dominance of the techno-modernist regime, the measures were and continue to be more and better technology driven by unconstrained market forces. No matter how clearly and quantifiably precise the climate emergency becomes, the forces of extractive capitalism

[8] Mark Jarzombek, "After History's Hegemony" Theorizing the Global, Global Architectural History Teaching Collaborative (GAHTC, 30 January 2021).
[9] Suzanne Marchand, Panel Discussion: Theorizing the Global, Global Architectural History Teaching Collaborative (GAHTC, 30 January 2021).

press on relentlessly. In his 2006 "An Inconvenient Truth," Al Gore pinpoints the root cause by quoting Upton Sinclair: "it is difficult for a man to know something if his ability to make a living depends on him not knowing it."[10] He could have just as easily pointed out that the definition of insanity is doing the same thing over and over and expecting different results. At the root of the incapacity to reverse the machinery of the climate emergency without reversion the rules by which that machinery operates.

My collaboration since 2008 in teaching the history survey with GAHTC contributor Patrick Haughey has been informed by a heightened interest in the interplay between socio-cultural-political economic operating systems that would seem to be organizing our individual and collective decisions in the background, and their related outward physical manifestations in the world in the form of landscapes, cities, and architecture. When developing our materials for sharing through the GAHTC collection, we embraced the term "Sites and Systems" to characterize a methodology that challenged our students to work with us on identifying how architecture is simultaneously the outcome and instrument of larger systems. The curatorial predilections of the architectural history lecture were displaced by the imperatives of getting to the heart of how the world is structured in multiple senses of the word. By rendering the instrumentality of the built environment visible and discussable, the aim is to empower students to better understand how systems operate and reproduce. Since first developing these methods, events have compelled a further mobilization of students to spend less time listening to lectures and more time doing history.

Doing History

Judging by outcomes, we have not yet done enough. From the perspective of the generations destined to inherit the consequences of the 20th century, adjusting our framing perspectives is not commensurate with the challenge. Instead, There is sufficient evidence to suggest the possibility that we have gotten it *exactly wrong*: that the disciplinary methods of history and pedagogy that feeds critical thought and underpins action in the present are structurally flawed in ways that blind us to our own complicity. What if circumstances compelled nothing less than reversing our methods and doing the opposite of prior norms of history and pedagogy? What might such a reversal look like?

In 2015 during a visiting lectureship teaching Mark's Global Survey, I tried an experiment: I taught the course backwards. We started in the present where every student is the world's foremost expert of their own life experience. The present and the future belong to the students. The first step is for them to each take ownership of their timeline. Imagining their life trajectories we ask: What are the most pressing challenges you are likely to face? What do you wish you had learned in college that might help prepare you for success? We used the fact that they have legitimate questions about the world they are inheriting as the foundation for questioning the present world. Taking note of these questions we used them to interrogate the recent past in the next lecture. In this manner, we stepped backwards in time, site by site and system by system, with a clear line of questioning linking us to the present and student projections of their future.

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[10] Upton Sinclair, *I, Candidate for Governor: And How I Got Licked* (Berkeley: University of California Press, 1994); Al Gore, *An Inconvenient Truth* (Oscarpreis, 2006).

In subsequent versions of the course in my home institution, my colleagues and I took the bold step of cutting the number of lectures in half. In the age of ubiquitous information, the challenge is no longer delivery of knowledge, but the development of skills to feed a lifelong practice of bridging the gap between information and understanding, and from understanding to moving through the world more effectively. I began introducing the instructors as the fourth most important source of understanding. Direct experience in the world itself is the most dependable source of understanding, followed by the special access to the world offered by our disciplinary tools, and third, the engagement with their colleagues. Lectures delivered by professors (number four) serve as the foundation for the original engagement with visual and physical evidence identified and analysed by students working together. Students are challenged to translate visual evidence into a logical sequence of points in support of a claim emerging from those points. The biggest challenge in this analysis work is to convince students that they will be punished if all they do is report what they learn from reading or lecture. The work of students is to conjure a narrative out of evidence as it intersects with their own subject position.

In the summer 2020 version of the History-Theory survey, GAHTC member Jennifer Gaugler presented a slide of King Leopold in Kinshasa. She then posed a question to the students prompting comparisons with the Black Lives Matter protests and the Confederate Monuments debate. Instead of quizzes and to break up each 15-minute lecture segment. Students write a private chat message to instructors. One student put her response out to the whole class. I lectured on about French and Dutch colonial architectures in Africa and Asia unaware that the Zoom chat was blowing up. Unable to continue as planned we moved the discussion from the chat to the Zoom call and for the next hour, well beyond the class period, a good two thirds of the 120 students debated the question. While we alerted students to our presence with our fingers on the mute button should someone cross lines of civility, it was for the most part a powerful demonstration of the urgency of the course topics in their lives. A chat group formed to carry on this and other discussions of where in the curriculum the real issues of their lives and careers might be addressed. The NOMAS leadership well-represented in the course took on a particularly active role in these discussions. We, the instructors, were *disciplined* by the critical questions brought to bear by our students and the course got better. In a more deliberate activation of participants, what we do is *disciplined* by the challenges as played out in the past, in the present, or anticipated in the future. In teaching, we are *disciplined* by our students. And the *discipline* benefits.