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The Global Ecodigital Divide: A Collaborative Mapping Exercise for Online Classrooms

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Within months of the Coronavirus pandemic, the digital divide started to receive renewed attention, especially within the realm of education (Correia 13–15). In 2020, the worldwide demand for inexpensive laptops was “up to 41 percent higher” than the previous year, which “created months-long shipment delays and pitted desperate schools against one another” (Browning). These shortages would seem to drive down internet usage; in fact, for all those already equipped and online, the opposite was true: “Internet services [rose] in usage from 40% to 100%, [when] compared to pre-lockdown levels” (De’ 2). While it could be argued that increased internet usage and remote work leads to fewer drivers on the road and thus a decrease in carbon emissions, internet use takes its own toll on ecological systems, with a comparable carbon footprint to the airline industry (Griffiths). Really, these two situations—folks struggling to access the internet and excessive internet use contributing to environmental damage—are two sides of the same coin and just a glimpse of what I am calling *the global ecodigital divide*.

My purpose in this study is twofold. First, I want to update our definition of the digital divide by binding it to a global, ecocritical framework. Of course, as Alondra Nelson has pointed out, digital divide studies tend to reinforce White supremacy through a false image of “‘Western’” technological superiority,” and by “[obscuring] the fact that uneven access is a symptom of economic inequalities that predate the Arpanet [...] and the World Wide Web” (5–6). The present study still places racism at the heart of the global ecodigital divide, but following Nelson, this updated definition traces the historical roots of this problem to the Enlightenment and the Atlantic slave trade. It challenges the idea that the digital divide is merely about who has a computer and who does not, and emphasizes instead that digital access, while intended to address socioeconomic disparities, often comes at the ecological expense of globally marginalized communities. This study also acknowledges that all marginalized communities are affected by this divide in a variety of ways, at different scales and to different degrees.

Second, I will outline a collaborative online mapping exercise for illustrating this version of the digital divide in an online classroom. The map is my medium because it is an excellent storytelling genre for breaking down epistemological barriers. As Sarah Williams elaborates, the affordances of a map are particularly advantageous in an information age. These affordances include disrupting power relations, affecting policy, facilitating information sharing, and allowing different publics to tell their own stories (168). In our case, by sharing their research, students can more easily recognize the

many layered and interconnected ways that digital technology is inseparable from human and nonhuman ecologies. By mapping this web of connections, students can grasp the problem as a “whole” rather than as isolated phenomena. Ideally, this multimodal story-visualization both allows students to more readily identify problems and inspires design justice strategies and solutions that are at the same time abductive and speculative (Costanza-Chock 15), or real and ideal.

At a time when the world desperately needs educational programs that approach past, present, and future phenomena with critical, creative, practical, anti-racist, anti-ableist, and anti-colonialist tools and methods, it is perhaps just another sign of the worsening digital divide that the School of New and Continuing Studies at Seattle University, intended for a less privileged audience, and for whom this exercise was designed, will close due to budget cuts at the end of the 2020–2021 school year. The students are adults working part-time or full-time, raising families, and completing an undergraduate degree. The college prides itself on accommodating students’ myriad situations by offering hybrid and online classes. There is an important irony here. Because the program appeals to a less privileged population through reduced tuition and online content, faculty and students were already prepared for the transition to online teaching with the rise of COVID-19. Of course, the school’s model was originally designed to capitalize on working adults in possession of an incomplete degree. But the model is also homologous to a school designed to prepare for ecological disasters and “negative global flows,” including the spread of disease (Ritzer and Dean 328). In other words, the School of New and Continuing Studies actually represents the kind of imaginative design needed in the era of digital culture and climate change. Hopefully, by mapping the global ecodigital divide, we can start to recognize the need for such programs and what they really represent: responsible education.

Digital Divides

An early pioneer in digital divide studies, Pippa Norris, parses out the digital divide into the global, the social, and the democratic. The global divide refers to the disparity between “industrialized and developing nations”; the social divide refers to disparities within a country, namely between affluent and poor classes; and the democratic divide points to the ways that some communities capitalize on digital resources to “engage, mobilize, and participate in public life” (4). While I will apply Norris’ three main terms to organize our understanding of the digital divide geographically, because of the changing landscape of digital culture, the terms are no longer so easily compartmentalized. As this section concludes, Norris’ three divides—global, social,

and democratic—are far more interconnected, overlapping, and grey, as the “global” in the global ecodigital divide connotes. This redefinition is part of an effort to end digital divide studies that merely point out the “haves” and “have nots.” What is needed instead are studies that illustrate how multinational corporations and the wealthiest countries are directly responsible for the digital and ecological impoverishment of others.

Historically, the global digital divide has been thought of in terms of well-equipped affluent countries (namely, White, capitalist, and neoliberal states, with a few exceptions, such as Japan) and under-equipped poorer countries (namely Black, Brown, Latinx, and Asian states). These East/West and North/South divisions break apart when examining so-called “highly developed” regions, such as the European continent. In Nicole Zillien and Mirko Marr’s study of the digital divide among European nations, they uncover wildly disproportionate internet use between northern countries (the Netherlands, Denmark, Sweden, and Finland) and the southern and eastern countries (Hungary, Bulgaria, Cyprus, Romania, Greece, and Portugal) (58). Similarly, Tomohisa Hirata’s “double digital divide” approach takes into account “the digital divide within each Asian country and that across the whole of Asia” (285). With the proliferation of digital technology across nations of all economic sizes, it has become clear that comparisons between countries of similar regions are important in their own right, and perhaps more telling than an arbitrary comparison between a smaller economic power and a centered United States.

The “social divide,” which examines disparities within a country, has further complicated the have/have-not binary. Kenichiro Onitsuka, A. R. Rohman Taufiq Hidayat, and Wanhui Huang study rural Indonesia, where Information Communication Technology (ICT) barriers are being surpassed. The authors focus on “‘after penetration,’” or how leapfrogging—skipping stages of technological development—is altering inter-community relations as digital natives surpass the digital knowledge and skillsets of older generations (4). Likewise, in economic destination states like the US, the social have/have-not story needs to be expanded to include immigrants who do not easily fall into the have-not category. Minhyang Suh and Gary Hsieh look to South Korean immigrants in Seattle, in part, because Korean immigrants generally “have extensive experience with ICT infrastructures before migration” (39). This prior knowledge requires an additional category to the haves and have-nots, the “had mores,” which Suh and Hsieh characterize as “those who were used to better and faster ICTs, but who no longer [have] access to that infrastructure or those technologies” (45). Simply graphing a native/immigrant divide onto the digital

divide within countries of varying socioeconomic statuses cannot adequately represent a globalized world characterized in large part by human migration flows.

The democratic side of the digital divide has changed substantially in the last decade with the rise of social media, big data, and powerful algorithms. As Carole Cadwalladr reported in *The Guardian*, Facebook's loose privacy restrictions allowed Cambridge Analytica to upend the 2016 elections in the US, an effort they prepared for in the UK Brexit vote, as well as their 2013 microtargeting mission in Trinidad. Microtargeting is bad, of course. But it merely reinforces the racist, misogynistic, ableist, and transphobic digital design and architecture that blocks people from participating in the democratic process every single day. Perhaps Ruha Benjamin best sums up the current state of the democratic divide (at least in the US), when she refers to the "New Jim Code"—after the Jim Crow laws of the nineteenth and twentieth centuries—which now "encompasses a range of discriminatory designs – some that explicitly work to amplify hierarchies, many that ignore and thus replicate social divisions, and a number that aim to fix racial bias but end up doing the opposite" (8). And, less covertly, almost every day since I began writing this article, I have witnessed headlines about White, anti-Black, anti-Jewish, and anti-immigrant hate-groups and conspiracy theorists attempting to discourage democratic participation by promoting subjective forms of violence against these marginalized communities. The sheer presence of hate groups in the news and on social media platforms is enough to drive away would-be digital citizens who, understandably, do not feel like being triggered, harassed, and/or threatened on a daily basis.

As Jeffrey James argues, "the digital divide needs to be conceptualized and measured not only between unweighted averages between rich and poor countries but also in terms of all global citizens, regardless of where they live" (39). To achieve such an adequate level of realism as James espouses, we must update our understanding of the digital divide to include comparisons between neighboring countries as well as remote countries connected through economic flows and between communities within individual countries (especially marginalized communities). We must also measure the state of a country's digital democratic accessibility by counting and analyzing the various mechanisms that maintain and suppress additional disenfranchised groups, rather than simply pointing to total number of votes.

It is simply not possible to assess an individual's divide without situating that individual in relation to their ability to participate in local, state-level, and global communities. As I will explore in the next section, this level of participation needs to

be measured according to an ecological framework, which necessarily includes a matrix of related terms (history, geology, and labour) that can be configured more easily by way of a map, which will be explored thereafter.

Deep and Surface-Level Global Ecodigital Divides

In their 2010 article, Alexander van Deursen and Jan van Dijk explain that the have/have-not binary quickly expanded in digital divide studies to include access to the internet, followed by an emphasis on the “social, psychological, and cultural backgrounds” of users (893). In 2014, the same scholars identify “four areas of importance [with respect to the digital divide]: attitudes, access, skills, and types of usage” (508). Most recently, van Deursen and Karen Mossberger have added new skills needed to access and manage the “internet of things” (IoT), which includes wearable technology, smart homes, and more (125). These three studies represent the trajectory of digital divide criticism from the last decade, and clearly the concept has expanded to include far more than who lacks a computer.

However, these new criteria still say nothing about how the digital divide connects to ecological urgency and global flows. Typical outlines of the digital divide are, in fact, bound up with a long history of global warming and human-caused ecological disaster, and the undergirding principle articulating these two problems is racism. Of course, human ecological disturbance can be traced back to a time prior to modern-day racism. My point is that when settler-colonialist slavery and ecological destruction become bound together for the sake of capitalism, that is when we should stake out the beginnings of the digital divide and why this outdated construction should be recast as the global ecodigital divide.

There are several reasons for starting with the Atlantic slave trade. First, the slave trade and the emergence of plantations in the Americas directly reinforces the Enlightenment commitment to “an improvement of man’s estate and an enlargement of his power over nature” (Bacon, *Aphorisms II*, LII, 267). For instance, as Ainsley Cray illustrates, “[i]n less than half a century, the colonists had essentially eliminated the natural environment of [Barbados], and replaced it with an ecosystem that was entirely controlled by humans and intended to generate wealth for the population of the island, as well as the vast British Empire” (3). Of course, plantations in the Americas are not the first instance of transferring plants, reorganization of ecosystems, enslavement of people, or even acts of genocide (on the Canary Islands, for instance, see Crosby 70–103). But over the course of about 400 years, between 11 to 12 million Africans were abducted, transported, and sold into slavery, the impact of which “straddled continents

thousands of miles apart” (Beinart and Hughes 23). Accordingly, the Atlantic slave trade represents the earliest and most sustained instance of a global, systemic effort to transform ecosystems without regard for slaves/labourers, native peoples, flora, or fauna.

It has already been recognized that “the information age,” as posited by Manuel Castells, has its origins in economics (for a summary see Miller 46–71). But to appreciate the racist principle at the heart of this origin, it is necessary to take economics back to its roots, when the field adopts its speculative and systemic edge, especially with respect to the slave trade (on insurance, Clark 16–18; on state finance, Mitchell 14ff.). The most well-known example of this link between the slave trade and betting on lives is the case of the Zong massacre of 1781, in which the crew of the Zong pushed its Black African prisoners into the ocean and then tried to collect the insurance money on their deaths, as represented in J. M. W. Turner’s *The Slave Ship* (1840). Today, the links between the mathematical determination of the economy and the reduction of Black Africans to “bits and pieces of black death” are still legible in the “ship and plantation ledgers,” in what Katherine McKittrick calls the “Mathematics of Black Life” (18). It must also be stressed that numerous present-day multinational banks, transport companies, tobacco companies, and of course, insurance companies (including my own, apparently) all have financial roots in slave profits (Rupprecht 11).

If the narrative thread between slavery and ecological disasters wrought by colonial plantations seems too distant to suture to our digital present, Jussi Parikka connects them by exploring what seems like an even deeper gulf between the geological accretion of the earth and today’s digital hardware. He establishes that we cannot separate the unearthly information highway from the earthly minerals and chemicals necessary for digital infrastructure, and the burden of sourcing these earthly materials squares with the global economic structures established under the heading of imperialist White supremacy. One place to start in this deep history is Parikka’s observation that “[c]omputer culture never really left the fossil (fuel) age anyway” (111). To illustrate this point, he turns to the YoHa art project’s *Coal Fired Computers* (2010), which “articulated the entanglement of fossil fuels, miners’ lungs, bronchitis, and emphysema with computer culture” (99).

A non-artistic illustration of Parikka’s sacrificial body can be located on the dark side of the Apple iPhone. In 2016, a *Washington Post* story by Todd Frankel documented where and how Apple was sourcing one of its many materials for the iPhone. In the

Democratic Republic of the Congo (DRC), for instance, “[a]n estimated 100,000 cobalt miners in the Congo use hand tools to dig hundreds of feet underground with little oversight and few safety measures.” (Frankel) In an appeal to American pathos, the many articles that followed focused headlines on the fact that children were among the miners. But in a more recent study, Sarah Katz-Lavigne focuses on large-scale mining (LSM) companies and violent conflicts with non-contracted artisanal or small-scale miners (ASM), where “unauthorized” artisanal miners are tear-gassed, arrested, and jailed while attempting to work in mines overseen by “authorized” mining operations (404). As students will discover when conducting their own study of the global ecodigital divide, in many cases the “authority” on who mines where sits far outside the borders of the DRC. Last, the above reports should be doubly disturbing knowing that they follow on the heels of the Second Congo War, which involved nine African countries, resulted in over 5 million deaths, and was funded in large part by the trade of “conflict minerals,” including the cobalt needed for the iPhone.

The case in the Congo deserves more attention because it exemplifies what is, perhaps, the “deepest” level of the ecodigital divide. This depth is simultaneously figurative and literal: the miners in the DRC are, in fact, closer to source materials, operating beneath the ground-level of social space. Forced to work outside of and below postindustrial societies, they belong to an even deeper stratum of the divide where the violence is more subjective, and the technology is less objective. It should come as no surprise that the unstable ground of the miners’ position comes with a concomitant psychological toll. As James Smith concludes, “comments about the inability to project into the future are widespread in the Kivus [provinces on the border of Rwanda] and are connected to the widespread sense of insecurity as well as the long-term expropriation and destruction of social resources by militarized groups, all of which is related to the global demand for, and fluctuating prices of, [digital minerals]” (21). The one job providing a sense of security with respect to the future is also directly linked to the collective disappearance of time’s horizon.

Inseparable from the miners’ physical and psychological suffering is the exploitation of natural resources and the miners’ bearing witness to this destruction. This side of the divide is likewise “deeper,” because the natural resources are neither readily available nor near the earth’s surface. Minerals, like cobalt, must be extracted from the planet by violent means, and there are “high levels of toxic pollution caused by the extraction,” which ultimately leads to “birth defects in [the miners’] children” (Kelly). Bearing witness for the miners is neither a passive nor a sublime experience. Being buried alive is a daily threat to the miners (Kara), as is displacement from one’s home;

there were 38 million internally displaced persons (IDPs) globally in 2015 (Moffett). Here we are somewhere below precarity. Homelessness, toxicity, displacement, death, and mourning, if not melancholy, or what Christina Sharpe calls “wake work”—because it is “interminable”—begin to characterize this level of the global ecodigital divide (19–20).

By examining the deepest ends of the global ecodigital divide, as I have done above, we can see how labour and environment are articulated, even as we ascend to “surface-level” divides. For instance, when reading Sarah Roberts’ study of “commercial [social media] content moderation” outsourced to countries like the Philippines, a global ecodigital framework highlights the fact that “ecozones”—IT centers—receive “24-hour uninterrupted power” as well as “special dispensation from taxation” (187). These details stand out even more against our long historical background: the Philippines is a postcolonial state and, as an archipelago, is extremely vulnerable to climate change. Even though Filipino content moderators maintain a relatively secure, high-demand tech job, compared to the miners, they are still subjected to the trauma of witnessing the worst the internet has to offer, the constant threat of the “race to the bottom” (i.e., being undercut by neighbouring economies), and displacement due to climate change. No doubt, once a relatively stable community is displaced, it will inevitably sink into a lower level of the global ecodigital divide, either forced into a “had more” position, or doomed to refugee status, where its digital communications technology will be tied to increased government surveillance (Latonero and Kift 1–11). In other words, in a world where the oceans are rising, (industrial) upgrading to a surface-level status is not a permanent solution to the global ecodigital divide.

Now, as the COVID-19 pandemic has made painfully clear, these deep and surface-level divides are indeed tied together. Because of mass quarantine, the demand for digital technology and social media has increased, and thus there is actually a greater need for both mining and content moderation. But, also because of the virus, mining companies have “indicated that their due diligence steps were limited” (Thomas), and according to the Organization for Economic Co-Operation and Development, artisanal mining operations are more vulnerable to non-state, armed militias (OECD). The situation for content moderators may be less dangerous, but it is no less demoralizing. In March of 2020, *The Washington Post* reported that Facebook, Twitter, and YouTube had sent their content moderators home (Dwoskin and Tiku), expediting the transition of content moderation from human hands to artificial intelligence.

It is important to chart the aforementioned cases so as to discern how our actions, even actions intended to close the digital divide, say, in American or Canadian schools, can actually deepen the divide for others elsewhere (i.e., through increased demand for electronics and the ensuing burdens). Miners, content moderators, people with impairments, people living in food deserts, students with unreliable Wi-Fi, multigenerational houses, laid off tenured professors—no one is outside this divide. It is important then that any exercise intended to help students visualize these links remains open enough for them to draw lines across the globe and history, throwing into relief the institutional failures that ultimately fall on the backs of poor and marginalized communities and their ecosystems. It is just such an exercise that I will outline in the following section.

Mapping the Global Ecodigital Divide

The question is how best to teach students about the global ecodigital divide so that they can picture their relationship to this historical and ongoing crisis. The exercise I present here is part of a larger set of multimodal and multimedial approaches to creating images of human, inhuman, nonhuman, cultural, technological, and planetary relationships. It is helpful, I think, to use the media and genres of the time period under consideration to reinforce the historicity of the epistemological affordances these materials offer. In this instance, because we are focusing on the global ecodigital divide in the digital age, using online maps that regularly reflect and reinforce racism (Noble 6), ableism (Hamraie 455ff.), and surveillance capitalism (Zuboff 140-154), we can reapply its modes and conventions instead to tell a story of entangled domains, oppressive systems, and resistance efforts, similar to those stories espoused by Donna Haraway (20–29). That said, because the global ecodigital divide is couched in a history that subsists in the present, I will also point out a way that our digital medium can accommodate a more historically stratified visualization. In this sense we can construct a map that is almost adequate to the depths of the story we are trying to tell.

What I present here is a more concentrated effort to map the global ecodigital divide by asking students to pinpoint the raw materials, labour, and processing that go into making an Apple iPhone. Maps are especially useful for illustrating such a complicated web because, as Karen Kemp explains:

assigning a geographic reference to data [makes it] possible to compare that characteristic, event, phenomenon, etc. with others that exist or have existed in the same geographic space. What were previously seemingly unrelated facts become integrated and correlated. Importantly, it allows us to perform spatial

analysis, which might be thought of simply as what we do with geographic information once it is in the computer. (32)

Our global approach expands Kemp's scope by comparing phenomena from remote geographic spaces within a manageable "whole." Of course, such a "totality" comes with limits—a mimetic whole is the stuff of science fiction. While there is a realist tendency here, it should not be confused with what Johanna Drucker calls a "mechanistic approach" to realism, and instead, this exercise understands that there is a dynamic relationship between *capta* (what is "taken") and *data* (what is "given") (par. 5, 3). Indeed, part of the point of this mapping exercise is to include those phenomena that institutions, states, and multinational corporations have a vested interest in excluding, including students' own personal stories. While we might debate over the realism/constructivism divide, at bottom, the visualization offers an opportunity to give voice to disenfranchised communities and to put them in conversation.

This last point about students including anecdotal evidence alongside their research highlights the importance of collaborating on such a mapping exercise. In their article about online collaborative writing, Teresa Mauri and Javier Onrubia stress that writing is a recursive and dynamic process of rewriting what students already think they know, enhanced through "a network of mutual support and assistance that is distributed among all the participating students as well as with the teacher" (94-95). While the authors focus on college-level composition, the same principles apply to a mapping exercise where students might draw on their own encounters and research, plus the questions, comments, and suggestions offered by classmates and instructors.

Of course, to make such a collaborative mapping exercise work requires a tool that can facilitate student input, research, connections, questions, and feedback. For this exercise I use Padlet, a digital platform offering various "padlets" or boards for collaborative work, including walls, timelines, maps, and more. The mapping tool is introductory, not as sophisticated as most GIS software, but the license for schools is relatively inexpensive, the learning curve is minimal, and the company is taking steps to increase accessibility. Its basic interface does not require the fastest internet connection, and because students need not conduct this exercise synchronously, they can add their contribution whenever and wherever a strong connection is available.

In Padlet's map (powered by Google), students can easily add images, articles, and written comments. The user can look up a location in the search bar or, in the case of an unnamed geographical spot, they can click on any location with their cursor. The most important features of the Padlet map, and what separates it from Google's My

Map, is the ability to easily link nodes and label edges, creating a network and revealing how each referent relates to the others. Last, students and instructors can reply with observations, suggestions, or questions. The maps can stand alone, serve as material for a written essay, or be embedded into a website for public, non-academic engagement.

At my home institution, we use Canvas for our learning management system (LMS), and weekly modules include pages with headings such as “Context: What’s in an iPhone?” In this particular context page, students find “Guiding Questions” for an excerpt from Brian Merchant’s *The One Device: The Secret History of the iPhone* (which appears online in *VICE*, “Everything That’s Inside Your iPhone”). On the next page, “Activity: Mapping the iPhone,” students read an assignment prompt that begins with a “Context and Purpose” section:

Together, we can achieve a more comprehensive picture of Apple’s iPhone by mapping all the pertinent locations involved in the phone’s construction. Where have the raw materials been sourced and under what conditions? What pieces had to be manufactured, assembled, and by whom? Also, where is the finished product sold? Who can/can’t afford them? And where do the phones end up after they expire?

We need not stop at the product-level. Let’s flesh out our map to include undergirding economic flows. Who owns the mines? The mines in the Congo must be owned by folks in the Congo, right? Most likely, this is not the case.

Last, keep in mind the impact of these different sites on their respective ecosystems. What is the ecological cost of mining, shipping, and refining? Think about the toll on the home, in the broadest sense possible. Where does the waste go from mining minerals, polishing glass, and storing data? These phenomena can be mapped too.

Even though this exercise does not include our “deeper” historical story, the “Purpose” section asks: “Is [the sourcing of raw materials] a way in which colonialism and imperialism still cast a shadow on the present?” It also addresses why we have elected to use this medium: “It is easy to read an article, like Merchant’s, and think that the problem starts and stops in the Congo. We are using the mapping tool for this exercise to help us paint a picture of a larger ‘whole.’” And last, it explains why we are conducting this exercise collaboratively: “We are collaborating to simulate working together on a massive project, one that requires various perspectives and areas of

expertise. Imagine you are part of a human rights organization bringing a case against Apple. To be successful you will need quite a group!”

The exercise asks students to work dynamically, researching articles, presenting them to their group, and then figuring out how their research connects with their classmates’ findings. A student might pinpoint a mining operation in the DRC, which might connect to another student’s post about a company in the UK that actually owns the mine (Figure 1). Once students exhaust the information from the article I supply, they must search for additional clues about how the iPhone is made. It is no easy task to map the life of the iPhone, from Foxconn factories in China to a student’s local Apple retailer. But by focusing on where the iPhone comes from, how it is made, and how its existence takes a toll on people and the planet, we remove the device from the cool, shiny, black vacuum through which it is marketed. The digital tool is no longer an object removed from all context; instead, our collaborative mapping exercise grounds it once again in bodies and the Earth.

Figure 1: A screenshot demonstrating the Padlet mapping interface. Links to articles can be added to nodes, nodes can be linked, and labels can be added to the edges (e.g., “Glencore owns cobalt mines”). Taken by the author.

This exercise could be recast in a number of productive ways. A semester-long project could incorporate the deeper historical background by simply adding a year to the title of posts. Or, for a clever print version of this assignment, the instructor could focus on

the nineteenth century, for instance, and purchase a reproduction of a map from the 1800s. This map could be circulated to students through the mail, with each participant adding their findings with a pasted or taped note. There are other forms this activity could take, and certainly for more advanced classes, instructors will want to use software that allows students to upload data, such as Palladio by Stanford's Design + Humanities Lab.

Finally, it is wise to follow-up with a discussion board, essay, and/or reflection assignment. A good question to start with is: "What surprised you about the map?" A more challenging question is: "Identify one of the links you found between two (or more) nodes: What political, economic, and/or ecological problems can you infer from this connection?" Last, a question that points to an ensuing module on strategies for "staying with the trouble" is: "What steps can you or your community take to mitigate or even eliminate the ecological costs of one or more of your findings?" These questions will likely elicit frustrating feelings. A discussion board can help students find others to identify with at this moment, and while it is difficult as an instructor to comment on every response, an effective strategy is writing your own post, summarizing the tenor of the class, and responding to the entire group, hopefully with some words of encouragement regarding the many possible changes that might unfold in the future.

Conclusion

The purpose of the above activity is to help students see that the digital divide addresses far more than whether or not someone owns a laptop. The downside of this activity, if it is not properly framed, is accidentally reinforcing the "end of history," "capitalist realism," or some other "game over" view. Through more art-design-story-making assignments, the hope is that students will recognize that the current map of the global ecodigital divide is neither permanent nor stable. It is sometimes hard to recall, even now, in the midst of a pandemic, when education is suffering because many cannot afford the required technology, that merely two decades ago no one came to school with a smartphone, and for most classes the most technologically advanced tool needed was a book. Mapping the global ecodigital divide can show students that indeed, this divide changes over time. But additional multimodal, multimedial, as well as multigenre, and even multispecies exercises are needed to help classes envision where we go from here.

The worst possible step we can take is to assume COVID-19 is an anomaly. No, it is clearly part of the global ecodigital divide and there will be additional diseases that

exacerbate this divide in the future. Instead, we—the many intermingling educational systems—must prepare for future diseases and climate disasters, and not wait until they happen only so that tech firms can swoop in with pedagogical snake oil. This is not to say that digital technology is bad for education and too detrimental to the planet to consider; this is only to say that there is an equation between bad technological solutions and reactive decision-making. The lesson is that by placing more importance on the values of sharing (McKittrick 7), responsibility (Haraway 28), and, we might add, preparedness, and the less importance we place on connection, precision, and innovation, the values of “technoliberalism” (Pfister 37–40), the more effectively we can shrink the global ecodigital divide, not just for our students, but for miners, content moderators, humans, nonhumans, and the Earth.

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