Article

Intersectionality: A Tool for Using Causal Layered Analysis in Education

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Abstract

Causal Layered Analysis is a critical part of futures education because it helps students deepen their understanding of controversial issues. However, critical thinking about the future is new and challenging to most students. This study will examine how the analytical framework of intersectionality can provide a structure to help students use Causal Layered Analysis. "Intersectionality" interprets how different social identities and/or social problems are interrelated; as such, it encourages students to consider more evidence about issues, make connections between different pieces of information, and envision solutions to complex problems.

Keywords

Introduction

Late in the evening of Thursday September 12, 2019, a 36-inch water main broke by the Tennessee American Water (TAW) plant located in Chattanooga. This incident left tens of thousands of residents in downtown Chattanooga and nearby areas with low to no water pressure until Saturday morning, and a boil water advisory in place until Sunday. Recommendations from a report in 2011 indicated that TAW should have implemented backup systems to prevent such an incident, but this had never occurred (Dukes, 2019).

I used Causal Layered Analysis with my students to discuss issues about utility infrastructure, and across multiple classes students shared worldviews of powerlessness. They felt powerless for a multitude of ways—powerless to take action during the emergency situation, powerless to understand the mechanics of why it happened, and powerless more broadly, with many students criticizing the cost of utilities and their unreliability more generally, beyond just this incident.

Public policy scholars use the term "wicked problems" to refer to problems that are "complex, unpredictable, open ended, or intractable" (Head & Alford, 2015, p. 711). Causal Layered Analysis is thus an optimal method for understanding wicked problems, like utility infrastructure, because it enables us to consider an issue at multiple layers of depth so as to suggest solutions that operate at all levels—from the immediate issue at hand to extended or related concerns.

Because the most educated stakeholders in coming years will likely play roles in public policy and advocacy, it's critical for college students to have the skills to analyze the future (Hoffman, 2019). This study will discuss how intersectionality, which is a framework for understanding the interrelated nature of multiple social identities and social problems, can enable students to obtain more information about problems and consider positive alternative futures that work to mitigate multiple problems at once.

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The Purpose of Causal Layered Analysis

The futures method Causal Layered Analysis serves to deepen the future, using a four-step process (Inayatullah, 2008). The first is the Litany level, which refers to commonly accepted headlines and talking points (Inayatullah, 1998). This level is simplistic and tends to incite fear and apathy on its own, since issues are not placed in context (Inayatullah, 2008). The second level of CLA, Systemic Causes, is concerned with the behaviors of and relationships between key stakeholders in an issue; this is the level at which much academic and policy analysis lies (Inayatullah, 1998).

Steps three and four of CLA are broader and deeper, and thus more difficult to interpret (Inayatullah, 2008). The Worldview level interprets stakeholders' positions, situating these positions in discourses that transcend individual stakeholders or actions (Inayatullah, 1998). Finally, the fourth layer, Myth and Metaphor, refers to taken-for-granted assumptions, big-picture explanations, and emotional reactions (Inayatullah, 1998). Analysis at this level can often occur through creative expression such as poems, stories, and images (Inayatullah, 1998). All four layers are crucial to analysis, because they enable us to investigate solutions to problems at varying time points in the future, as well as to engage a variety of stakeholders (Inayatullah, 1998).

A strength of Causal Layered Analysis is that it engages a wide variety of individuals through encompassing different ways of knowing; using creative and non-textual expression; and incorporating diverse people and views (Inayatullah, 1998). For this reason, the social science concept of intersectionality, which is a method of interpreting the interrelated nature of people's social and political identities and experiences, can contribute to effectively using Causal Layered Analysis.

The Development of Intersectionality

In her 1989 article in which she invented the term "intersectionality," Crenshaw examined American legal cases in which laws about gender discrimination and racial discrimination were insufficient to respond to the discrimination concerns of black women. Crenshaw elaborated on the legal case *DeGraffenreid v General Motors,* in which five black women brought a lawsuit against General Motors because of the company's decision to use seniority in deciding whom to lay off during a recession. General Motors had never hired black women until the Civil Rights Act of 1964 (though it had begun hiring white women several years before that point). All the black women who had been hired after 1970 were selected to be laid off, because these were the employees with the least seniority. However, the court rejected the plaintiffs' attempt for the lawsuit to cover not just women or just blacks, but black women specifically. In the court's view, there was no gender discrimination because of the fact that white women had been hired during a period of time when black women were not, and recommended that the case be attached to another race discrimination case. Crenshaw (1989) summarized the court's decision as implying that the limits of gender discrimination claims are defined by white women's experiences, and the limits of race discrimination claims are defined by black men's experiences. Black women are protected only in the event that their concerns overlap with one of these groups (black men or white women). In concluding her article, Crenshaw highlighted the need to put the most marginalized groups of people at the forefront, calling this new concept "intersectionality":

> . . . the failure to embrace the complexities of compoundedness is not simply a matter of political will, but is also due to the influence of a way of thinking about discrimination which structures politics so that struggles are categorized as singular issues. Moreover, this structure imports a descriptive and normative view of society that reinforces the status quo. It is somewhat ironic that those concerned with alleviating the ills of racism and sexism should adopt such a top-down approach to discrimination. If their efforts instead began with addressing the needs and problems of those who are most disadvantaged and with restructuring and remaking the world where necessary, then others who are singularly disadvantaged would also benefit. In addition, it seems that placing those who currently are marginalized in the center is the most effective way to resist efforts to compartmentalize experiences and undermine potential collective action. (Crenshaw, 1989)

Since the time this article was written, scholars have built upon the concept of intersectionality in a multitude of ways. Just as Crenshaw interpreted the relationship between gender and race, other scholars have used this concept

to interpret other axes of disadvantage, such as social class, age, and disability. For example, Chun, Lipsitz, and Shin (2013) wrote about the American nonprofit group Asian Immigrant Women Advocates:

> Organized to advance the interests and aspirations of limited-English-speaking, low-wage immigrant women workers, AIWA does not embrace intersectionality simply because its members have been wounded by racism, sexism, imperialism, class exploitation, and language discrimination, but because each realm of these experiences has helped the organization to see how power works and how new identities are needed to combat its intersectional reach and scope. This approach rejects the subordination of one oppression to another. It does not focus solely on gender, class, race, or language, nor does it organize along single-axis identities such as Chinese or Korean or Vietnamese immigrants, Asian Americans, women, or workers. Rather, it offers participants many different points of entry and engagement at the intersections of their diverse and plural identities. In doing so, AIWA promotes an approach to identities as tools to be used in complicated, flexible, and strategic ways. (Chun, Lipsitz, & Shin, 2013)

In this way, Chun et al. used intersectionality as a social movement strategy—a tool to build a community around equipping marginalized women with the skills to both improve their own lives and be part of effecting social change at the national level.

Part of the strength of intersectionality lies in its vagueness; in addition to interpreting relationships between categories of people like those above, it also enables us to situate issues within broader contexts (Choo & Ferree, 2010; Hancock, 2019). Intersectional analyses can situate issues within temporal changes, connecting them to their historical context; and can make connections between individuals and the social institutions they operate within (Hancock, 2019). For example, analysis of gender balance in elected office must take into account a variety of social factors, including the political system of the district; the district's religiosity; and the district's demographics (Hancock, 2019). Furthermore, analyzing sociopolitical development over time can provide information about the importance of these social factors (Hancock, 2019). Because Causal Layered Analysis enables us to envision future change based on our knowledge of the present and past, intersectionality can thus guide us through this process, through deconstructing critical individual and social factors that uphold inequality or inefficiency in the present, and reconstructing these into a future that meets diverse needs.

To summarize, intersectionality can be used in multiple ways when considering a particular issue. Intersectionality can be used to identify the variety of pertinent categories to which a person belongs (e.g., all people have a race, gender, occupation, etc., which will affect their role in the issue), and to identify broader contexts surrounding an issue (e.g., the political system, the state of the economy, the educational system; all of which affect the issue). Intersectionality can also situate issues in their temporal context (change over time); this intersection is incorporated into CLA by default because CLA allows for reconstruction of preferred futures.

Intersectionality and Causal Layered Analysis in Futures Education

Research Questions

The purpose of this study is to identify how college students can use intersectionality to guide them through using Causal Layered Analysis to interpret course content. It is easy for people to think of the future defensively—in fear that the future will be worse than the present, people can take on a narrow focus, to merely preserve what they have (Hancock, 2019; Inayatullah, 2019). This, however, occurs at the expense of developing and implementing visions of preferred futures (Hancock, 2019; Inayatullah, 2019). Because most students are unfamiliar with futures thinking, it is particularly easy for this group to fall into stereotypical, fatalistic ways of thinking about the future (Davidson, 2019). Providing clear structure to guide students is critical to ensuring that they are prepared to clearly identify problems and goals so as to develop plans to achieve preferred futures. This study will document in what ways intersectionality has contributed to students' ability to articulate conceptually rich preferred futures.

This study took place in two Introduction to Sociology courses at an urban community college in the southeastern United States. Because Introduction to Sociology is a general education course, it attracts students from most majors

offered at the college because it fulfills a requirement for graduation. This study thus provides information on a broad spectrum of college students. Community colleges in the United States provide low-level tertiary education, open to all students who have completed high school, in the form of associate's degrees, some of which prepare students for entry into the workforce and some of which prepare students to transfer to a university to complete their bachelor's degree. As such, using a community college for this study is an opportunity to study students of varying degrees of academic expertise and preparedness. Furthermore, using a general education course as the setting of this study ensures that students from a variety of fields are included.

The data for this study is from a final project in the course, in which students worked in groups to build a CLA pertaining to technology usage. Because this was the culminating project in the course, students were expected to integrate knowledge from the entire semester, in which students had had the opportunity to explore a variety of topics in the discipline of sociology (e.g., diversity, education, environment). Groups of students completed this assignment by posting key statements (which took both verbal and visual forms) on boards that were shared by the class as a whole (see Fig. 1).

Fig. 1: One class's final project, with the deconstruction and reconstruction present at the front of the room

Deconstruction of the Past and Present

Table 1 presents an analysis of the students' deconstruction of technology usage in the past and present. For each layer of CLA, the table summarizes key statements made by students; provides a description of the types of intersections present when applicable (e.g., an intersection with age or an intersection with politics); and identifies the level of that intersection (whether the intersection is a category to which people belong that influences their engagement with technology or a broader context for technology usage). Selected close-up images from the students' boards are shown in Fig. 2 and 3.

Table 1: Deconstruction

Layer	Key Statements	Types of Intersections	Level of Intersection
Litany	Exacerbation of climate change and pollution	Environment	Context
	Merging of human and machine	-	-
	Improvements to medical technology	-	-
	Humanoid robots look and act unnatural	Communication norms	Context
	Popularity of social media	Age, social class	Category
	Differential access to new technologies	Age, social class	Category
Systemic Causes	Our current technology is too limited for clean energy needs	Environment	Context
	Use technology to benefit people with disabilities	Disability	Category
	Multiple levels of government implicated in exacerbation of climate change	Politics	Context
	People feel uneasy about new expectations as technology is more prevalent	Education, work	Context
Worldview	Feelings of powerlessness over new technologies	-	-
	Uneasiness about humanoid robots specifically because of their odd appearance	-	-
	Media misinformation about climate change	Environment, communication norms	Context
	Difficulty with communication or lack of communication about technology, especially across age groups	Communication norms, age	Context, category
Myth and Metaphor	Live beyond your limitations	Health, age	Context, category
	How far is too far?	Health, age	Context, category
	Need for universal access	Social class	Category
	Whose responsibility is this? Who has, or should have, power?	Environment, communication norms	Context

    In this deconstruction, students used intersectionality in multiple different ways to build conceptual richness. First, as students covered the Litany level, they indicated multiple different general themes pertaining to technology—different emerging technologies; how they are used; and technology's relationship to the environment. Intersectionality has thus encouraged students to widen their perspective, to identify interrelated issues instead of perceiving them as mutually exclusive. This widened perspective continued throughout the CLA, in which students returned to, and added on to, the intersections present in the Litany level.

    A second way students used intersectionality was to make connections between individuals and broader society, and this use became clear as the students transitioned to the Systemic Causes level. One notable example is shown in Fig. 2; here, students drew a word cloud pertaining to climate change. Students articulated a variety of problems negatively affecting the environment (e.g., fossil fuels, deforestation), problematic communication strategies (e.g.,

lack of belief in climate change, unwillingness to compromise), as well as multiple levels of government (local and national) that are implicated. In this example, students articulated particular actions that bridge the gap between small-scale interactions (e.g., poor or nonexistent communication) and society-wide outcomes (e.g., fossil fuel usage). Furthermore, within the Systemic Causes level, students continued to widen their perspective, bringing in both category-based and context-based intersections (in particular, disability and work respectively).

Students' deconstruction incorporated analysis of both categories and contexts at all layers of the CLA. A third way in which students used intersectionality manifested itself in the Worldview and Myth and Metaphor layers, where students brought together categories and contexts in order to deal with the "wicked problems" they had articulated. In the Worldview section, students highlighted large-scale media misinformation, as well as smaller-scale communication difficulties between ordinary people, as contributing to conflict. Students followed by identifying some competing myths—should we live beyond our limitations, or is there a point when our technology goes "too far"?

Students also used the fourth layer of CLA to question who has, or should have, power, as shown in Fig. 3. In this portion of the project, some students wrote rap verses from the perspective of a climate change believer and denier. The verse from the perspective of the believer says:

> "This is a message to all you deniers."
> "The summers are getting hotter causing major forest fires."
> "I hear you in the back yelling it's a hoax."
> "But why are you oblivious to the melting of the poles?"

This verse displays those who believe in climate change as criticizing those who do not for ignoring a wide variety of evidence. The verse from the perspective of the denier adds information about this conflict:

> "Why do you think the world will end?
> *It's been around a while."*
> "Why do you think the world's gonna end?
> *It's doing fine without us!"*
> "Why do you think the icebergs are melting?
> *Nothing lasts forever."*
> "The sun sets fine without our help!
> *It's been around a while!"*

This portion of the students' analysis identifies how climate change deniers do not necessarily deny that our earth is changing but rather that they believe the changes are out of our control entirely. The difference between believers and deniers thus goes deeper than a disagreement about the details of what on earth is changing—even if members of the two groups agree on these facts, some believe we should take action to reduce impact, while others believe human action is futile. Because the disagreement goes deeper than an analysis of systemic causes, reconstructing the issue involves building new myths and metaphors that will underlie the future of 2100, as the next section will elaborate on.

Fig. 2: Deconstruction Systemic Causes layer, in which students identify a variety of problems negatively influencing the environment, including multiple levels of government
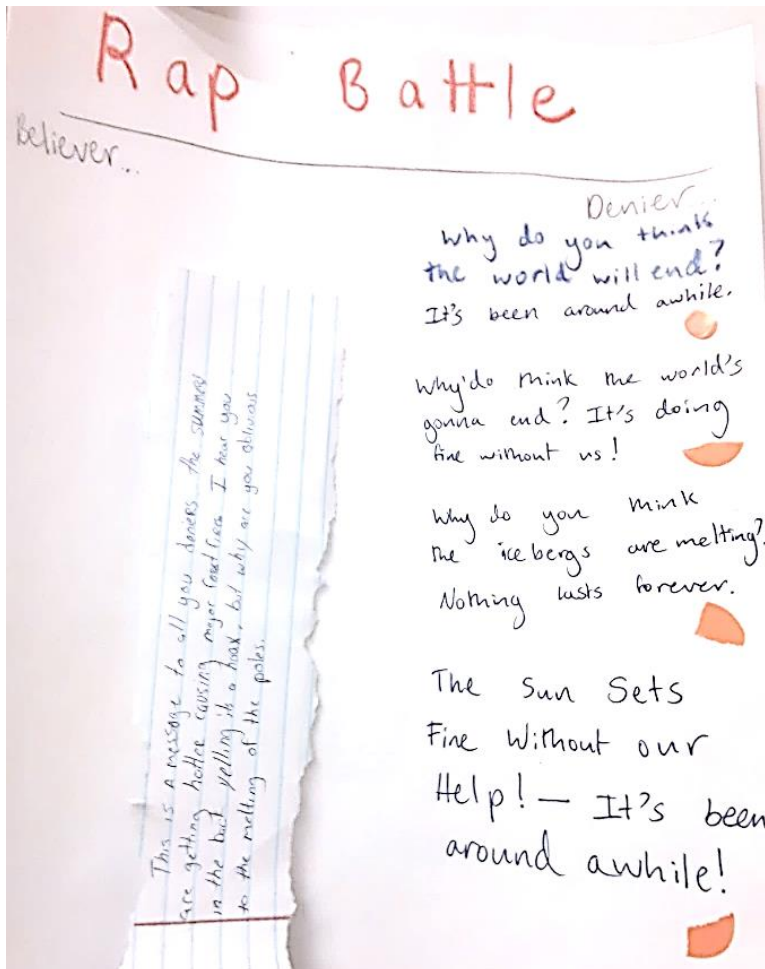

Fig. 3: Deconstruction Myth and Metaphor layer, in which students expressed the views of a climate change believer and denier in the form of a rap battle between the two

Reconstruction: Thinking Forward to 2100

Table 2 presents an analysis of the students' reconstruction of technology usage, thinking forward to 2100 based on problems and issues identified in the reconstruction. For each layer of CLA, the table summarizes key statements made by students; provides a description of the types of intersections present when applicable (e.g., an intersection with age or an intersection with politics); and identifies the level of that intersection (whether the intersection is a category to which people belong that influences their engagement with technology or a broader context for technology usage). Selected close-up images from the students' boards are shown in Fig. 4 through 6.

Table 2: Reconstruction

Layer	Key Statements	Types of Intersections	Level of Intersection
Litany	Will we still be considered human as our medical technology becomes extremely advanced?	Health	Context
	Vulnerable earth	Environment	Context
	Harmony between humans and humanoid robots	-	-
	Equal access	Age, social class	Category
Systemic Causes	More acceptance of diverse people	Age, gender, religion	Category
	Prioritize non-human stakeholders (plant and animal life)	Environment	Context
	Consider the wider universe (research on outer space and extraterrestrial life)	Environment	Context
	More integration of people with disabilities in everyday life	Disability	Category
Worldview	Diminishing bias	Age, gender, religion	Category
	Prioritize technology usage for safety and health to minimize fear and harm	Environment, health	Context
	Extend compassion to non-human stakeholders (e.g., humanoid robots, extraterrestrial life)	-	-
Myth and Metaphor	Integration should be institutionalized through law and policy—this includes human diversity, plants and animals, and other beings (e.g., robots, extraterrestrial life)	Disability; other categories implied but unspecified (see Fig. 6); environment	Category, context

Students' reconstruction of preferred futures for 2100 responded to the themes in their deconstruction. The litanies of 2100 encouraged not necessarily finalized solutions to problems identified in the deconstruction but rather continued attention to the issues—questioning the role of humans in a mechanized world, perceiving earth as vulnerable and in need of continued care and attention, and further equalizing access to technology across the digital divide. Such a focus indicates that CLA has encouraged students to consider these problems as "wicked"; thus moving away from expecting simplistic one-time solutions and toward acknowledging the need for long-term planning and continued caution to prevent resurgence of hazards.

As in the deconstruction, students used intersectionality to make connections between individual behavior and society. In the Systemic Causes and Worldview level, students encouraged diversity and inclusion, both for humans (e.g., age, gender) and non-human stakeholders (e.g., plants and animals on earth, potential extraterrestrial life elsewhere in the universe). Students developed a cohesive Myth and Metaphor from these themes—bringing together categories and contexts, students envisioned institutionalizing diversity and inclusion through law and policy. The fact that students developed a cohesive Myth and Metaphor from their analysis indicates that they have

brought together the issues under consideration to theorize of a common problem (Taylor, 2016). In other words, students' preferred future suggests as a basis that we move beyond ingroup conflict to determine solutions that work to solve multiple problems simultaneously (Taylor, 2016). Even though people may have diverse focuses (e.g., animal activism, women's rights), it is a more efficient use of resources to work to bring together stakeholders to find common ground—paralleling Taylor's (2016) example of how current fossil fuel producers could reorient their assets toward cleaner options, thus meeting their economic needs and environmentalists' clean energy needs simultaneously. This integrative thinking allows us to use intersectionality as a social movement strategy (Chun et al., 2013).

Importantly, students' reconstructed a Myth and Metaphor that made connections between relationships in day-to-day life and long-term futures. The term "global catastrophic risks" refers to events that would cause significant negative effects to a large number of countries or continents (Kuhlemann, 2019); they are thus distinguished from small-scale or more endurable problems. Examples of global catastrophic risks include global war, climate change, and pandemics. It is difficult for the public to respond to global catastrophic risks with the attention they deserve because by definition, these risks require us to extend our attention to people who are far away (Kuhlemann, 2019). It becomes even more difficult to consider the effects of current issues on people or other living things that have not yet been born, who are even further from most people's minds (Kuhlemann, 2019). Considering global catastrophic risks is difficult for human beings, because we tend to be more easily moved by accounts or visuals of specific individuals in distress as opposed to statistics on overall outcomes (Kuhlemann, 2019; Yudkowsky, 2008). Because narrative stories can help people make connections between the day-to-day process of social change and scholarly data (Milojević & Inayatullah, 2015), intersectionality, with its focus on broadening analysis of categories and contexts, can guide students through the challenge of making these connections to build solutions to wicked problems.

A notable unusual finding was the fact that students spoke explicitly about disabilities frequently, but nowhere in this CLA did students explicitly mention racial issues—despite the fact that two weeks of a 15-week semester were devoted to a unit on race, and there was no unit on disabilities in this course. The American sociologist Bonilla-Silva (2002) used the term "color blind racism" to refer to how speaking about race is often taboo in the United States. White Americans tend to ignore or minimize racial issues even when they are relevant. For example, students neglected to refer to readings in the course pertaining to racial discrimination in American workplaces and schools, despite the relevance of these to students' preferred future of integration and acceptance. Students tend to be very sensitive regarding the way they are perceived by their classmates, which can lead them to avoid speaking up at certain times, such as when discussing a difficult or controversial issue (Roehling, Kooi, Dykema, Quisenberry, & Vandlen, 2010). Instructors using CLA with groups of students should thus be aware that the struggles of regular class discussion still apply when using this method.
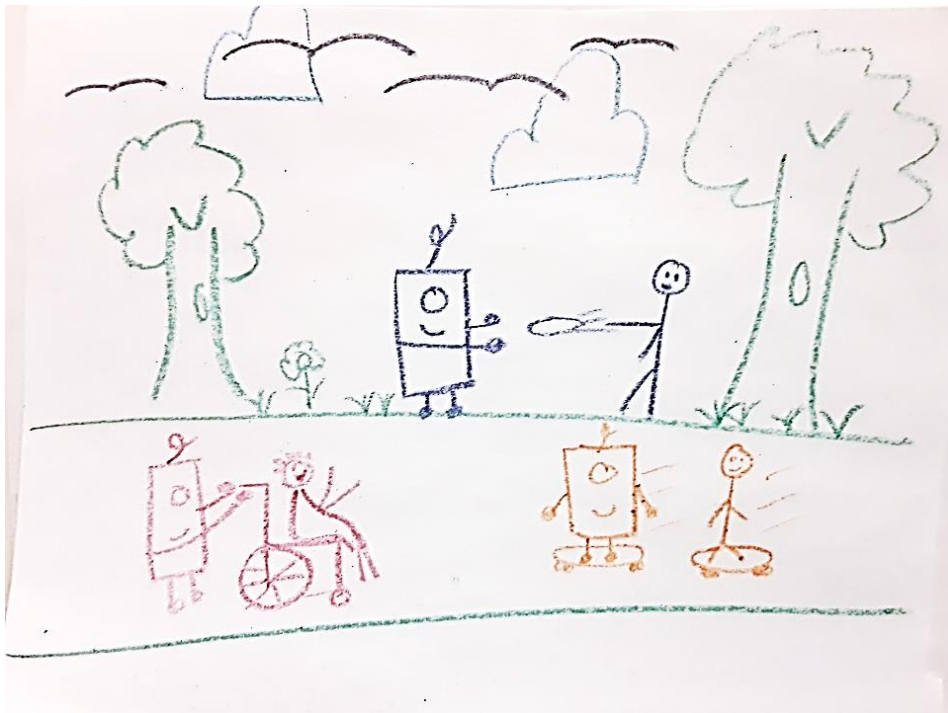
Fig. 4: Reconstruction Systemic Causes layer, showing integration of people with and without disabilities enjoying time in a park, along with robots

Fig. 5: Reconstruction Myth and Metaphor layer, showing people with and without disabilities having equal access to technology
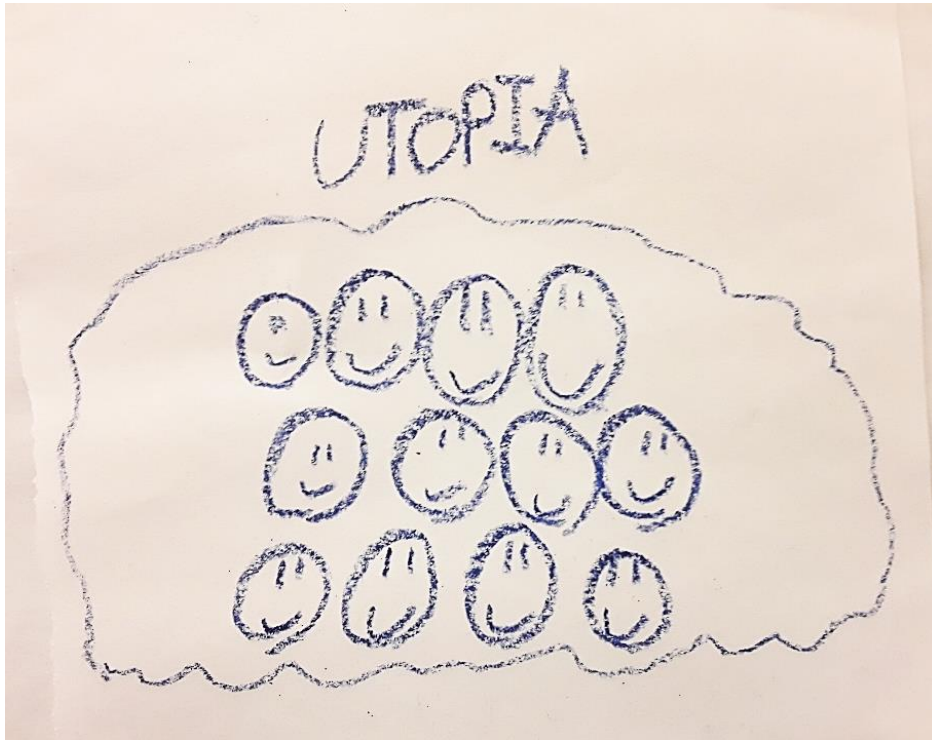
Fig. 6: Reconstruction Myth and Metaphor layer, showing humans being integrated (but not specifying which categories of people are integrated)

Conclusion

Critical research is intended to question power relations through deconstructing current-day language and categories and considering alternatives for the future (Inayatullah, 1998). Intersectionality serves the purpose of leading students through CLA, by encouraging students to think broadly about interrelated problems or issues; make connections between individual behavior and society; and make connections between categories and contexts to envision solutions to complex problems.

In an analysis of human error in scholars' judgments about global catastrophic risks, Yudkowsky (2008) critiqued some of his previous academic work:

> Once upon a time I made up overly detailed scenarios, without realizing that every additional detail was an extra burden. Once upon a time I really did think that I could say there was a ninety percent chance of Artificial Intelligence being developed between 2005 and 2025, with the peak in 2018. This statement now seems to me like complete gibberish. Why did I ever think I could generate a tight probability distribution over a problem like that? Where did I even get those numbers in the first place? (Yudkowsky, 2008)

Yudkowsky (2008) followed by stating that futures thinking requires broad knowledge, beyond just a narrow disciplinary domain. Using intersectionality as a guide for CLA can help students engage in the process of making these necessary connections—and translating them into policy recommendations, which will be necessary to put preferred futures for technology and environment into action (Hoffman, 2019).

Acknowledgements

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