

American Engineering and Engineering Education Are Settler Colonial Projects: Making Visible the Logic of Possession

Austin Morgan Kainoa Peters, Purdue Engineering Education

Austin Morgan Kainoa Peters was born and raised in Wailuku, Maui, Hawaii. As a current Ph.D. student at Purdue University in the School of Engineering Education, Austin is working to unlearn his assimilative experiences in engineering education through drawing on his experience of being multiracial and Native Hawaiian. His research goal is to make visible and break down settler colonialism in the engineering education field.

American Engineering and Engineering Education are Settler Colonial Projects: Making Visible the Logic of Possession

Background – Invisibility of Colonialism

The purpose of this critical theory paper is to make settler colonialism, specifically the settler colonial logic of possession, visible in American engineering and engineering education. The motivation of this paper stems from the invisibility of settler colonialism throughout American engineering education research making colonial and settler colonial structures the norm in our field even as scholars in our field begin to apply anticolonial, postcolonial, neocolonial, and liberatory perspectives to their work. This invisibility is intentional as settlers designed settler colonialism as a structure that make its own deployment as well as the deployment of other oppressive social structures hidden by making oppressive processes and consequences seem unavoidable and natural [1, 2].

This invisibility is seen in the Journal of Engineering Education (JEE), the American Society of Engineering Education's (ASEE) flagship research journal, with only one mention of settler colonialism. Alice Pawley [3] talks about the settler colonial origins of American engineering in the stealing of land and knowledge from the Haudenosaunee people to build the Erie Canal. Pawley describes further how the social structure of colonialism, along with other oppressive social structures, were and are the foundation of engineering in the United States of America (USA), even though engineers and engineering educators ignore these structures. Ignoring these structures demonstrates how settler colonialism is successfully engrained yet invisible within American engineering and engineering education.

Taking a step out, I also searched in JEE for words related to colonialism (i.e. colonial, decolonization, colonized, etc.) with 18 articles showing up, including Pawley's. The use of these terms varies widely with few delving into the colonial structures of American engineering. One of these articles has colonial in the name of the school of a participant [4]. Three of the articles [5-7] mention a colonial period. Another three [8-10] explain their use of terms as a resistance to colonial domination extending from Idalis Villanueva Alarcón and colleagues' [11] argument to understand the colonial and imperial linguistic histories of Latin America. In all these examples except for Idalis Villanueva Alarcón and colleagues' article, the relationship to engineering, engineering education, or engineering education research is less clear.

Idalis Villanueva Alarcón and colleagues [11] along with four others [12 – 15] explicitly mention how histories of colonialism within and outside the field reproduce the illusion of epistemological superiority of Western knowledge in engineering education and engineering education research. Other scholars start to resist this epistemological domination in engineering education research. In terms of qualitative research methodologies, two articles [16, 17] discuss applying Linda Tuhiwai Smith's *Decolonizing Methodologies* to think about whose story is being told in and who is benefitting from academic research. Reynante [18] as well as Sochaka and colleagues [19] both discuss how an understanding of colonialism should impact how engineering educators work in communities other than their own. These articles represent early examples of making colonialism visible with an emphasis on deconstructing the superiority of Western knowledge [20] throughout American engineering and engineering education. However, I want to push the field to think deeper about the processes of colonialism and settler colonialism like in James Holly Jr. and Stephanie Masta's piece [21] where they describe making the invisibility of whiteness visible in engineering education research. In the conclusion of their piece, they urge engineering education scholars to critique colonialism and capitalism when trying to move towards liberatory frameworks so that our field can truly confront these systems of power based in whiteness. So far in JEE, scholars have named colonialism and settler colonialism but have failed to confront these systems illustrating how American engineering and engineering education allows the consequences of these oppressive systems to go unscathed.

In the following sections, I hope to do my part in no longer letting settler colonialism hide in the shadows. I will describe settler colonialism through distinguishing it from colonialism and outlining different settler colonial logics. My goal of contextualizing settler colonialism is to influence other scholars to theorize more deeply when discussing colonialism and settler colonialism. After distinguishing settler colonialism from colonialism, I will illustrate why I use Maile Arvin's [22] logic of possession to explain the strategic goal of settler colonialism and apply this logic to the case of the city of Kaka'ako in Honolulu, Hawai'i. This application of the logic of possession will illustrate how ideologies of American engineering and engineering education have and continue to reinforce settler colonial possession and other structural oppressions. By making visible the connection between settler colonialism with engineering and engineering education, I am beginning to deconstruct the invisibility of settler colonialism with the hope to better colonialism, colonialism, and other oppressive structures.

I center settler colonialism instead of colonialism due to my background as a Native Hawaiian forcibly living under the settler colonial nation of the USA motivating my overall research interests. I also argue that it is important to make settler colonialism visible at this specific conference as the conference is residing in what is called Canada and ASEE is an organization of the so-called USA. Both Canada and USA are occupiers of Turtle Island that have and continue to possess the natural world and hundreds of Native peoples through settler colonialism.

Settler Colonialism and Moving Towards the Logic of Possession

I begin with my favorite description of settler colonialism from Maile Arvin, Eve Tuck, and Angie Morrill [2], three Native feminist theorists. I cite their description at-length for its significance in my work and understanding of settler colonialism:

Settler colonialism is a persistent social and political formation in which newcomers/colonizers/settlers come to a place, claim it as their own, and do whatever it takes to disappear the Indigenous people that are there. Within settler colonialism, it is exploitation of land that yields supreme value. In order for settlers to usurp the land and extract its values, Indigenous peoples must be destroyed, removed, and made into ghosts. Extracting value from land also often requires systems of slavery and other forms of labor exploitation. These simultaneous processes of taking over the land (by killing and erasing the peoples with previous relationships to that land) and importing forced labor (to work the land as chattel slaves to yield high profit margins for the landowners) produced the wealth upon which the U.S nation's world power is founded. Profit is obtained by making property out of the land, as well as out of the body of the slave (p.12). Arvin, Tuck, and Morrill [2] highlight three actions of settler colonialism with a foreign population coming to a place, claiming that place, and disappearing the Native population. Colonialism, on the other hand, is a process where a foreign population comes to a new place, ascends into power, and demands some form of a resource or labor from a colonized population [1]. The major distinction between settler colonialism from other forms of colonialism is that the foreign population works to *replace* the Native population with the foreign population [1, 23 – 24]. In other words, colonialism is the process of colonizers ascending into power with the motive to exploit the colonized land and people for extraction and/or subordination, while settler colonialism is the process of colonizers claiming possession over land with the motive of disappearing the colonized Native [23].

Thinking about settler colonialism's motive to disappear the colonized Native and their relationship to land, I want to highlight Wolfe's [23] foundational theorization of the logic of elimination that outlines the strategic goal of settler colonialism being to erase the Native and their relationship with the land. Consequently, settler colonialism is an ongoing structure that changes shape to meet this strategic goal of elimination. The logic of elimination here does not only mean the physical erasure (like the brutal killing and lynching of Native Americans throughout the colonization of the United States) but also the psychological erasure (like the boarding school projects in both Canada and United States with the goal to "Kill the Indian and Save the Man" [25] and current projects in research to erase non-Western knowledges [24]), or social erasure (like through situating Native Americans, Alaska Native, and Native Hawaiians as simply racial groups rather than the Indigenous stewards of the land [26]).

Even though many scholars would agree that Arvin, Tuck, and Morrill describe the logic of elimination, one of the reasons that Arvin, Tuck, and Morrill's description of settler colonialism is my favorite is because these Native scholars give special attention to the land, specifically the extraction of value [2]. I argue that eliminating Indigenous peoples and their relationship to land is a part of the process to possess land which requires a subsequent possession of Native peoples and other marginalized peoples for power and profit that looks like elimination. This is important for the context of my work as I want to shift the focus away from the elimination of the Native towards the possession of land and the subsequent possession of Natives, as well as other marginalized groups residing in that place.

Maile Arvin [22], a Native Hawaiian feminist scholar conceptualized the logic of possession as a different way to think about the strategic goal of settler colonialism. In *Possessing Polynesians*, Arvin challenges the logic of elimination to be re-conceptualized as the logic of possession for the case of Polynesians. Arvin describes the logic of possession as settlers falsely naturalizing whiteness as Indigenous to a place [22].

We see this naturalization of whiteness as Indigenous with concepts like Manifest Destiny and Terra Nullius where American and Australian settlers, respectively, rationalize themselves as the "true" inhabitants of that place while settlers ignore the Native presence completely or view the Indigenous peoples as not civilized enough to be inhabitants [27]. For example, Manifest Destiny was a settler colonial tool in the United States to describe Westward expansion as inevitable socializing that these lands were for the taking as if the Indigenous peoples were not there. British explorers employed Terra Nullius to describe Australia as unoccupied through positioning Aboriginal people as less than human to be able to occupy that land so that the settlers could rationalize the land being theirs to possess [27]. Through these concepts of naturalization, settlers position Native land and people as inherent possessions of whiteness [22].

Under the logic of possession, Native land and people are possessions that cannot claim whiteness. Settlers situate Native land and people as "near white" so that settlers can continue to rationalize themselves as the possessors of Indigenous land and people [22] through claiming their falsely naturalized indigeneity. Although Arvin applies this logic of possession to Polynesia, I argue the logic of possession can also be applied in other locations as I have described with Manifest Destiny in the United States and Terra Nullius in Australia, as well as the examples of psychological and social erasure (that I would reframe as psychological and social possession) I described earlier.

To be clear, Arvin aligns with Wolfe's understanding of settler colonialism as an ongoing structure that takes on different forms to maintain the strategic goal of settlers disappearing the Native population [23], but Arvin differs in this strategic goal [22]. The strategic goal of the logic of possession is different from the logic of elimination for two reasons. The first is that possession recognizes that disappearing does not mean elimination because elimination cannot be fully realized. Elimination cannot be realized as many Indigenous peoples continue to survive through and resist settler colonialism, playing an important role in making the ongoing settler colonialism structure visible. Another reason elimination cannot be realized is because settlers need Native land and people as possessions to profit off. Needing land and people to profit off is why settlers position Native land and people as near white or what Arvin [22] calls the "permanent partial state of the Indigenous being inhabited (being known and produced) by a settler society (p.16)." Settlers assign this "permanent partial state" to Native possessions to establish their authority and Native inferiority to maintain a racialized hierarchy and exploitation.

Going back to Arvin, Tuck, and Morrill's description [2], making property out of land and marginalized people including the slave is how the USA gained its wealth. Settler colonialism requires the land and racialized hierarchy in place so that settlers can impose their authority over these possessions to profit. For this system to work, settler colonialism also needs to keep these power dynamics invisible [1]. Making settler colonial exploitation visible elucidates that settlers are falsely claiming authority. Because this authority is at risk when settler colonialism is visible, settlers need to invisibilize settler colonialism, as well as the other oppressive structures that establish different hierarchies like racism, to continue to profit off the land and marginalized peoples. I have demonstrated this invisibility in JEE to illustrate how American engineering education research conforms to colonialism and settler colonialism.

The second reason that the logic of possession differs from the logic of elimination is to create space to contend with other oppressive social structures. Arvin [22] specifically uses the logic of possession to confront the gendered aspects of settler colonialism. Settlers position Native land and people as exoticized and feminized objects so that settlers can use heteropatriarchal whiteness to claim these land and people as possessions for profit. In the context of Hawai'i, J. Kehaulani Kauanui [28] and Haunani Kay-Trask [29] describe how the military of the USA and the institution of tourism, respectively, feminize and objectify Native Hawaiian land as an American possession for profit. Arvin [22] fittingly connects both the military and tourist

industries in her work explaining how visiting military men used this process of feminization and objectification to possess Native Hawaiian women through miscegenation and how the tourist industry possesses Native Hawaiian land and women through commodifying and misappropriating depictions like the hula girl in a coconut bra and grass skirt. These examples of Native Hawaiian land and women illustrates how the logic of possession can put settler colonialism and other structural oppressions into immediate conversation in ways that the logic of elimination overlooks. Furthermore, Arvin [22] also conceptualized the logic of possession as anti-Indigenous, anti-Black and anti-immigrant. Thus, the deconstruction of the settler colonial logic of possession requires the simultaneous deconstruction of multiple structural oppressions.

Because of this simultaneous deconstruction, I apply the logic of possession as an analytical lens to illuminate how American engineering and engineering education use structural oppressions to possess Native Hawaiian land and marginalized people through the case of Kaka'ako. Due to the location and history of Kaka'ako as a coastal and capitalist tool to colonize Hawai'i, I will spend much of my analysis focused on the forces of capitalism while sprinkling in conversations on imperialism and race. The emphasis on capitalism aligns with the work of Ramones and Merry [30] that calls for a deeper discussion on the materialized relationship between capitalism and settler colonialism to understand economic, political, and cultural conditions as capitalism often offers the tools to allow settler colonialism to permeate through a complex and intertwined relationship. I hope that my analysis moves towards the direction to meet the calls of Pawley [3] to exemplify naming and confronting systems of power, as well as Holly Jr. and Masta [21] to make whiteness visible through contending with settler colonialism and capitalism.

Kaka'ako as a Microcosm of the Settler Colonial Logic of Possession

Kaka'ako is currently an urbanized district on the island of O'ahu where construction projects are planned for the next 20 years. Right after the new year, I took a quick trip with my friends to O'ahu as a goodbye before all of us moved away from Maui. We visited Kaka'ako and the construction plans are evident. On each street corner, I saw pictures of the future high-rises that continues to construct downtown O'ahu as a metropolis for the tourist and military industries.

Instead of doing what so many are doing and looking forward to what Kaka'ako will look like, I will take you (the reader) backwards to what Kaka'ako was and how American engineering physically and socially contributed to the construction of figurative and physical settler colonial layers to possess Hawai'i and Native Hawaiians. As we go through the layers, I will weave in the ways American settlers used the logic of possession and positioned Kaka'ako as an engineering project. I also use the layers of Kaka'ako to shed light on the ways that American engineering and engnieering education participate in and conform to the logic of possession.

An important note for this section is that I pull in Hawaiian history in order to make the connections between engineering and colonization visible. My use of Hawaiian history in this paper should not be referenced for its use of history as I left out many events that help to better understand the colonization of Hawai'i. Along with that, I do not believe that history moves linearly in space or time. Consequently, I view my use of Hawaiian history as an active shaping of Kaka'ako with various moving parts across time and space. My organization of this shaping comes with the goal of using Kaka'ako as a larger representation of how settlers used the logic of possession throughout Hawai'i and in other nation states living under a settler colonial regime.

Possessing Hawaiian Land

Kaka'ako was a fishing village full of *loko i'a* (Native Hawaiian fishponds) and known for its salt ponds. My previous work [31] discusses how loko i'a are engineering feats that allowed Native Hawaiians to maintain an abundance of food and water for Native Hawaiian people while tending to the health of the natural world. With Captain James Cook bumping into the Hawaiian islands in 1778 on his expedition to extend the British empire [32], Hawai'i and specifically Kaka'ako became an important stopping place for ships. Due to increasing foreign pressures of being a part of the global, capitalistic economy, the Native Hawaiian monarchy (with the influence of American missionaries and other early arrivants to the islands) decided to move towards land ownership with the Māhele in 1848 and towards a capitalistic economy [30]. These decisions completely changed the landscape of Kaka'ako from a wetland willage to a dredging, in-fill, and incineration project to to meet the infrastructural needs for harbors and wharves [33].

Although Kaka'ako was not a settler colonial possession of the United States yet, the groundwork to become a possession is beginning with the introduction of globalization and capitalism. The pressures of globalization and capitalism replaced and continues to replace Native Hawaiian engineering practices based in tending to the health of the natural world [31]. Instead, the mindset of engineering represented through these infrastructural engineering projects, as well as the move towards a capitalistic economy, is to treat the land as a possession for profit. Future settlers positioned Kaka'ako as a globalized trading post beginning to place the value of Kaka'ako (and Hawai'i more broadly) as simply a natural resource for economic profit.

Placing the value of land solely based on profit is a part of settler colonialism that invisibilizes the animacy of the natural world. In many Indigenous cultures, especially Native Hawaiian culture, the natural world is more than a resource, the natural world is the ultimate knowledge holder, connector, and sustainer of all things. Treating the natural world as only a resource replaces Indigenous values of the natural world with a Western conception of land that only values the profitability of the land. Invisibilizing the natural world as a resource also invisibilizes Indigenous connections to the natural world creating the space for settlers to falsely claim indigeneity and rationalize possession [22] over the land for economic exploitation.

I argue that American engineering is often an active participant in this invisibilization process of the logic of possession through enabling the capitalistic motives of settlers. In the example of Kaka'ako, the dredging, in-fill, and incineration engineering projects provided the infrastructure needed for globalized trade, replacing Native Hawaiian conceptions of the natural world towards a Western understanding where profiting off the land is an unavoidable process [2].

Settlers maintain the logic of possession through viewing Kaka'ako as a resource for globalized power and profit today through different engineering projects. Instead of the focus on trade infrastructure, current Kaka'ako engineering projects align with the tourist and military industries. Kaka'ako and Hawai'i are commodified for its natural beauty in the tourist industry [29] and for its strategic location for the USA military to continue its imperial and neocolonial efforts [32]. These two industries are the largest industries in Hawai'i [34], as well as intimately tied to the construction and engineering fields [35]. The past infrastructural projects of Kaka'ako and the current high-rise and other construction projects illustrate how American engineering has

played an integral role in invisibilizing the Native Hawaiain connection to land to establish and maintain the logic of possession over different parts of Hawai'i using the global capitalist economy as a tool to rationalize possession of land through whiteness.

Possessing Native Hawaiian (and other Marginalized) People

While the first layer represents how moving towards a globalized economy led to the early possession of the land in Hawai'i as a globalized trading post and capitalistic endeavor, the second layer shows how the changing landscape of Kaka'ako created an early form of possession over Native Hawaiian people. The sugar plantation era represents a time where the descendants of the first missionaires who came to Hawai'i became sugar plantation owners and wanted to possess more of the economy in Hawai'i [32, 36]. With the boom in sugar production in Hawai'i and the change to a capitalistic economy, American owners of these sugar plantations used their power to divert water away from Native farms and imported cheap labor through the possession of Japanese, Chinese, Korean, Portuguese, Puerto Rican, and other immigrants [32 - 33, 36].

The diversion of water using irrigation ditches throughout Hawai'i are celebrated engineering feats [37]. However, this diversion of water took resources away from Native Hawaiian farmers placing them at a lower socioeconomic level than the American plantation owners. Through the emphasis on sugar production and economic profit for American settlers, the racial hierarchy related to the logic of possession [22] was evident during this time. Not to mention the imported cheap labor of racialized individuals who are also situated in that hierarchy is another signal of settler colonialism and akin to how the USA originally built its wealth off making property out of the land of Native Americans and the bodies of enslaved peoples [2]. However, settlers worked and continue to invisibilize these hierarchies. Because of being placed towards the bottom of the racial hierarchy and the need to survive in the capitalist system, Native Hawaiian farmers, as well as the racialized imported laborers, moved to Kaka'ako changing the district into a multiethnic working-class neighborhood [33].

Kaka'ako as an multiethnic working-class neighborhood represents an early version of an invisibilized racial hierarchy so that American settlers could gain economic and political power through their sugar plantations to possess Native Hawaiians and other marginalized peoples until today. Native Hawaiians disproportionately suffer from health, social, and economic disparities [32] illustrating the consequences of being positioned as near white yet inferior possessions [22]. In order to maintain Native Hawaiian inferiority through a racialized hierarchy, settlers sell Hawai'i as a multicultural paradise that invisibilizes the Indigenous connection that Native Hawaiians have to their homeland [34]. Multiculturalism is used as a settler colonial tool to invisibilize the racial hierarchy in Hawai'i through reframing the capitalist need for cheap laborers as a celebration of cultural diversity. The impact of the sugar plantation era represented through this multiethnic neighborhood before and multiculturalism today illustrates how invisibilized racial hierarchies maintain the positioning of Native Hawaiians as possessions.

I connect this possession of people to ideologies in engineering education that illustrate how engineering education is also a project of the settler colonial logic of possession. Engineering education actively works to maintain the depoliticization of engineering work [38] that invisibilizes the racialized hierarchies engineering work establishes through projects like the previously mentioned water diversion projects. Through depoliticizing engineering work,

engineers and the field of engineering can maintain its economic power as an managerial profession [39] while the profit engineers gain extends from extracting value from the land through treating it as a natural resource and exploiting marginalized people as cheap laborers [2]. These patterns are further invisibilized within the field as engineering education uses meritocratic ideologies to invisiblize inequalities in the demographics of engineers [38] further maintaining the possession of people through the practice of engineering. Through both depoliticization and meritocracy, American engineering education rationalizes whiteness as the norm in the field to maintain economic and racialized power in the hands of white settlers [22].

The Role of Western Progress in Possession

In the previous sections, I discussed how the logic of possession is employed in American engineering and engineering education through looking at the infrastructural and multiethnic neighborhood layers of Kaka'ako. This section looks at the most recent settler colonial layers of Kaka'ako after settlers came into illegal possession of the government of Hawai'i. I use illegal here to bring awareness to Hawai'i being an internationally-recognized nation and the USA intentionally ignoring international law to illegally overthrow Queen Lili'uokalani in 1893 to help American settlers (mainly descendants of the powerful sugar plantation owners) annex Hawai'i as a territory, leading to eventual statehood [32, 36]. Leading up to statehood in 1959, the settler Territorial Government designated Kaka'ako as an industrial district so that businesses being pushed out of the city center in Honolulu could move to Kaka'ako [33]. The previous working-class neighborhood saw many evictions, leases taken away, and warehouses built where the previous residents lived. With the rapid development and increasing population that came after statehood, Kaka'ako started to take on its urban landscape that is seen today [33].

Settlers made decisions in both designating Kaka'ako into an industrial zone and then transforming this zone into an urban metropolis to restructure Kaka'ako to match their vision of progress, progress based in technological and economic advancement [22, 25] through and for private industries [39, 40]. In order to possess Hawaiian land and Native Hawaiian people, settlers continuously positioned themselves as the authority in the economy and the government through a false claim to indigeneity [22]. A Western vision of progress is seen in all the layers. The move to globalized trade and increasing sugar production both moved to progress Hawai'i to align with a capitalistic global economy. At these times, the infrastructure and water diversion projects represented technologically advanced engineering feats demonstrating how the Western vision of progress continuously works to enable the settler colonial logic of possession.

Western progress is also central to how American engineering and engineering education work as settler colonial projects. Linda Vanasupa and colleages [41] argue that disciplines created in the industrial era like American engineering value the paradigms of industry and maintain those paradigms in practice and education. Consequently, American engineering and engineering education instill a Western, industrialized vision of progress towards technological advancement and economic growth that is deeply intertwined with the settler colonial ideology of extracting value through possessing land for profit and through possessing racialized bodies for cheap imported labor [2, 22]. The goal of thes settler colonial projects is to enable capitalistic tools and ideolgoies to provide power and profit to private industries [40] and settler colonial governments [2]. American engineering played and continues to play an integral role in covering the Native Hawaiian landscape, replacing this landscape with settler colonial layers, and physically and socially constructing a Western vision of progress. All these aspects work together to possess Hawaiian land and Native Hawaiian people demonstrated through Kaka'ako.

Conclusion

Throughout the paper, I connect American engineering and engineering education to the settler colonial logic of possession through the different layers of Kaka'ako. The first layer demonstrated how American engineering projects invisibilize the animacy of the natural world and replace this animacy with a Western conception of land based in economic profit to set up settler exploitation of land as a resource. The second layer demonstrates how settlers to use the exploitation of land to establish economic power and maintain racialized hierarchies. Settlers invisibilize these hierarchies to rationalize their economic possession of Native Hawaiians and other marginalized groups as cheap laborers. We also see this establishing and invisibilizing of racialized hierarchies in American engineering education through the ideologies of depoliticization and meritocracy [38] that further explains how both American engineering and engineering education are settler colonial projects. The last two layers illustrate how a Western vision of progress are central to all the layers and further these settler colonial projects through enabling capitalist motivations demonstrating the complex and intertwined relationship between settler colonialism and capitalism [30].

Treating the land as a resource for profit, establishing and invisibilizing racial hierarchies, and using Western progress as a capitalist tool are aspects of settler colonialism that I have identified to connect the logic of possession to American engineering and engineering education. These are the connections I found evident in Kaka'ako; however, there are many connections to see, understand, and demonstrate as our field is imbricated in colonialism and settler colonialism. Without a deeper understanding of colonialism and settler colonialism along with their simultaneous interactions with other structural oppressions, our field will continue to be unable to name, confront, or resist systems of oppression. I urge anyone reading this paper to make colonialism and settler colonialism visible for themselves and for others so that we can begin to deconstruct the settler colonial logic of possession and move towards a decolonizing future.

I would be remiss to bring up decolonizing without offering my understanding of decolonizing and decolonization as this is a highly co-opted buzzword that scholars continue to water down, especially when thinking about the ways that engineering educators are discussing anticolonialism, postcolonialism, and neocolonialism without deeply contending with colonialism. My decolonial future is where all colonized peoples are given their political, economic, and cultural autonomy back so that we can tend to our relationships with the natural world again. I emphasize autonomy here to further challenge the fallacy that the natural world is possessable. Settlers falsely claim economic, political, and cultural possession over land through the logic of possession [22], but no one should be able to possess the natural world. Settlers can and should give our (inclusive of both the natural world and people) autonomy back through breaking down their illusive logics of possession or elimination depending on how you contextualize settler colonialism. Others may situate themselves closer to anticolonial, postcolonial, or neocolonial understandings and envision other decolonial futures; however, my understanding is guided by my experiential knowledge as a Native Hawaiian dealing with settler colonialism and the logic of possession, especially in the American engineering and engineering education space that continues to conform to and invisibilize structural oppressions.

References

[1] L. Veracini, "Introducing: Settler colonial studies," *Settler colonial studies*, vol. 1, no. 1, pp. 1–12, 2011.

[2] M. Arvin, E. Tuck, and A. Morrill, "Decolonizing Feminism: Challenging Connections between Settler Colonialism and Heteropatriarchy," *Feminist Formations*, vol. 25, no. 1, pp. 8–34, 2013.

[3] A. Pawley, "Opinion: Asking questions, we walk: How should engineering education address equity, the climate crisis, and its own moral infrastructure?," *Advances in Engineering Education*, vol. 25, p. 450, 2019.

[4] B. Coley and K. Thomas, "'The lab isn't life': Black engineering graduate students reprioritize values at the intersection of two pandemics," *Journal of engineering education (Washington, D.C.)*, vol. 112, no. 2, pp. 542–564, 2023, doi: <u>10.1002/jee.20518</u>.

[5] R. Drake, C. Poleacovschi, K. M. Faust, A. True-Funk, and J. Kaminsky, "Civil engineering students as avoidant actors: Using culturally relevant problem-solving to increase critical action attitudes," *Journal of engineering education (Washington, D.C.)*, vol. 112, no. 2, pp. 262–283, 2023, doi: <u>10.1002/jee.20507</u>.

[6] D. Z. Frank, E. P. Douglas, D. N. Williams, and C. D. Crane, "Investigating culturally contextualized making with the Navajo Nation," *Journal of engineering education (Washington, D.C.)*, vol. 110, no. 4, pp. 840–860, 2021, doi: <u>10.1002/jee.20423</u>.

[7] M. Wisnioski, "What's the Use? History and Engineering Education Research," *Journal of engineering education (Washington, D.C.)*, vol. 104, no. 3, pp. 244–251, 2015, doi: 10.1002/jee.20075.

[8] G. C. Fleming *et al.*, "The fallacy of 'there are no candidates': Institutional pathways of Black/African American and Hispanic/Latino doctorate earners," *Journal of engineering education (Washington, D.C.)*, vol. 112, no. 1, pp. 170–194, 2023, doi: <u>10.1002/jee.20491</u>.

[9] P. O. Garriott *et al.*, "How Latiné engineering students resist White male engineering culture: A multi-institution analysis of academic engagement," *Journal of engineering education (Washington, D.C.)*, vol. 112, no. 3, pp. 695–718, 2023, doi: <u>10.1002/jee.20536</u>.

[10] R. A. Revelo, J. A. Mejia, J. Mejía, and I. Villanueva Alarcón, "Beyond the monolith: A systematic review of the literature on Latiné/x/a/o students in engineering using a liberative approach," *Journal of engineering education (Washington, D.C.)*, vol. 113, no. 3, pp. 717–742, 2024, doi: 10.1002/jee.20598.

[11] I. Villanueva Alarcón, J. A. Mejia, J. Mejia, and R. Revelo, "Latiné, Latinx, Latina, Latino, or Hispanic: Problematizing terms often used in engineering education," *Journal of engineering education (Washington, D.C.)*, vol. 111, no. 4, pp. 735–739, 2022, doi: <u>10.1002/jee.20486</u>.

[12] C. F. Escobar, J. A. Mejia, and T. Perez, "Arrebatos and institutionalized barriers encountered by low-income Latino/a/x engineering students at Hispanic-Serving Institutions (HSIs) and emerging HSIs," *Journal of engineering education (Washington, D.C.)*, vol. 113, no. 4, pp. 1177–1197, 2024, doi: <u>10.1002/jee.20612</u>.

[13] S. Secules, "On the importance of (white) humility: Epistemological decentering as a positional orientation toward research," *Journal of engineering education (Washington, D.C.)*, vol. 112, no. 2, pp. 258–261, 2023, doi: <u>10.1002/jee.20508</u>.

[14] S. Secules, A. Gupta, A. Elby, and E. Tanu, "Supporting the Narrative Agency of a Marginalized Engineering Student," *Journal of engineering education (Washington, D.C.)*, vol. 107, no. 2, pp. 186–218, 2018, doi: <u>10.1002/jee.20201</u>.

[15] S. Secules *et al.*, "Positionality practices and dimensions of impact on equity research: A collaborative inquiry and call to the community," *Journal of engineering education (Washington, D.C.)*, vol. 110, no. 1, pp. 19–43, 2021, doi: <u>10.1002/jee.20377</u>.

[16] A. L. Pawley, "Learning from small numbers: Studying ruling relations that gender and race the structure of U.S. engineering education," *Journal of engineering education (Washington, D.C.)*, vol. 108, no. 1, pp. 13–31, 2019, doi: <u>10.1002/jee.20247</u>.

[17] J. Walther *et al.*, "Qualitative Research Quality: A Collaborative Inquiry Across Multiple Methodological Perspectives," *Journal of engineering education (Washington, D.C.)*, vol. 106, no. 3, pp. 398–430, 2017, doi: <u>10.1002/jee.20170</u>.

[18] B. Reynante, "Learning to design for social justice in community-engaged engineering," *Journal of engineering education (Washington, D.C.)*, vol. 111, no. 2, pp. 338–356, 2022, doi: 10.1002/jee.20444.

[19] N. W. Sochacka, J. Walther, and A. L. Pawley, "Ethical Validation: Reframing Research Ethics in Engineering Education Research To Improve Research Quality," *Journal of engineering education (Washington, D.C.)*, vol. 107, no. 3, pp. 362–379, 2018, doi: 10.1002/jee.20222.

[20] L. T. Smith, *Decolonizing methodologies: Research and Indigenous peoples*, 3rd ed. Zed Books, 2021.

[21] J. Holly and S. Masta, "Making whiteness visible: The promise of critical race theory in engineering education," *Journal of engineering education (Washington, D.C.)*, vol. 110, no. 4, pp. 798–802, 2021, doi: <u>10.1002/jee.20432</u>.

[22] M. Arvin, Possessing Polynesians. Duke University Press, 2019. doi: 10.2307/j.ctv11312hc.

[23] P. Wolfe, "Settler Colonialism and the Elimination of the Native," *Journal of genocide research*, vol. 8, no. 4, pp. 387–409, 2006.

[24] S. Masta, "Challenging the relationship between settler colonial ideology and higher education spaces," *Berkeley Review of Education*, vol. 8, no. 2, 2019.

[25] S. Grande, *Red pedagogy: Native American social and political thought*. Rowman & Littlefield, 2015.

[26] J. K. Kauanui, "A structure, not an event," Lateral, vol. 5, no. 1, 2016.

[27] A. Moreton-Robinson, *The white possessive: Property, power, and indigenous sovereignty*. U of Minnesota Press, 2015.

[28] J. K. Kauanui, "Native Hawaiian Decolonization and the Politics of Gender," *American Quarterly*, vol. 60, no. 2, pp. 281–287, 2008.

[29] H.-K. Trask, "Lovely Hula lands: corporate tourism and the prostitution of Hawaiian culture," *Border/Lines*, no. 23, 1991.

[30] I. Ramones and S. E. Merry, "Capitalist Transformation and Settler Colonialism: Theorizing the Interface," *American Anthropologist*, vol. 123, no. 4, pp. 741–752, 2021.

[31] A. M. K. Peters and S. Lord, "Ho'okele: Native Hawaiian and Pacific Islander Engineering Students Navigating the New Troubled Waters of Identity and Meaning," presented at the American Society for Engineering Education, 2022.

[32] H.-K. Trask, *From a Native Daughter*. in Colonialism and Sovereignty in Hawaii (Revised Edition). University of Hawaii Press, 1999. doi: <u>10.1515/9780824847029</u>.

[33] T. Grandinetti, "Urban aloha 'aina: Kaka 'ako and a decolonized right to the city," *Settler Colonial Studies*, vol. 9, no. 2, pp. 227–246, 2019.

[34] E. K. Wright and B. J. N. Balutski, "Ka 'Ikena a ka Hawai 'i: Toward a Kanaka 'Ōiwi critical race theory," in *Kanaka 'Ōiwi methodologies: Mo 'olelo and metaphor*, K.-A. R. K. N. Oliveira and E. K. Wright, Eds., 2016, pp. 86–108.

[35] D. Riley, A. L. Pawley, J. Tucker, and G. D. Catalano, "Feminisms in engineering education: Transformative possibilities," *NWSA Journal*, pp. 21–40, 2009.

[36] N. K. Silva, *Aloha betrayed: Native Hawaiian resistance to American colonialism*. Duke University Press, 2004.

[37] T. Witcher, "The East Maui Irrigation System," *Civil Engineering Magazine Archive*, vol. 86, no. 9, pp. 42–45, 2016.

[38] E. A. Cech, "The (mis) framing of social justice: Why ideologies of depoliticization and meritocracy hinder engineers' ability to think about social injustices," *Engineering education for social justice: Critical explorations and opportunities*, pp. 67–84, 2013.

[39] D. Riley, "Mindsets in engineering," in *Engineering and social justice*, Springer, 2008, pp. 33–45.

[40] A. Russell and L. Vinsel, "Hail the Maintainers." Aeon, Apr. 07, 2016. [Online]. Available: https://aeon.co/essays/innovation-is-overvalued-maintenance-often-matters-more

[41] L. Vanasupa, L. Schlemer, R. Burton, C. Brogno, G. Hendrix, and N. MacDougall, "Laying the Foundation for Transdisciplinary Faculty Collaborations: Actions for a Sustainable Future," *Sustainability*, vol. 6, no. 5, pp. 2893–2928, 2014, doi: <u>10.3390/su6052893</u>.