

Kinopolitical force and environmental migration

Jared L Talley

I

The fact that people move through their landscapes should be uncontroversial. People have wandered, migrated, immigrated, and traveled since time immemorial for a multitude of reasons, from pleasure and curiosity to survival and necessity. Although answers will vary as widely as the reasons that people move through their landscapes, it is worth considering *why* people move – especially in our current geopolitical reality where emigration and immigration are both violently imposed and opposed, respectively. It is to this end that Thomas Nail (2015) offers *The Figure of the Migrant*, arguing against migration being “predominantly understood from the perspective of *stasis*...the migrant *as a failed citizen*” (3, author’s emphasis). Simply, Nail suggests that we are better able to understand human migration by taking human movement to be prior to social stability; it is the confluence of the former that gives rise to the latter, contrasting the predominant view that stable societies produce migrants as “failed citizens”.

Nail offers an account of kinopolitics (de: “the theory and analysis of social motion: the politics of movement”(ibid, 24)) that properly applied explains paradigmatic cases of historic migration with the intent of better understanding the conditions of contemporary migration. Missing from Nail’s account, though, are the resources to understand a substantial site of contemporary migration: environmental migration (i.e. those cases where people are forced into movement by changes in their environments). Although Nail recognizes that his analysis is not exhaustive, he does aim to provide a conceptual framework – namely, explaining migration from human mobility instead of state stability – to guide further migration analyses. Here, I argue that his kinopolitical conceptual framework is insufficient to understand environmental migration and thus either needs to be amended or qualified. In this paper I expand on Nail’s kinopolitical forces in order to account for environmental migration in an effort to reinforce Nail’s framework. Ultimately, I contend that a kinopolitical understanding of environmental migration offers a unique methodology with which to view current/future environmental management impacts, a cross-sectional resource that can further develop Nail’s own account, and a rich site of analysis to better understand the role of environmental technology in society. Thus, it is the aim of this paper to amend Nail’s kinopolitical view of migration in ways that describe environmental migration.

II

Nail’s kinopolitical theory is founded on the idea that humanity’s fundamental mode is movement and it is the confluence of our movements that seemingly stable societies emerge. The paths upon which humans traverse are conceptualized as *flows* across landscapes that can merge, diverge, cross, oppose, and loop back on themselves according to sociopolitical pressures (hence, “kinopolitics”). When a flow turns back on itself, it forms a junction where other flows can either pass through or get caught in the feedback loop giving the impression of stasis. As other flows – human paths – merge and join in the junction, others diverge and leave the junction. The growth of junctions gives the impression of stasis as more and more flows are circulated through the junction instead of entering or exiting it. Human flows circulate through multiple junctions providing “an ordered network of junctions” (ibid, 29) that are characterized as communities, cities, states, and nations as they mature and grow in complexity. Nevertheless, Nail reminds us

that they are fundamentally a mere amalgamation of the multitude of human flows entering, flowing throughout, and exiting the junctions.

As the circulation of junctions – hereafter referred to simply as states – *expand*, Nail argues that they simultaneously *expel*. This principle of expansion by expulsion lies at the heart of kinopolitics as the people who are expelled (migrants) are done so according to the varying logics of expansion. Nail identifies four logics of expansion that are characterized by different social forces – centripetal, centrifugal, tensional, and elastic – that operate on states, producing four distinct paradigms of migration. These forces represent the ways that the sociality arising from circulating flows and junctions operate on individuals, either circulating their paths back into the state or expelling them out as migrants. For instance, centripetal forces draw flows inward toward the center of a state (not necessarily the physical center, but instead from a “decentered periphery” (ibid, 43)). As the state conjoins more and more flows, the demand for resources increases and the territorial boundaries of the state expand to encompass the land needed for resource provision, evidenced by the historical expansion of communities through ever-increasing expansion of agricultural land. This territorial expansion creates a “centripetal remainder” of people who are left over or left out as territorial flows are further drawn inward. These people are expelled as nomadic populations that thrive beyond the territorial boundaries of the state – an expulsion that Nail describes as the “first figure of the migrant” (ibid, 48-58).

Nail’s centrifugal, tensional, and elastic forces operate similarly to the centripetal force, except that they operate on expanding political institutions (expelling migrants as barbarians), expanding juridical institutions (expelling migrants as criminals and vagabonds), and expanding economic institutions (expelling migrants as proletariats) instead of expanding territories. As flows are forced inwards, outwards, against each other, or away from each other, they expel some people as uncirculated flows that become different figures of the migrant.

The four figures of the migrant that Nail describes are expelled from the state via kinopolitical forces, but they are not without their own force. In contrast to the four kinopolitical forces, Nail describes the pedetic force that is developed in response to kinopolitical expulsion. The pedetic force occurs as continuous oscillation, waves, and pressure that exert counterforce on the expelling kinopolitical forces (e.g. centrifugal). The pedetic force characterizes the flows of the migrant after expulsion, much as a river responds to agitation. This force is developed as a mobility strategy that reflects the conditions of expulsion, thus the pedetic force of each figure of the migrant is distinct. For instance, in response to expulsion by territorial expansion, nomadic migrants develop a continuous oscillation across the landscape that follows “the earth’s flows wherever they may go...[moving with] the grasses, herds, and waters” (ibid, 131). As the environment’s flows change with the seasons, so does the nomadic migrant’s movements. Put another way, the pedetic force of the nomadic migrant continuously oscillates with the environment after territorial expulsion. Similarly, the other migrant figures – barbarian, vagabond, and proletariat – move in waves against their previous state (e.g. barbarians), move against the state from within (e.g. vagabonds), and focus their productive force against the economy that expelled them (e.g. proletariats). In this way, pedetic forces can be seen as migrant mobility strategies enacted in response to kinopolitical expulsion.

Although this is a glaring oversimplification of Nail’s treatment of migration, it serves to highlight the fundamental components that motivate my analysis. Humanity’s fundamental mode is movement (flows) and it is by the merging, diverging, circulating, and expelling of these flows

that the conditions for migration and the concomitant reactive movements are explained. Conspicuously missing in Nail's account, though, are the resources to make sense of contemporary environmental migration or, otherwise put, the migration that results from environmental change. I concede that some aspects of environmental migration can be viewed through Nail's forces – such as territorial expulsion when land becomes inhabitable – yet I argue that the resources provided are not explanatorily sufficient for the breadth of environmental migration situations.

III

What do I mean by environmental migration? Most generally, I mean the human movement that has a proximal cause that is *prima facie* and essentially environmental. This broad definition encompasses a broad range of scenarios. For instance, the desertification of a region may cause those communities that relied on the land to migrate to other areas. A wildfire burning uncomfortably close to residences may cause those people to migrate (either temporarily or permanently) to other, more secure, residences. Volcanoes, flooding, hurricanes, sea level rise, deforestation, and earthquakes are but a few environmental reasons that can cause communities to migrate from one landscape to another. While it is true that many of these reasons will be attributed to sociopolitical causes – perhaps a mismanaged floodplain due to class difference in neighboring communities – it is not necessary that they have sociopolitical causes. We can imagine a small meteorite impacting the earth and forcing some people to migrate, but the impact itself was not socio-politically caused whereas floods can happen (or not) on varying sociopolitical platforms.

Environmental migration is expected to increase drastically in the coming century due to global climate change and the resulting environmental changes. Citing Melillo et al. (2014), NASA reports that by the year 2100 the sea-level is expected to rise anywhere between 8 inches to 6.5 feet, while Sweet et al. (2017) expect a sea-level rise of 1-4 feet. In any case, there is general consensus that “tens of millions living on small islands and in delta regions” will be impacted by sea-level rise and forced to migrate to higher ground (Byravan & Rajan 2017, 108). Sea-level rise is a fairly direct impact of climate change as the icecaps melt under warmer conditions. Indirectly, though, we can expect increases in tropical diseases (reacting to longer warm seasons and pest migration due to warming climates) and shortages of food and drinking water (in response to changing weather patterns, flooding, and desertification), causing innumerable stresses that could prompt human migration (Broome 2008). Regardless of out-of-this-world environmental disaster scenarios such as meteor strikes, it should be obvious that the potential for environmental migration is considerable. The sheer number of people – tens of millions or more – that will be affected by environmental migration in the next century should prompt us to consider the environmental migrant as a key figure of the migrant and, by virtue of this, we should be able to explain the environmental migrant within broad migrant theories.

If the four logic of expansion described by Nail are sufficient for theories of migration, then environmental migration can be fully understood in light of them. As mentioned above, many of the environmental factors underlying contemporary migration will have sociopolitical causes that, presumably, align with Nail's theories. For instance, the people who are most at risk for flood-induced migration may be at risk specifically due to territorial expansion/expulsion, forcing them to reside in at-risk regions. Given that Nail's theory is expressly a theory of sociality and politic (recall the definition of kinopolitics: “the theory and analysis of social

motion: the politics of movement” – *social* motion and *politics* of movement), we may be wary that I am making a categorical error. Perhaps Nail never intended to encompass environmental migration in theories of kinopolitics. Even if this is true, it is also true that if much of environmental migration has sociopolitical factors and much of this migration cannot sufficiently be explained by kinopolitical forces, then we need to amend or modify the kinopolitical forces. As I describe below, environmental migration cannot be fully explained by kinopolitical forces, and thus it is worth considering how the environmental migrant is distinguished from the other figures of the migrant and how amending Nail’s theories can account for this.

IV

For the purpose of this paper, I compare two environmental migration scenarios – sea-level rise and hurricane impacts along coastlines. I’ve chose these cases specifically for their similarities and their differences. Since both cases impact the similar geographical areas, it is intuitively plausible that many of the sociopolitical factors will be held constant between the two. As described above, there will be sociopolitical factors that impact environmental migration, so holding them constant allows us to distinguish those factors between the cases that resist explanation in the current kinopolitical theory. The difference between the two cases, though, provides a rich site of analysis. The rate of change between each scenario is drastically different and encompasses a broad range of environmental disasters. Sea-level change happens at a relatively slow pace over time, allowing institutions and communities to adapt to the pressure it causes. Similarly, ecosystem change, desertification, and drought can often intensify over decades which mirrors slow-rate environmental change. On the other hand, hurricanes happen relatively suddenly, forcing communities to flee rather than adapt to environmental pressures. Similarly, wildland fires, earthquakes, and tornadoes can strike suddenly indicating fast-rate environmental change. Considering a broad range of rates of change allows us to tease out the factors that are attributable to one of the four kinopolitical logics already described by Nail and those factors that need to be further explained.

Migration caused by the two scenarios – hereafter referred to as the sea-level rise and hurricane scenarios – admittedly has kinopolitical factors, yet the four logics are insufficient to fully explain them. I consider each of these in turn. To begin, territorial expansion is the first logic of expulsion by expansion, operating by territorial expansion drawing human flows inwards and expelling surplus labor as nomadic migrants. Can this help explain the migration caused by sea-level rise or hurricanes? In the former, territory is permanently lost as the ocean rises, so any migrating populations cannot return to their previous homes. Community expulsion is caused by the loss of territory, not a sociopolitical expansion of territorialized land. The boundaries of the human territory are necessarily modified by the boundaries of the ocean which is akin to saying the human flows that run against the boundary of the ocean are redirected inwardly. At first, this may seem to parallel the inward redirection of flows from outward territorial expansion characterized by the first logic, yet the proximal cause of the redirection is not expansion of the territory – it is the compression of territory by an external, non-sociopolitical pressure. Similarly, hurricanes compress the territorial boundaries, forcing human flows inward to be either absorbed by the circulation of junctions or expelled as environmental migrants elsewhere. In either case, it is the compression of territorial boundaries that forces the redirected flows of communities, not the expansion of territorial boundaries. However, it should be noted that the key difference between the sea-level rise and hurricane scenarios are the scale of impact and the characteristics of those impacted. For slow rate changes, impacts will be felt differentially with respect to the

resources a community has to adapt or mitigate for the change. For example, a resource rich community may be able to construct levies and dykes to protect their territory, whereas resource poor communities will have no option. I will turn back to this distinction later in this paper, yet it should be recognized that other kinopolitical logics will likely need to be brought to bear to understand which communities will be impacted and to understand in what ways those communities will feel the impact.

The next kinopolitical logic is that of political expansion. As the political norm of a state expands it delineates an *other*, often an inferior which is not seen as part of the political sociality. According to Nail, these *others* are expelled as barbarian migrants from the expanding political state. Political expansion requires, tautologically, a political state to expand. In neither of the sea-level rise or hurricane scenarios are migrants formed by the expansion of a political state as the sea and the hurricane are not states nor are they political. It could be that the reasons for the two scenarios are themselves founded on a form of political expansion as it could be argued that climate change operates on a political logic that, accordingly, could be forcing its expansion onto othered communities that are expelled as environmental migrants. This means that climate change is the product of a certain form of political expansion (possibly a capitalistic politic) that is, itself, expelling by expansion. If this is true, then we will need the resources from Nail's theories to understand how kinopolitical forces operate on both human flows and environmental flows as the political expansion is not directly expelling environmental migrants – only indirectly through the expansion of the borders of the sea. Furthermore, political expansion requires an *other*, so sea-level rise and hurricanes would need to distinguish between expelling only the *other* and not the dominant political community. As in territorial expansion, each scenario treats this differently – slow-rate environmental change allows resource rich communities to adapt to expansion (political or otherwise) while fast-rate change affects all equally. If political expansion was explanatorily sufficient, we should be able to understand how it drives the expansion of the environmental borders and how it differentially impacts resource rich versus resource poor communities in both slow and fast-rate environmental changes. Thus far, we do not have the logics to understand either of these.

The third kinopolitical logic is that of juridical expansion. States construct and describe their juridical norms – laws, contracts, etc. – which set a domain of juridical impact. As the domain of impact expands, some people are expelled as criminals and vagabonds. These people are those that either do not wish to be included in the domain of impact or are otherwise excluded from the domain of impact by the juridical norms themselves. This expulsion by expansion suggests that migration can occur when a community is prevented from entering another community because of the latter's juridical norms. As with the above cases, however, there doesn't appear to be explanatorily sufficient logic in juridical expansion to understand environmental migration. First, as with territorial expansion, it is the loss of habitable territory forcing environmental migration. Second, as with political expansion, there may be reason to understand climate change as a form of juridical expansion, yet we then need resources to understand how kinopolitical forces impact both human and environmental flows. Juridical logics may in part help describe environmental migration, especially insofar as climate change policy differentially impacts certain communities. This means that a new policy may juridically expel some communities – perhaps a policy requiring certain levels of energy efficiency in homes that are not reasonable to resource poor communities – but this only suggests explanations for these migrants. These migrants are forced to move juridically, but they were not forced due to the actual environmental impact. The rising

sea level or hurricane scenarios do not, themselves, force migration. The difference between the two scenarios parallels that of political expansion – on one scenario communities are impacted differentially, whereas the other impacts all communities equally. Again, we do not have the resources within juridical logics to understand the environmental migrant.

The last kinopolitical logic is that of economic expansion. As states evolve robust economies, their economic machinery demands varying levels of human labor. As economies wax and wane to keep relative economic stability, labor is demanded at different scales across the landscape, promoting the expulsion of labor when labor demands are low. Thus, as economies expand, surplus labor is expelled as the fourth figure of the migrant, the proletariat. Environmental change will impact local economies and by virtue of this, produce varying levels of proletariat migrants as the local economies expand and contract to keep relative stability. It is unlikely, though, that the expansion and contraction of the economies – and the migration produced by this expansion – would have existed in the same capacities without the prompting environmental change. Put a different way, the environmental change begets a qualitatively distinct migration that would not have happened without the environmental change, regardless of pre-existing conditions for economic migration. This suggests, minimally, that those environmental migration scenarios that could be explained by economic expansion have some distinct mechanisms that are themselves not able to be explained by economic expansion, and thus it is not explanatorily sufficient. As in the logics described above, there will certainly be elements of economic expansion that help to distinguish which communities are impacted by environmental change. Those communities that rely on the economies that are most impacted by sea-level rise, for instance, will differentially feel the impact of their collapse. For example, the tourism industry that relies on beach access also relies on proletariat labor that will be impacted in ways that other communities will not. This is not to say, though, that it is by virtue of economic expansion that environmental migrants become environmental migrants. Again, we do not have the resources within Nail's kinopolitical logics to understand the environmental migrant.

This discussion broadly suggests that Nail's kinopolitics is explanatorily insufficient in regards to environmental migration. It is not that the four logics do not help to understand environmental migration, only that they cannot fully account for it. Understanding the forces that prompted certain communities to develop in high-risk areas as well as understanding those communities that will be disproportionately impacted by responses to environmental change will certainly fall within the purview of the four described logics. Yet each of the logics seeks to provide fundamental explanations of migration by the expansion of different systems. The migration caused by the expansion of these logics – territorial, political, juridical, and economic – is not the same migration that is caused by either slow-rate sea-level rise or fast-rate hurricanes. In a very direct way, the expansion of the environment itself (the expansion of the sea and the expansion of hurricane damage zones, respectively) is the proximal cause of migration.

Nail's theory is expressly kinopolitical, citing the social and political motivators of migration. This suggests that it is not within the scope of his theories to consider environmental expansion as the environment is not obviously social or political. If it were social or political, it is plausible that it is so by virtue of the institutions that govern our relationships with the environment, further suggesting that kinopolitics can be useful in understanding the enviro-sociopolitical relationships. This is one way in which Nail's theory could be expanded or amended to better understand environmental migration, yet I still contend that the expanding environment would nevertheless cause human migration without enviro-sociopolitical explanations. Therefore, in the

next section I offer a fifth logic that can be considered in tandem with Nail's four logics in order to better understand those cases where the environment's expansion causes migration.

V

Groups of people move across landscapes for many different reasons. Nail strongly argues that the bulk of this movement is due to territorial, political, juridical, and/or economic expulsion from expanding institutions, yet how do we explain migration when it is not clearly caused by an interaction with a social institution? Nail's account explicitly focuses on kinopolitical (social) explanations, so it may not be surprising that it does not take up migration that does not have as a proximal cause non-social factors. However, if a previously stable community (circulating junctions and flows) is forced into migration by a natural disaster and Nail's assertions that migration is the product of expelling kinetic forces, we should be able to locate or characterize the kinetic forces that demand the migration. Keeping with Nail's physical force metaphor (suggesting that the centripetal, centrifugal, tensional, and elastic forces represent the territorial, political, juridical, and economic expansions, respectively), I suggest we appeal to the *contact* force to better understanding environmental migration.

Analogous to the centripetal force characterizing territorial expansion that expels nomadic figures of the migrant, the contact force characterizes environmental expansion that expels vicariant figures of the migrant. The term *vicariant* appeals to early theories of evolutionary speciation where physical features of a landscape serve to separate a population which allows each separated community to evolve distinctly apart from their counterpart, eventually allowing two different species to emerge. Vicariant migrants are, in this paper, those migrants that move due to physical separations in their landscapes. These physical separations provide a contact force which is a force that the vicariant migrant cannot permeate. In the sea-level rise example, we can see the edge of the sea as a contact force that requires the peoples living near it to move or be submerged. It is of no consequence if peoples can individually permeate the boundary – people will, of course, swim in the sea regardless of the contact boundary – but this is not to say that people can live beyond the boundary. These boundaries also do not present the same force to all people equally. Perhaps some peoples possess the knowledge and social institutions to thrive in a desert environment where others do not. These latter communities feel a contact force where the former communities do not. This last example also suggests that there are ways that technology (understood as both tools and techniques) can help to permeate a contact force.

The fifth logic I propose here may be better understood as the first logic as it underwrites the genealogies of the other four. The contact force operates on human mobility prior to junctions being formed, which is a necessary condition for the other four logics. The ways in which we move across our landscapes are constrained by environmental factors – we do not live on water, we cannot walk up certain mountains, and we generally avoid areas of especially dramatic hostile environmental conditions. Nails seems to recognize this, regardless if it didn't register as a logic itself: “nomadism oscillates continually by following the *earth's flows* wherever they may go...the nomads migrate between different seasonal pastures according to unpredictable weather patterns” (Nail, 131). I argue that this movement is, in fact, an expulsion due to the expansion of the environmental contact force.

Simply, when a flow (or, as in a junction, a multitude of flows) is impacted by a contact force, then the flow is disrupted. The degree of disruption is proportionate to the degree of the contact force. This means that a sudden, violent contact force will impact a flow on a much larger scale

than a lengthy, stable contact force. Hurricanes, for example, are relatively sudden and violent environmental changes. In response, human flows are substantially altered – most, if not all, people are redirected away from coastlines within short notice. Sea-level rise, on the other hand, allows time for human flows and junctions to adapt to the changes. Perhaps floating islands can be built so that territory isn't so much lost as it is just reimagined. Understanding that reactions to the contact force are different with respect to its relative duration and intensity allows a novel dimension to understanding the impacts of the other four logics. As described above, the expulsion of migrants on the basis of hurricanes will look much different than that of sea-level rise. Hurricanes provide a contact force that cannot be adapted to (with current technology). People must move – must revert to the base mode of mobility – in order to flee the contact force. This levels the proverbial (and not coincidentally, territorial) playing field with respect to political, juridical, and economic expulsion. Everyone is expelled and everyone becomes a migrant. The contact force is so great, it causes environmental migration en masse.

VI

It is helpful to describe the contact force insofar as it provides a cross-sectional resource to further develop Nail's kinopolitical account as it can be used to understand why people migrate in lieu of territorial, political, juridical, or economic expansion. Furthermore, it can be used in conjunct with Nail's four logics to better understand the geospatial dimensions of migration – not only why they migrate, but also where they migrate. Providing the resources to better understand where a community migrates to can be especially powerful in contemporary understandings of immigration/emigration as large-scale migrations are expected in light of global climate change and subsequent natural disasters.

First, Nail's kinopolitical theories are detailed resources with which to better understand the conditions that drive people to move throughout their landscapes. If they are amended as I've argued, then we now have a better resource to understand how environmental changes can drive people to move. When environmental management agencies make decisions regarding energy development, environmental engineering projects, and landscape restoration initiatives, they are making decisions regarding the contact force. This means that the environmental boundary that provides a contact force to the surrounding communities can be (and often is modified) in environmental management decisions. Perhaps a new landscape restoration initiative seeks to restore an extant species of wolves to a landscape. Surrounding communities may see this as an increased contact force, suggesting that the environment that put pressure on the communities movement is now stronger or otherwise more voracious. For example, the reintroduction of wolves in Idaho wilderness was met with strong opposition by the ranchers who grazed cattle in the wilderness, suggesting an intensifying of the contact force. Rancher opposition can be seen here as an expression of their pedetic force, relying on political clout to revert the contact force to its previous porosity, evidenced by the subsequent hunting seasons on wolves and studies regarding the concomitant movement of cattle herds (and, by extension, the rancher) in response to wolves (Mech 2010; Oakleaf et al. 2003). It is plausible that a sufficiently intense contact force – perhaps a wolf population that doesn't allow for cattle grazing – would have the impact of small ranching communities moving into areas where the contact force was less. At a minimum, there are signs of the impact of the wolf-contact force on the migration patterns of sheepherding communities in Idaho as these communities practice transhumance migration and are more readily adapted for mobility than their ranching counterparts (Stone et al. 2017). Understanding the environment as a contact force, rather than a passive and fully-permeable

landscape with which communities move freely across, allows us to understand how human flows operate in contact with it.

As desertification increases, sea-levels rise, wildland fire regimes become more violent, and as water shortages increase and snow levels decrease, more and more migration will have some environmental progenitor. Conversely, states will make more and more environmental decisions to lessen the impact of environmental changes. In order to better make these decisions, it is worth noting that full range of characteristics that impact the communities within these environments. Constructing hydroelectric dams to conserve water will cause environmental expansion as the subsequent reservoir removes previously habitable territory and, by the logic of expulsion by expansion, communities within the new-reservoir boundaries will be expelled. Deforestation, on the other hand, may retract the environmental boundary allowing outward migration into previously inhabitable land. Environmental managers can better understand the ways that communities will interact with the environment if they view these boundaries as a contact force and consider the ways in which this force – along with the territorial, political, juridical, and economic forces – of the region can be expected and accounted for in their decisions.

Second, by defining the contact force and the vicariant migrant that it produces, we can better understand the role of technology in society. As mentioned above, technology (understood here as novel tools and techniques) can allow a community to permeate an otherwise impermeable contact force. Bridges are good examples of this. There was a time when certain water channels and canyons were impassable such as the Grand Canyon or the Mississippi River. These impassable features or, here, impermeable contact forces, served to guide human flows into more passable features the landscape. As a reminder, pedetic forces are those that characterize the flows of the migrant after expulsion, seen as the ways that the migrant responds to expulsion. The pedetic force of vicariant migrants can be, in part, explained through the use of technology – the vicariant migrant resists the contact force by developing technology that allows permeation of the contact force. In this example, bridges indicate the pedetic response of the vicariant migrant. Bridge technology breaks the contact force of rivers and gorges allowing movement across otherwise impermeable barriers. As contact forces, in general, put pressure on communities, they can either move (as the vicariant migrant) or they can resist in the form of technology. On a global scale, we can see this play out in the dream of colonizing the Moon or Mars. If the environment on Earth becomes inhospitable to a degree that humanity is forced to leave (i.e. become vicariant migrants), then we can see the technology to colonize another planetary body as the pedetic force of the vicariant migrant – we must permeate a barrier of some sort, potentially atmospheric or that of outer space. In either case, technology of this sort can be seen as a pedetic reaction to the contact force.

The expected rise of environmental migration due to global climate change should prompt us to look for the theoretical resources to understand how human communities will be impacted. The contact force can be used as a cross-sectional resource with the other four logics to better understand environmental migration. The contact force of the environment can be either slow or fast-rate, as in sea-level rise and hurricanes respectively. Migration analyses that take seriously all five logics need to be sensitive to the rate of the contact force as the faster the environmental change, the less effect of the four sociopolitical logics. Slow-rate changes allow a larger impact of the other four logics as well as a more concerted pedetic force (technological advance) to permeate the contact force. This intensity of environmental change and its impact on the other logics will also be weighed against the duration of the change, although I will not belabor this

point here. Briefly, the continued duration of the contact force will allow its produced vicariant migrants to develop communities where they have migrated to, minimizing the possibility of the vicariant migrant returning to their previous homes. Short duration environmental change, on the other hand, will prompt the vicariant migrant to return home after the contact force has receded (such as people moving back to cities as hurricanes recede). The continued pattern of moving and returning can be seen as the continued oscillation of the vicariant migrant in light of short duration, high intensity contact forces. Recognizing these dimensions in environmental migration helps to better understand the characteristics of the vicariant migrant and the reasons they migrate.

The contact force that I recommend here can be fundamentally characterized as the flows of the environment – i.e. earth's flows or nature's flows – rather than those specifically of humans. Given that humans are integrally embedded in their environments, all human flows will also be environmental flows yet not all environmental flows will be human flows. This is the largest distinction between Nail's four logics and the fifth I've offered here. Understanding the ways in which human flows integrate with themselves falls under the purview of Nail's logics while understanding the ways they interact with the nature's flows is the intended scope of the contact force. This is, inherently, a call to better understand the ways in which human communities interact with their environments. I do not disagree that this call requires consideration of the sociopolitical factors of the environmental relationship, yet I do argue that expanding our scope to include the enviro-sociopolitical factors allows us to recognize a more nuanced picture. The five logics described here, founded on the principle of expulsion by expansion, do well to illustrate the complexities of these relationships.

VII

The contact force, as described here, is not meant to nullify any of Nail's kinopolitical theory. It does, however, allow for more robust cross-sectional interpretations of contemporary migration in that it helps to better understand how our environments impact our movements across our landscapes. Future research would further detail the intricacies of the contact force, the vicariant migrant, and the ways that they operate in reaction to the other kinopolitical forces. A rapidly changing environment, along with rapidly changing techno-environmental adaptations, prompts us to consider the ways in which landscapes themselves demand human migration. It is by understanding this dimension that we can better articulate the reasons for environmental migration, the movements of the vicariant migrant after expulsion, and the pedetic strategies that the vicariant migrant employs to permeate the contact force.

References

- Broome, J. (2008). The ethics of climate change. *Scientific American*, 298(6), 96-102.
- Byravan, S., & Rajan, S. C. (2017). Taking Lessons from Refugees in Europe to Prepare for Climate Migrants and Exiles. *Environmental Justice*, 10(4), 108-111.
- Mech, L. D. (2010). Considerations for developing wolf harvesting regulations in the contiguous United States. *Journal of Wildlife Management*, 74(7), 1421-1424.
- Melillo, J.M., Richmond T.C., & Yohe, G.W. (2014). Climate Change Impacts in the United States: The Third National Climate Assessment. U.S. Global Change Research Program. 841 pp., doi:10.7930/J0Z31WJ2

Nail, T. (2015). *The figure of the migrant*. Stanford University Press.

Oakleaf, J. K., Mack, C., & Murray, D. L. (2003). Effects of wolves on livestock calf survival and movements in central Idaho. *The Journal of wildlife management*, 299-306.

Stone, S. A., Breck, S. W., Timberlake, J., Haswell, P. M., Najera, F., Bean, B. S., & Thornhill, D. J. (2017). Adaptive use of nonlethal strategies for minimizing wolf–sheep conflict in Idaho. *Journal of Mammalogy*, 98(1), 33-44.

Sweet, W., Horton, R., Kopp, R., & Romanou, A. (2017). *Sea level rise*. Publications, Agencies and Staff of the U.S. Department of Commerce. 581.