"Environmental Justice, Technoscience, and Transformation"

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Introduction

Inherent causal connections and strong correlations between technoscience and environmental justice produce numerous occasions for fundamental shifts for the future of inseparable influences between environmental philosophy and science and technology studies. I examine our current understandings of environmental injustice in both distributive and recognition dimensions of justice (a bivalent approach), in order to provide a rubric for the social epistemology and obligations surrounding technoscientific disasters and remedies.

My first objective is to describe the expanding centrality of environmental justice in environmental philosophy, which requires a transition in many of the canonical projects and embedded dichotomies of environmental philosophy. I then provide a description of multiple causal connections and strong correlations between technoscience and environmental justice, through theoretically interpreted case-based examples, as a means to illustrate the cultural, distributive, and restorative components that science and technology studies will need to consider in future scholarship and research.

Part I: Environmental Justice Studies and Philosophy of Science, Technology, and Society

Historical Connections to Technological Disasters

Catastrophic technological disasters, such as the Union Carbide Plant explosion in Bhopal, India, which left hundreds of thousands of casualties and tens of thousands of deaths present concerns for regulation, transnational corporate activities, and above all the human health and environmental destruction by technological neglect. Underlying the Bhopal case are fundamental questions of responsibilities and obligations to avoid unnecessary risks to human and non-human populations, and a series of questions pertaining to social justice. How was this technology transfer conceptualized and justified? Why did a chemical plant modeled in the Midwestern United States find its site in a developing nation without any consideration of cultural, economic, regulatory, and resource difference to such dramatic degrees? The Bhopal case is of unimaginable magnitudes to most technological disasters, but technological disasters have become so common place throughout the globe that the cumulative impacts cause us to give overdue consideration of these impacts in environmental philosophy.

Historically speaking, where shall we start to consider the environmental history of technological disasters, and are they the kinds of phenomena that occur as recently or to the

catastrophic magnitude as Bhopal? Certainly not, unless one considers the long-range impact of anthropogenically caused climate change, which began with the birth of the Industrial Revolution's carbon release circa 1750. In fact, technological disasters and concerns for social justice, which amount to concerns under the rubric of the transdisciplinary field of Environmental Justice Studies (EJS), run contiguous with both the advent of modern industrial society and the broader concerns of the environmental movement (where ever and whenever we identify the environmental movement). For instance, revisionist environmental historian Robert Gottlieb identifies in his book, *Forcing the Spring*, a comparable parallel and sometimes converging track of the United States environmental movement in urban environmentalism. While figures like John Muir and Gifford Pinchot and first generation ecologist Aldo Leopold forged the U.S. environmental consciousness in a movement devoted to preservation and conservation values of "natural" environments and subsequently gave scientific focus to ecological systems, Gottlieb makes a strong case that figures like Jane Addams and Alice Hamilton were forging the environmental justice movement from the reformation hub of urban social science and activism in Chicago's Hull House. An astute observation in many respects because several activities of Hull House bear the stamp of the Environmental Justice Movement (EJM): these reformation scientists gave birth to the craft of case-specific studies of industrial pollution (a form of technological disaster, especially in the 19th century form of occupational and environmental hazards); created activism around issues of living, working, and playing environments; politicized injustices and corruption surrounding sanitation—specifically surrounding immigrant ethnic neighborhoods; they provided, remarkable advances in sciences (bacteriology, sociology, ethnographic study) that connect environmental causes of impacts to human and non-human health; and like the EJM with over 70% of grassroots leadership by women, Hull House's success from politics to science have direct connection gender values pertaining to women leaders and researchers.

Rachel Carson's *Silent Spring* marks a convergence of these parallel environmental movements, when the technological disaster of DDT, the product of the military industrial complex borne of World War I, reached a peak of destruction to human and non-human survival. But, Carson missed an opportunity to capture the social justice concerns that Addams and Hamilton accurately described as fellow scientists nearly a century earlier. Indeed, Carson even missed the opportunity to capture who amongst the humans are at greater risks. She identified farmers using and sprayers in contact with DDT, but not the farmworkers. It would take until Cesar Chavez and the United Farm Workers (UFW), the renowned Chicano and Filipino collective of farmworkers to realize the extent of social justice concerns. It would also take the convergence of environmentalists (now well-established as a white, affluent populous) in California and UFW to induce lawmakers to outlaw DDT use in the U.S., despite the fact that the U.S. would remain the largest producer of DDT in the world until present date. Once DDT was outlawed, technoscience produced a family of more intensive and more dangerous agrochemical compounds. But, the technological disasters of those could be confined to the UFW constituents, the farmworkers, without the larger population worrying about these hazards. And so, the problem was resolved, until one place, located in the shadow of the production source of DDT and its offspring compounds, took the attention of the average U.S. resident—the Love Canal technological disaster which ignited the anti-toxics movement and a host of federal policies to address citizen and environmental health issues. Dovetailing Love Canal, civil rights leaders, labor leaders, environmentalists, indigenous activists, women's activism, and radical academics

pushed the issue a step further—why, they asked, are the poor and especially minorities the most burdened by environmental burdens in modern industrial society? Why aren't corporations, consumers, and public officials addressing these distributive disparities? And, why does the general public fail to see the extent of technological disasters that impact the lives of so many, so close, and so globally? The sources of these answers are also the sources of the answers behind the Bhopal disaster.

Technoscience Production and Environmental Justice

Since there are inherent causal connections and strong correlations between technoscience and environmental justice that produce numerous occasions for fundamental shifts for the future of inseparable, co-influencing factorss between environmental philosophy and science and technology studies. Environmental disasters have a backward-looking character to them, and EJS is by no means locked into that trajectory. However, response to the injustices embedded in technological disasters has significantly influenced the forward-looking trajectory of EJS and the EJM. Mitigating, circumventing, and ameliorating such technological disasters requires consideration of who is more likely to suffer the direct consequences, how they are compensated for the environmental burdens and risks to health, surrounds, and environments, and who are making the decisions regarding where environmental burdens go, how we respond to them, how much knowledge legitimates the siting, and why these are risks worth taking. Let us take the philosophical importance of environmental justice to both the backward and forward trajectory, with emphasis on the forward, specifically transformative forward trajectory. The relationship between technoscience studies, or the philosophy of science, technology, and society and environmental justice can generally be thought of along the continuum technoscientific production. A brief account this continuum, broken into six items for conceptual convenience, will also indicate the specific ways that case-studies provide different interpretations of environmental justice.

1. Conceptualization and Design

The essentially social and political character of technoscience means that differing material and cultural relations are directly related to technoscience, as are relations of power, or the ways in which technoscience increases some social capacities above, and sometimes at the sacrifice of, incapacities of others. Justice issues are inherent, environmental justice fundamental. Consider a definition of "engineering" by a mainstream professional organization, representative of most professional definitions, which places "safety of life and property" in the ethos of engineering"

> [T]he creative application of scientific principles to design or develop structures, machines, apparatus, or manufacturing processes, or works utilizing them singly or in combination; or to construct or operate the same with full cognizance of their design; or to forecast their behavior under specific operating conditions; all as respects an intended function, economics of operation and safety to life and property.[1]

[1] *Science*, Volume 94, Issue 2446, pp. 456: Engineers' Council for Professional Development

2. Extracting Raw Materials

Like the traditional environmental discussions pertaining to the impacts upon non-human subjects, environmental justice considerations are set off upon the extraction and processing of raw materials. Take mining as an obvious example of the ways in which the working conditions, the environmental burdens to communities and regions, and the political recognition of miners and residents are immediately impacted by the technoscientific stage of raw material extraction. This is no less the case with oil extraction, especially in places like Ogoniland of Nigeria. We could go on and on.

3. Refining and Processing Raw Materials

Few environmental burdens are as notoriously implicated in environmental justice cases as petroleum refining. Cases seem so endless that we may as well just count the oil companies themselves and presume each one has a multiplicity of environmental justice controversies attached to them. Whole geographical regions identify the extent of environmental justice impacts from petroleum refineries: "Cancer Alley," "Jersey Turnpike", "Billings, Montana," etc. The political power of these transnational corporate entities rolls along with disenfranchised and marginalized populations. Again mining, especially considering its procedures of refining that involve slurries and intensive acidic washing that goes on.

4. Manufacturing

Working conditions and the environmental dangers to workers and the surrounding environment have been well-documented around the world since the inception of the Industrial Revolution. The chemicals associated with many early manufacturing processes gave rise to ailments such as, fossy jaw and lead poisoning. Repetitive and constraining actions in many manufacturing positions have depended heavy upon disenfranchised and marginalized labor, and has capitalized upon these vulnerable populations in technoscientific dimensions such as, limited movement in the manufacturing site, limited ventilation on the production-line. The locations of manufacturing sites, such as *maquiladoras* along the Mexican-U.S. border have generated a host of environmental justice concerns: transnational manipulation and violations of health and environmental regulations, transnational manipulation of safety standards by using toxic materials with safety labeling in foreign languages from the workers. Manufacturing injustices exist beyond the larger assembly plants and standard product piece work associated with automobiles and electronics. Agricultural production can exist under the manufacturing rubric, such as floral manufacturing of roses, carnations, and many other types found primarily in large plantations of Columbia and Kenya where pesticide use is disastrous to human health and surrounding environs. Moreover, manufacturing also captures the arena of home workers around the world whose quota work is extreme, tools limited and dangerous, and technological safety measures are nearly non-existent.

5. Trade and transportation

Interstate and international trade and transportation poses a number of environmental justice concerns, as well. For example, in the U.S. the Waste Isolation Pilot Plant (WIPP), a high-level nuclear waste facility in New Mexico, involves the transportation of high-level nuclear waste across multiple states raising exceptional risks associated with technoscientific limitations. The transportation routes of tractor-trailer hauling trucks cross through countless municipalities that are ill-equipped to handle any type of accident that would involve the spillage

of the high-level nuclear waste. Imagine every town en route from the State of New York to New Mexico needing the technoscience measures to handle such a disaster. Trade poses similar concerns for furthering the global inequities in environmental justice. The North American Free Trade Agreement has been responsible for moving environmental burdens of manufacturing plants further into the global South; and Plan Puebla Panama is intended to extend that even further to South American states. Trade agreements limit patents to specific parties of transnational groups, and promote problems of bioprospecting from indigenous groups world-wide.

6. Waste stream

The most extensive and problematic of these five arenas of environmental burdens is the waste stream burden that exists as both a part of each arena and a problem onto itself. Indeed, the primary environmental burden associated with environmental injustice is the distribution of environmental waste. The EJM literally began with the issues of waste stream distribution, initially in 19th century downstream inequitable distribution and later in the debates of environmental racism: whether toxic landfills and hazardous waste facilities, in particular, are distributed inequitably in the communities of U.S. minorities. In international contexts this phenomena is only increased. Moreover, many technological disasters are actually those of landfills and wastestreams. Love Canal is the wastesite of toxics from local petrochemical manufactures, and the waste pit drew its toxic stew into the residences and schools of the community. In 1978, it was estimated that 2,000 such sites exited in the U.S.

Philosophical Characteristics of Environmental Justice

A great deal can be said of the different ways that environmental justice is construed both historically and academically, but, my philosophical interest is in the general rubric of environmental justice, both across-the-board amongst academics and specifically for extending the knowledge and scope of both environmental philosophy and science and technology and society studies. Some general characteristics of the environmental justice approach are needed. Below I provide another six item list for conceptual convenience, with some explanation. These items are intended to open the field to more philosophical parlance (but not in exclusive jargon) and yet to replace the academic tendency to over-simplify environmental justice with a static, one-liner definition, but they are by no means exhaustive characteristics of EJS or EJM:

1. EJS Embedded in the EJM

As the previous cases and history emphasize, EJS cannot be divorced from EJM, and both are simultaneously local and global in scope. Every nation has its own version of the EJM, even if by other namesake. The U.S. has a well-established and varied history of the movement. The European versions of the Green Party represent another nation-based facet. Anti-hydro-project movements in India; corporate responsibility, compensatory, and victim recognition movements like *Soshisha*, in Japan; and, First Nation Reconciliation movements around the world offer additional versions to the continuing list EJMs worldwide. Given the synapses of the wide-variety of EJMs, we can see why Love Canal's leading activist voice, Lois Gibbs, who is now Director of the Center for Health, Environment, and Justice, publically refers to the EJM as the "fastest growing, largest social movement in the world."

2. Case-Based Methodology

Despite the global extent, each community is responding to particular historical features, particular claims of justice and charges of injustice, and particular remedies of justice. While scholars can generalize a movement and even refer to specifically established Principles of Environmental Justice, even these are historically limited, geographically located, and open to expansion with the simple twist of another catastrophe or interpretation. Rather than hyper-contextual, relativist, or overly-supple in interpretation, these features have heighten access to legitimacy from the grass-roots and local level or interpretation, expanded our epistemic horizons, and given vitality to the products of citizen science and technological critique. In short, the case-specificity has broadened the range of epistemological positions and democratized the technoscience and concepts of justice.

3. Situated Epistemologies

Concentrating the points of case-study specificity in item 2, narrative, experiential accounts, and situated epistemology is crucial to environmental justice studies rubric. A critical component of the scholarship and movement is the representation of voices from people and different parties undergoing the process of establish environmental justice in a particular context. Part of the virtue of situated and grassroots accounts affects both technoscience and the expansion of the collective experience of participants in the variety of EJMs.

4. Embodied Agents

Citizens, political agents, activists, and "experts" in both the professionalized and non-professionalized senses of the word are configured as inherently embodied subjects in EJS. The extent to which embodied, and more emphatically, politically embodied subjects are accounted in EJS, may appear insignificant at first glance, but philosophically this is quite formidable. Theoretically, embodiment perplexes many neo-liberal political theories and frameworks. This works on multiple levels. The political framework may simply see the issue as distributive and compensatory formations of justice, a version of cost-benefit analysis, which loses either the causal connections of embodiment, or extracts embodiment from deliberative principles in the echo of Rawlsian genius of the original position. More commonly for the political discourse is the language of "stakeholders" in which a pluralistic system of exchange dominates the deliberations between residents, corporate interests, government bodies, and other interested parties. A corporate stakeholder is disembodied from its abstract legal entity and made into a subjective participant, while a resident stakeholder is disembodied from her interests of survival, health, and caretaking. Thus, disembodied political exchange allows emotional abstraction and over-rationalization of the localized interests. The disembodiment fundamentally favors the legal entity of corporate interests and ironically undermines the concept of collective embodiment of community; given the fact that the corporate interests are actually collectives (in the form of neighborhoods, communities, marginal population groups, and even interests groups) reconstrued as singular entities for legal, individualistic purposes.

5. Embodiment in Space, Place, and Time

The abstraction of corporate and institutional entities for purposes of neo-liberal principles of justice overlooks the bodies that exist in localities of space (in terms of a myriad of physical, emotional, and political constructions), place (in terms of a myriad of physical, historical, institutional, political, and personal constructions), and heritage (in terms of identities

that have existed overtime, intentionally and unintentionally to represent the connections of space and place into future learned from past). Environmental identity, environmental heritage, and the nuances of agency in space and place are simply disregarded in many of the neo-liberal accounts that dominate political discourse in environmental and technoscientific approaches.

6. Transforming Justice

The above items operate on a philosophical foundation regarding how we are to understand justice in EJS. One reason EJS is philosophically crucial to concepts of justice is found the environmental contribution EJS makes to justice theory. Few if any justice theorists have included environmental contexts; but from the environmental philosophy rubric we have early on in the second-wave Murray Bookchin's social ecology, key discussions of intergenerational justice early in the 1970's, and the emergence of ecofeminism in the late 1970s. Outside of the ivory tower, however, activist concerns of justice in civil rights, labor, and living conditions were giving accounts of justice that stretched beyond abstract academic accounts, both in terms of concepts and practice. By the 1980's, "environmental justice" as a term was on the tips of tongues of activists from numerous quarters, legal theorists, sociologists, geographers, and philosophers. By the 1990s, some philosophers could no longer resist applying theories of justice, to the concern and cases of environmental burdens from technological disasters, past, present, and future, often in the name of toxic and hazardous waste. The predominant approach came through the distributive theories of justice. After all, if the issue is inequitable distribution of burdens and the remedy is compensation, a form of redistribution, then this sits tight in the model of justice as fairness central in the Western philosophical tradition since Aristotle's *Nicomachean Ethics*.

Drawing from early insights of philosophers like Iris Young, who took on environmental justice in case and justice theory before the term "environmental justice" was even getting wider academic use, I adopted a framing for our current understandings of environmental injustice what I later called the *bivalent environmental justice theory*, which would add to the distributive justice tradition the paradigm of recognition justice—asking who makes the decisions, how are identity and heritage related to place, and to what extent is the environmental inherently political. A fundamental way in which the bivalent environmental justice theory became useful was to expand justice theory to the case-specific nature of the field, to offer transformative interpretations of justice, and to prescribe a wider epistemological approach. One benefit of the approach is the rubric for the social epistemology and obligations that must be addressed to consider, alleviate, and avoid technoscientific disasters that result in extraordinary injustices.

Part III: Bivalent Environmental Justice

Distributive interpretations of justice are of course one major branch that many scholars still favor. Strictly distributive interpretations, however, fail dramatically to account for the breadth necessary for the range of transgressions in environmental justice cases. Even if we isolate our discussion to the environmental racism debates of the US-EJM during the 1980's and 1990's, whether or not environmental burdens related to toxic and hazardous waste are inequitably to minority communities (African-American, Latino-American, American Indian, Asia Pacific Islander Commonwealths) or more primarily on the basis of socio-economic class, distributive justice is horribly incomplete. First, there are fundamental issues of participatory parity in the

decision-making process and in the representation of the mainstream environmental quarters (policy-makers, government representatives, environmental scientists, and mainstream activism). Definitions of "environmental racism" emerged central to understanding the meaning of "environmental justice", and these never failed to include participatory justice issues, despite the dominance of distributive interpretations by scholars. Additionally, there is nothing from the grassroots sectors of the EJM that give us reason to reduce the dimensions of justice to strict distributive discourse, especially because only weak notions of participatory parity in the form of pluralistic democratic procedures and voting, could be strained from the distributive discourse. Rather, like emerging scholarship in social justice formulated by a recognition paradigm, a strong-participatory dimension has always been required to give respectable accounts of the transgressions against environmental justice. Admittedly, participatory parity itself is not enough to demonstrate the interpretative expansion of theory, because one could maintain a distributive reductionism to capture some versions of participatory justice (voting, public hearings, etc.). Likewise, there are scholars who think distributive theories always come first in environmental justice, but I would contend that it is *they* who are either over-extending the distributive paradigm, or *they* who are dealing in a watered-down participatory justice, or *they* who are mistaking the symptom of inequitable distribution of environmental benefits and burdens for the appropriate philosophical account of the environmental injustice. Mistaking the symptom of inequity for the cause of the political inequality underlying the injustice is both common, due to the millennia of distributive justice theory and unfortunate, due to dangerous reifications in the myth of merit and failures to recognize situated experience, knowledge production, expert-elitism, historical injustices and exclusionary social practices, and decision making processes. Too many particulars of the environmental justice struggles, too many histories of the many movements around the world, and too many emerging issues confound this category mistake in distributive circles. That is not to say non-distributivist interpretations, such as strict identity politics, are the alternative. Fortunately, there is another option; especially if we want to emphasize the virtues of participatory justice.

My option of *bivalent environmental justice* is an anti-reductionist strategy that relies upon the assumption that justice is co-constructed, co-constituted, co-original, and interpenetrating along lines of the distributive and the recognition paradigms of justice. A key element in working out this approach was formalized in Nancy Fraser's interpretation of the *redistribution-recognition problem*, in which she uses an heuristic conceptual devise to identify four nodes of justice and the ways in which each takes on the social-ontology of bivalence. (See Figure 1). The four nodes include: (1) the nature of the given injustice; (2) the remedies given in response to the injustice; (3) the identifiable collectivities pertaining to the given injustice; and (4) the interpretation of difference as it pertains to goals of justice in the paradigm. Bringing these nodes of justice under a bivalent framework entails a perspectival dualism, as opposed to a substantive dualism, that enhances the paradigms of justice and transformative approaches to the arrangements set in the social-ontology. This perspectivalism gives opportunity to address the normative dimensions of bivalent environmental justice; namely, how we should increase inclusive and deliberative democratic processes for recognition, who and how we make decisions for technoscience, and how we should consume and distribute environmental benefits and burdens.

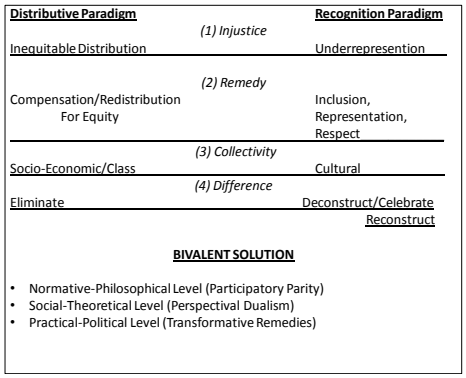

Figure 1- Nodes of Justice for Redistribution/Recognition Problem and the Levels of Bivalent Solution to the Problem

Under the bivalent approach, distributive theories may remain bound to distributive principles and presumptions, and similarly for recognition theories, but regardless of paradigmatic loyalty a theory must ultimately be pitched under a bivalent social-ontology. Elsewhere, I've given many reasons for this construction of environmental justice, and I am fairly convinced that quasi-bivalent conclusions have emerged in many other places, with many other thinkers, policy makers, and activists; albeit under many different names, usually involving terms of "participatory justice," "identity," "social location," and the like.[2] In my observation, most theorists sense the press of bivalence especially when they get around to their account of participatory parity. I approach participation from Fraser's model, in which participatory justice exists as a bridge between the two paradigms. This seems right to me, since material and social conditions must involve participatory parity, and knowledge production as well as cultural transmission and transformation must be participatory. Thus, participatory justice must be both distributive and recognition oriented, respectively. However, in my walk across the bridge of participatory justice, I would suggest it is weaker on the distributive side than on the recognition side; partly because I do feel certain that many things in the world tend to be over-simplified as goods or even resources, and these should be more directly associated with a stronger sense of participation that I believe exists closer to the recognition side of the bridge. The point is that we span participatory parity between a weaker and stronger sense, between distributive and recognition paradigms, respectively; and scholars who eventually get to a quasi-bivalent conclusion usually get there as they require stronger participatory frameworks.

A different metaphor illustrates bivalence, participatory parity, and my entry point for discussing environmental identity and environmental heritage: two features crucial to my account. Let's imagine the tree of justice existing with two co-primary limbs.[3] Branches of

[2] Despite this observation of similarities to bivalence, David Schlosberg writes in his book *Defining Environmental Justice*, that I am the only theorist he knows of who specifically includes recognition at the defining point of "environmental justice," and he reiterates his observation regarding my notion of *environmental identity*, something I briefly describe later.

[3] In one version of this metaphor, presented at the International Association of Environmental Philosophy, Pittsburgh, PA, (2008), I was criticized for the static, if not slow, dynamic a tree metaphor conjures. Certainly, more dynamic metaphors exist in the non-human world (crystals, bacteria, etc.), but my inspiration for this metaphor comes from a discussion with Val Plumwood in 2005 observing the growth patterns of her namesake, the plumwood trees. This species of old-growth trees is exceptionally dynamic, sometimes changing growth patterns to right angles, in order to avoid other trees and share the sunlight.

compensation, restitution, redistribution, and even retribution may primarily stem from the distributive limb; whereas, branches of identity, reconciliation, and even restoration stem from the recognition limb. The ontological status of the tree is something I believe is apprehended by my concept of environmental identity and its attendant concept, environmental heritage: two consequent extensions of the bivalent environmental justice approach.

Environmental identity, as I understand it, is "the amalgamation of cultural identities, ways of life, and self-perceptions that are connected to a given group's physical environment." [4] In the description I am currently offering, "*environmental identity* is closely related to environmental heritage, where the meanings and symbols of the past frame values, practices, and places we wish to preserve *as members of a community*. In other words, our environmental heritage is our environmental identity in relation to the community viewed over time." Speaking from my bivalent emphasis, "recognition justice demands that we fully account for the situational aspects of group mobilization for environmental justice by understanding the individual and community environmental identities and environmental heritages are at stake." Meanwhile, "the distribution of environmental burdens, which requires practical-political remedies remains closely hinged to the ways in which groups' environmental identities and environmental heritages are respected within a society." Yet, despite these points, environmental identity and heritage are the most commonly overlooked aspects of environmental justice. Moreover, even if distributive justice and political recognition are achieved as a result of an environmental justice struggle, the affected groups may still experience harm to their environmental heritage and as a result of which they are forced to rethink their self-identity." This latter point contains the aspects of transformative justice, a fundamental goal of environmental justice, and with which I have applied bivalence in cases ranging far beyond mere distributive question, into questions of cultural reconciliation and restorative justice, and in contexts ranging from industrialization to ecotourism and from the worse toxic catastrophes to the most desperate attempts to preserve human ecological systems.

IV. Restorative Justice and Technological Reconciliation

Considerations of environmental identity in recognition justice involve first and foremost construing identity in environmental terms as well as cultural and political terms. It must be acknowledged that a culture is inseparable from its surroundings and therefore the political space for individuals and communities to express that relationship must be preserved. In addition, recognition justice must ensure that the ways of knowing about the environment that are formed by the interrelationship of self, society, and surroundings be brought into considerations of justice. In other words, environmental injustice must be assessed in terms of the disrespect to the local knowledge systems that pertain to the environmental experiences of the local residents. At the same time, it is important to acknowledge that competing identities are a source of conflict and, therefore, while being mindful of the unequal power relations among community members, environmental identities must be subjected to scrutiny for the ways in which groups are capable and/or willing to transform their environmental identity. No identity should be disrespected, but no identity should be regarded as inscrutable.

[4] Figueroa, Robert Melchior. (2006). Evaluating Environmental Justice Claims. In *Forging Environmentalism: Justice, Livelihood, and Contested Environments,* ed. Joanne Bauer. New York: M.E. Sharpe, pp. 371-372. All quotes on this page are excerpted from the same citation.

In addressing injustices against environmental identity creative remedies should be explored. One possible remedy is *restorative justice*, wherein mediators attempt to bring victims and offenders into a dialogue (though not typically face-to-face), in order to establish the parameters of apology for victims, foster greater responsibility and conscience on the part of the offender, and to try to suture the wounds of the affected individuals, families, and communities. Restorative justice requires that the victims have the opportunity to confront the offenders so that repeat offenses do not occur. In other words, apologies and mediation would be added to the recognition and distribution remedies of greater participation and compensation, respectively. The recognition and reconciliatory power of these apologies are not to be underestimated. In Australia, for instance, the resistance of a legitimate Sorry Day to reconcile the settler violations against aboriginal peoples and the historical resistance of a "sorry declaration" has only made the issue more important. Similarly, Prime Minister Kevin Rudd's recent 'Sorry Speech', which finally did symbolize the government's apology to "the oldest continuing cultures in human history," was no minor matter-- it made a difference to the heritage of aboriginal and settler Australians.[5] Moreover restorative justice is the kind of reconciliatory process that opens avenues for institutional structures to be reformed in order to give the victims a voice in the decisions surrounding environmental practices of the wrongdoers and in the creation of laws aimed to prevent future victims, abuses of science, and irresponsible policy-making.

Restorative justice as a remedy is not without its flaws, as the main legal practitioners in New Zealand and Australia have learned. Victims, in particular, are often placed under great stress when "dialoguing" with their offenders. The offender may in fact get too much credit in the restorative justice process, while the victim is put in a position where s/he must take pains to improve upon the conscience and rehabilitation of the offender. On the other hand, restorative justice can be effective in bringing environmental identity back to a community. For instance, in Japan, for instance, *Soshisha*, the movement on behalf of the patients of Minamata Disease, caused by mercury dumping represents an effort of restorative justice that is laudable. Even after decades of resistance and advocacy, the people of Minamata remained divided, with victims and offspring of victims still suffering the disease, social stigmatization, the economic hardships of downsizing the culpable Chisso Company plant, and the environmental destruction of the local landscape. Restorative justice may also ensure that if a polluting factory or operation is shut down, culpable parties do not simply move on and repeat the offense elsewhere. This is one result that environmental justice advocates in the U.S. have tried to avoid as transnational corporations will simply export the burdens once a local struggle is won by residents. Public apologies also shift the burden of proof. It helps to identify the victims in a manner that keeps the spotlight on the culpable parties, instead of casting doubt on the victims themselves, as in the cases of Minamata Disease where the victims are seen as violating social custom or burdening state tax systems. In the 1990s, the prefectural government took active measures to reunite the community through the *Moyainaoshi* campaign. This reconciliation effort "emphasizes activities that bring the residents face-to-face to discuss issues, to cooperate together on resolving

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[5] Prime Minister Kevin Rudd. 13 February 2008. Speech *Apology to Australia's Indigenous Peoples House of Representatives Parliament House, Canberra, Australia*.

community environmental problems as a way of healing their differences and the environment." With public apology, memorials, concerts, sculptures, and community involvement, the rhetoric of healing between residents -- across generations and of the environment -- signaled a new identity for Minamata. The recycling system and other forms of community work that are part of *Moyainaoshi* were intentionally developed as part of this effort to redefine the identity of victims and the city itself. Victims became participating citizens, whose voices count. They have the traditional knowledge that can forge Minamata's new identity – the very knowledge that for decades legal experts, corporate giants, prefectural and national government officials, medical professionals, and other residents had long dismissed.

The project of *Moyainaoshi* remains unfinished. As a movement led by the prefectural government, its credibility is diminished. It makes top-down mistakes, for example, inviting victims to the memorial's coffee house, but not allowing them to work there because of their disabilities. Despite its efforts to create awareness and social sensitivity, Minamata people continue to hold discriminatory attitudes toward the victim and fisher communities. The city's festivities and memorials take place on the 58-hectacre green, which is the site of the reclamation landfill where the dredged mercury from the sea is buried; a site that many victims and activists contested. The victims themselves remain exhausted from decades of illness and social prejudice, and the healing process depends upon reliving this painful experience. The mayor's formal apology has not been matched by an apology by Chisso, which maintains that (voluntary and forced) compensation are enough. Yet, to the extent that victims are able to continue to find a way to express their values, struggles and needs, however, the healing can proceed. Thus, while new expansions on justice emerge from a bivalent environmental justice approach, this is not to suggest the expansion is exhaustive. Indeed, the expansion must reflect into modifications of environmental ethics, as well as modifications in justice theory.

Conclusion (to be developed)