HOW MUST I EXPLAIN TO THE DOLPHINS? : THEORIZING THE EPISTEMOLOGY OF UNCERTAINTY THROUGH AN INTERSECTIONAL APPROACH TO CLIMATE CHANGE

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“In agriculture, as in nature and culture, the more complex the system or structure (within the obvious biological and human limits), the more sound and durable it is likely to be. The present industrial system of agriculture is failing because it is too simple to provide even rudimentary methods of soil conservation, or to be capable of the restraints necessary for the survival of rural neighbourhoods, and because it fosters a mentality too simple to note these deficiencies.”

Introduction: Defining Evolution

I write this essay in the first person quite deliberately, following Black feminist/womanist praxis. It is a way of claiming space that also encourages the taking of responsibility. Unfortunately the academic ‘we’ elides critical identities while providing a most unnecessary authority as a facade to hide behind. The first person approach can appear narcissistic. However, for those of us who never had a public self to speak of, and whose recent collective history has been one of enforced silence, invisibility and voicelessness, it is quite liberating. I owe it to my sisters as we together develop a public narrative. Thus Menah Pratt-Clarke reminds us of “..the responsibility of women of color to ‘interrogate our silences’ and engage in critical self-analysis and self-transformation by remembering, speaking, voicing, and acting. One of the key challenges of ‘speaking up’ involves the unwritten rules that control what can be said; what remains unsaid; and how we can say what we want to say.” Before these unwritten rules can be challenged they must be made visible. One of the best ways to do this is to weave your own narratives. The power of contrast is effective. Still, for those of us who lost the habit of exercising public power a few generations ago, the telling of stories can be quite a complex process. It requires first the forming of an empowered subject position which can then re-shape public narratives: “Through the

Participatory Action Research process the researchers (community) developed a social analysis weaving together tales of discrimination ... and in doing so they redefined not only ‘the problem’ but also themselves. If to tell one’s story is to know one’s story, it is also to take control over one’s representation."³ I find the ‘I’ quite helpful in doing that.

It is important to qualify this statement. Individuals in African culture (I should refuse, by the way, to problematize Africa as long as nobody questions the use of the terms ‘Europe’, ‘Europeans’ and so on, but will nevertheless do so in a moment) are not selfed in the way the term is understood in the global North. Socialized as we are in extended families, and educated to believe in a moral good more important than one’s individual self, Africans are notoriously and often irritatingly community-minded. They are also deeply spiritual. South African social justice theorist Biko makes this point from a Black Consciousness approach: “We regard our living together not as an unfortunate mishap warranting endless competition among us but as a deliberate act of God to make us a community of brothers and sisters jointly involved in the quest for a composite answer to the varied problems of life.”⁴ And (before my communist comrades begin to hyperventilate) let me hasten to add that even Marx recognized the necessity for humans to live a spiritual existence.⁵ As such it would be proper to begin this African story with an invocation to the Most High. May the telling be blessed.

I tell the story in the traditional manner, meaning it is not a linear story, but rather a spiral. It engages an epistemology akin to Wongbusarakum’s characterization of indigenous knowledge systems: “... not knowledge-in-abstract, but rather knowledge-in-context. In particular it is knowledge generated and primarily transmitted in a context of active use...Learning is first-hand and experiential.”⁶ I have spoken of Biko as a theorist but he might not have recognized this distinction, preferring no doubt to think of himself as a practitioner of revolution. It is not possible to think of a greater commitment to political practice than to give your life in the struggle. In his honour, this story is told in the tradition of oral history where the circular approach provides for repetition, which aids memory. It allows the listener space to imagine and so co-create the story. Those who are linearly minded may visualize a straight line running through the centre of the spiral and so we shall communicate quite comfortably. The story without a doubt has a moral.

³. Cahill, Caitlin The Personal is Political: Developing New Subjectivities Through Participatory Action Research, Gender, Place and Culture, 14:3, 2007, pp. 24.
This story is about growth and change, or in scientific terms, evolution. The approach to evolution set out in this essay is that characterized by Kropotkin:

“...it is not love and not even sympathy upon which Society is based in mankind. It is the conscience -- be it only at the stage of an instinct -- of human solidarity. It is the unconscious recognition of the force that is borrowed by each man from the practice of mutual aid; of the close dependency of every one's happiness upon the happiness of all; and of the sense of justice, or equity, which brings the individual to consider the rights of every other individual as equal to his own. Upon this broad and necessary foundation the still higher moral feelings are developed.”

In proposing co-operation as a greater evolutionary force than competition, Kropotkin did not see himself as disagreeing with Darwin. In fact, he excoriated Darwin’s followers for distorting his views, and quite rightly placed these in the context of an exploitative capitalism seeking a naturalization of its ideology. From an African perspective, a theory of evolution does not of necessity exclude the notion of God/de. We could have been created with the capacity for evolution. A clever Creator would have constructed the universe with the capacity for randomness, or, in human terms, free will. This would have allowed for change and prevented boredom. In this sense one could characterize the First Cause as a feminist, since notions of choice lie at the heart of feminist theory. It is only unfortunate that free will implies also the capacity for sin. There can be no right choice if we did not also possess the capacity to make the wrong choice, and the set of actions discussed here, namely diminishing the choices of future generations through the indiscriminate burning of fossil fuels, would be one instance of wrong choice. There is nothing inevitable about the survival of the human species. Having acquired free choice we will not be protected from the consequences of our actions, or our failure to act.

Identity in Theory and Practice

Anthropogenic global warming is, arguably, one of the most catastrophic species failures in the history of this planet. This, because it involves not just the risk of extinction of the human species, but of a multitude of other species which have not emitted excess carbon. Shiva puts it with characteristic frankness:

“Our world has been structured by capitalist patriarchy around fictions and abstractions like ‘capital’, ‘corporations’ and ‘growth’ which have allowed the

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8. Kropotkin Mutual Aid, pp. 8-10.
unleashing of the negative forces of the Anthropocene. We will either make peace with the earth or face extinction as humans even as we push millions of other species to extinction. Continuing the war against the earth is not the intelligent option.\(^9\)

Note well that I do not consider the planet to be in any danger. The planetary ecosystem adapts to human action. For instance, the hotter the globe, the more humidity collects in the atmosphere and the more it rains.\(^{10}\) The earth is cooling itself. Not fast enough to save the human species, in fact, extreme weather is causing political and economic instability all over the world.\(^{11}\) If this is the social disruption we are seeing at 0.8 °C average warming, what is going to happen as we head for the seemingly inevitable 2 °C?\(^{12}\) So the current episode of human-induced climate change can be characterized as a massive counter-evolutionary set of actions on the part of one species. If ‘intelligence’ is defined as the ability to adapt to the available ecological niche, then the human species is proving itself to be rather stupid.

Moreover, intelligence is not the only quality necessary for survival. The will to survive is equally important. It is pointless adapting to one’s ecological niche if being there makes you miserable, with the consequent immune system depression and susceptibility to illness which that implies. Survival without happiness (here defined as contentment with one’s ecological niche) would not be evolution but simply a slower and more painful way to die. Thus we need to take to heart Shiva’s injunction that:

“Biologically and ecologically we are one with the earth. The web of life is woven through interconnectedness. It is the disease of separation and eco-*apartheid* that denies this and then creates the diseases of loneliness, depression, alienation.”\(^{13}\)

Bearing these considerations in mind, I view climate change adaptation and mitigation as a stage in human evolution. Intelligence and happiness become central elements in defining evolutionary responses. To fulfil these criteria, climate adaptation and mitigation need to combine technical approaches with equality and justice. Contentment with one’s lot is hard to sustain when your neighbour is enjoying a luxurious life. To be hungry is one thing, but to be hungry when your fellow citizen is eating corn-fed steak and pork chops is another and more painful experience altogether. It takes an exceptional philosopher to at that stage reflect that the neighbour is only bringing heart

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\(^{10}\) Lenderink, Geert & Erik van Meijgaard, *Increase In Hourly Precipitation Extremes Beyond Expectations From Temperature Changes* Nature Geoscience 1, 511 – 514, 2008.


\(^{13}\) Shiva *Making Peace*, pp. 11.
disease upon himself. For billions of us to aspire to the same unhealthy diet is counter-evolutionary.

Experts at seeking justice, in turn, have expounded on two interlinked ideas. The problematic that needs to be addressed is, as Anzaldúa puts it:

“Like racial identity, a structure dominant groups use to produce forms of inequality to exclude other groups ... something similar happens to marginalized ‘disabled’ groups. When marginalized groups fall back on defending identity as a strategy of resistance, when we cling to our identity as ‘disabled’, ‘immigrant’, or whatever, and use identity as a basis for political mobilization, we inadvertently reinforce our subordination. Our identification is based on an oppositional distinction from another group, the ‘normal’. The social transformations we produce are not free from the identity/disability-based divisions/ inequalities that we oppose.”

To solve this problem, South African heroes of the struggle have tended to emphasize that the identity which forms a basis for unity must of necessity seek its own destruction. Celebrating identity is a process, it cannot be an end in itself. Otherwise we become locked into the identities shaped by oppression and ultimately reinforce the system which oppresses us. The great Pan Africanist Mangaliso Sobukwe explained it as follows:

“Politically we stand for government of the Africans, for the Africans, by the Africans, with everybody who owes his loyalty only to Africa and accepts the democratic rule of an African majority, being regarded as an African... I have said before and still say so now, that I see no reason why, in a free democratic Africa, a predominantly black electorate should not return a white man to Parliament, for colour will count for nothing in a free Africa.”

This makes sense, since race in its modern sense, like scientific racism – arose under specific historical conditions such as slavery and colonialism. Similarly, Camara has pointed out that matriarchy is not the opposite of patriarchy but has historically tended to be associated with non-hierarchical forms of governance. Thus Sobukwe’s reasoning that if you transformed the material conditions structuring certain hierarchies of identity, the identities themselves would eventually disappear. The disagreement between Sobukwe and Mandela which led to Sobukwe’s exit from the African National Congress Youth League to form the Pan Africanist Congress in 1959 was therefore not

one of ideology but of tactics. Everyone agreed that the ideal was the end of race. But Sobukwe disapproved strongly of an alliance with the South African Communist Party, which is indeed to this day one of the more Stalinist of Communist parties. Sobukwe, though a committed African communalist who placed great emphasis on the class struggle, believed that we would be better served remaining outside the antagonisms of the Cold War. Biko’s older brother Khaya joined Sobukwe in the PAC, and it was in dialogue with him that the young Biko’s political theories developed. Biko wrote in the tradition of Sobukwe and Mandela when he argued that the struggle against white supremacy must have as its end goal a society where racial oppression does not exist. The goal was not to recreate hierarchies, but to abolish the notion of hierarchy altogether. This is a difficult task for people who have not known anything else but hierarchy all their lives. Biko defined the most important enemy of Black Consciousness not as white supremacy, but the black inferiority complex. In this spirit comes his most famous epigram: “...the most potent weapon in the hands of the oppressor is the mind of the oppressed.”\textsuperscript{17} For Biko, the true enemy lay within. He privileged identity politics because his activism recognized the primacy of experiential knowledge. Political mobilization requires us to work to our strengths, and the one thing we can fully know is the reality of our lives. Yet this reality is shaped by the political and economic system within which we learn ways of knowing. Biko perceived the potential contradiction between process and outcome precisely because to act on what we know is to risk our struggle being shaped by a hierarchical present: “This is the major danger that I see facing the black community at the present moment---to be so conditioned by the system as to make even our most well-considered resistance to fit within the system both in terms of the means and of the goals.”\textsuperscript{18} Essentially Biko was saying that we become intellectually disabled by hierarchical systems. We do not know what free people think like. And we cannot know what we do not know.

Biko approached this issue by encouraging the arts, encouraging the Black Consciousness movement to since its inception find its strength in creativity. We have to imagine what we cannot know. Through art we come to know ourselves. We are inspired, refreshed, and expand the limits of the thinkable. Gqola defines the absolute centrality of creativity to the movement when she says: “Paying attention to interior worlds is an important part of how we change. It is not indulgence.”\textsuperscript{19} Survivors of trauma in particular need help in confronting what goes on inside us. Arts and culture support us in that exploration, providing intuitive solutions when intelligence fails.

As Maathai has pointed out, the link between our broken cultures and our damaged environment is intimate. A people who cannot love themselves will not love the earth which nurtures them: “There is enormous relief, as well as anger and sadness, when people realize that without a culture one is not only a slave, but also has in effect collaborated with the slave trader, and that the consequences have been long-lasting.

\textsuperscript{17} Stubbs I Write What I Like, pp. 68.
\textsuperscript{18} Stubbs I Write What I Like, pp. 36.
\textsuperscript{19} Gqola, Pumla Dineo A Renegade Called Simphiwe, MF Books, Johannesburg, 2013, pp. 25.
and devastating, extending back through generations. A new appreciation of culture gives traditional communities a chance, quite literally, to rediscover themselves, revalue and reclaim who they are... 20 In decades of political organizing, the hardest thing for me has been to support people who themselves are victimized to see the ways in which they oppress others or are complicit with oppression. Victimhood is comfortable because it is what we know, especially when it has been our cultural milieu for generations. It is not comfortable for us to see agency in the way we step on other people. Denial is easy but it keeps us in chains. For the people who benefit from the system are always a minority. They could not uphold it on their own. Their survival depends on their ability to co-opt sections of the oppressed. The black man who beats his woman to pulp every Friday night, the MP who votes in a law condemning queers to death, or the parents who sell their daughter into human trafficking, are all people who are complicit with white supremacy if for no other reason than because they divide us, weaken us and make us easier to rule. In the context of climate change, this worries me deeply. As Biko has said of white liberals, you cannot benefit from a system and expect to be found innocent. The best you can do is to work amongst your own, giving the oppressed space to determine their own destiny. In this spirit I ask myself: how can I be part of a species which is damaging the planetary ecosystem? How can I deny complicity? How must I explain this to the dolphins? Reclaiming our culture enables us to see with clear eyes what we have done, and only then can we take responsibility for changing our lives. It is only when the 99 % recognize their role in upholding the system that we will also find the power to change it. That is the message of Black Consciousness.

It was for this reason that Biko recognized the necessity for a dual approach to struggle. Our struggle has to be firmly rooted in what we know, yet we have to consistently move from the known to the unknown (or forgotten) by envisaging a society structured in a non-hierarchical fashion. For Biko the seeming contradiction between the necessary means and the logical outcome had to be understood in terms of human capacity for self-deceit and denial. There could be no compromise with hierarchy precisely because we will only know quite how colonized our minds have been once we are free: “In laying out a strategy we often have to take cognizance of the enemy’s strength and as far as I can assess all of us who want to fight within the system are completely underestimating the influence the system has on us.” 21 He saw the enemy’s strength as based on our mental weakness, namely the human impulse to think we are smarter than we are. To guard against this, he placed system change at the centre of Black Consciousness. Striving to foresee the end of the identity which formed the basis for his struggle was not, in Biko’s analysis, a concession to white supporters or a striving for liberal humanism. It was the very essence of his strategy.

An ecological way of putting it would be to think of identities as compost materials. They are good things, they are useful and if handled well, mixed correctly, layered...

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properly and watered regularly will provide a good home to the soil bacteria and earthworms who will change and unite many disparate identities into beautiful Black stuff which nourishes new life. Once we accept that the logical purpose of identity politics is to transform its own existence, the work becomes easy. Once we understand that the methodology to do so needs to support the identified discovering themselves within their affinity groups and culture, the work becomes soothing. And once we accept that our task (no matter from which identity, intersection, traffic circle or parking place we started) is to oppose and refuse complicity with the system which divided us in the first place, we shall give birth to new life.

**Theorizing Uncertainty**

Biko’s approach is particularly useful for climate change, since the challenge global warming poses to positivistic epistemology is that the sum of what we do not know will always be larger than the sum of what we know. Of course, this has always been the case. Randomity, for instance, on which the whole of the probabilistic sciences have been based (not least meteorology) requires an infinite number of cases to be mathematically sound. When you toss a coin, you can be sure to get heads 50% of the time and tails 50% of the time only if you toss the coin an infinite number of times. The idea that tossing the coin, say, seven billion times will give you a better result than seven times is a convenient fiction which has allowed the development of some interesting science. Still, seven billion minus infinity and seven minus infinity come to the same sum: infinity. We fall short of the truth by exactly the same amount in both cases. To say that the probability of the one is more certain than the probability of the other is, logically speaking, nonsense. Yet we approach the sciences in this way because they give us a comforting feeling that we know something when we do not know.

Probabilistic theory is not only logically inconsistent, it also fails to meet many real-world challenges. You cannot run double-blind clinical trials with HIV positive people. It is simply unethical. You cannot create statistical solutions in cases where multiple causes manifest as one effect, such as gender based violence. Assuming that you can address the problem through a science which pretends certainties is in itself an act of complicity. Sometimes you just cannot know if you will be dead or alive by sunrise. You can only know your capacity to do the right thing.

With human-induced climate change, however, the problem of what we do not know has become critical. This is because in dealing with ecosystems and inter-relationships between multiple systems of different types - social, economic, biophysical – we catch

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22. This term is used as defined by Baars: “For four centuries, Western science has been based on philosophies of Descartes and Kant whose approach to biology reflects the ideas of Bacon and Newton and a mechanistic and mathematical interpretation of nature. The Cartesian paradigm commonly is called positivism or rationalism.” Baars, Ton Reconciling Scientific Approaches For Organic Farming Research Ph. D. Thesis, University of Wageningen, 2002, pp. 22.
positivistic science at its weakest. With the exception of ecology, its approach has been to break down phenomena into their smallest component parts and analyze them under controlled conditions which abstract from reality, such as a laboratory. It struggles to deal with the relation between the part and the whole in reality which is the essence of system analysis. Not surprisingly, perhaps, a sharp critique of this scientific approach has come from organic farming which by definition must deal with human/nature interactions in the broadest sense. Thus Fukuoka states that:

"In nature, a whole encloses the parts, and a yet larger whole encloses the whole enclosing the parts. By enlarging our field of view, what is thought of as a whole becomes, in fact, nothing more than one part of a larger whole. Yet another whole encloses this whole in a concentric series that continues on to infinity. Therefore, while it can be said that to act one must intuitively grasp the true ‘whole’ and include all small particulars, this cannot actually be done."²³

Knowledge in context accepts that you cannot know it all and acts anyway. The rats eat the pumpkin, the chickens refuse to lay, the apple trees fail to set fruit for some inscrutable reason; or to be more precise, bad things happen due to some event or non-event in the ecosystem so small that the farmer cannot see it. Uncertainty is part of life. Like the oppressed masses, organic farmers know they are not in control. They become experts at dealing with uncertainty through evolutionary methodologies such as showing some respect (feed the soil and it will feed the plants), exercising gratitude (plant twice as many pumpkins as you need) and paying attention (watch the chickens until you understand why they are unhappy). In organic farming, epistemology is defined by uncertainty. We know we are not in charge.

From a feminist perspective as well the critiques have been many. The violence of patriarchy – of which global warming is perhaps the ultimate expression – had to be made thinkable by rendering men, especially white middle class men, as the thinking subject while everybody else became with nature an exploitable object. Glazebrook and Story have defined the construction of positivistic science as an act of epistemic violence:

"..the mathematization of nature is the foundational projection onto nature of human understanding that makes experimental methodology necessary to modern science. Moreover, mathematization makes possible the reduction of beings, i.e. anything that can appear in modernist ontology, to economic value. Modernity is thus driven by a logic of capital at work in technoscience in that the instrumentality at the essence of technology is inseparable from the calculability essential to modern science."²⁴

Perhaps nowhere is this violence more evident than in the assumption that science can provide the answers for us. We have given up responsibility for our lives along with the


power to make knowledge. In response, many theorists have argued that assuming the primacy of any one form of oppression is an identity privilege. As white people can refuse to see racism where it exists precisely by virtue of their place at the top of the racial hierarchy, so assuming the primacy of racism has been shown to be a privilege only available to Black men, or the primacy of class a viewpoint available only to heterosexuals. Intersectional theory, meaning thereby an approach where several identities are mutually constitutive within a specific historical and social context based on a specific material and moral economy, has worked to accomplish the mental double vision required to recognize the power which lies in affirming oppressed identities, whilst developing strategies to ultimately render them socially unimportant.

The categories of analysis I have found find most useful are race, class, gender, sexual orientation, indigeneity and disability. To include any more identities would probably lead to the end of intersectional theory. For theory to be applicable in practice there must be boundaries. Technically, everything can potentially intersect with everything else. To think that intersectionality can be used to apply to every conceivable concept or identity is to stretch the theory beyond its capacity. Theory, after all, is the process of temporarily abstracting from reality in order to allow conceptual thinking. While complexity is necessary in order to do the job well, the expression of theory cannot become too unwieldy or it becomes useless. At some point a liberatory theory has to work in practice. At that point we must accept the limits of human ignorance, including that of the theorist. Thus to use intersectional theory as a cure-all is to do it an injustice. It is a theory evolved at a specific historical juncture to speak to activist needs, primarily that of moving beyond the limitations of single-issue politics. As such it is suitable to systems crises like climate change. But specificity needs to be balanced against the purpose of intersectional theory. When analysts come to the conclusion that: “Given this multitude, it is not feasible to provide a common intersectional methodology; the methods always need to be adapted to the specific context or case under study…” we approach theory breakdown. If we do not have a common methodology, how do we compare results? How do we choose which strategy or set of strategies will lead to liberation?

Tuana warns against intersectionality being reified into the ‘laundry list’ approach: ‘women and other vulnerable groups’. She argues that:

“.. while gender can serve as an analytic category, it must always be richly situated. Gender outside of its complex contexts is too rough a measure to be effective and will always risk repeating dominant patterns of thinking and thereby reinforce sexist assumptions about women. In short, gender must always be studied from specific and embodied locations where we as researchers

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25. For a full discussion cf. Abrahams, Yvette “‘We’re Here Because We’re Here’: Speaking African Womanism” in Duncan, Norman and Pumla Dineo Gqola et al (eds.) *Discourses on Difference, Discourses on Oppression*, Centre For Advanced Studies of African Society, Cape Town, 2002.

are continually attentive to the complex and intersecting power relations from which gender emerges in its specific manifestations.”

The laundry list functions to simplify the problem instead of admitting that positivistic scientists just do not know enough about messy and complex life at the bottom of several hierarchies. The six identities deployed are all here because they have been adequately theorized on the basis of considerable research rooted in activist movements. They have earned their place in the theory. There needs to be a balance between the uniqueness of the research situation and the need for consistent methodology.

It is important to remember that for theory to bear practice, while it requires that one distance oneself enough to reflect, this is not the same as removing oneself to another planet. Thus assemblage theorists seem to be attempting altogether too high a level of analysis. While we all need a place for technical language, when the only available language is so complex that the people about whom we are writing will never have a hope of understanding it, the work loses its activist relevance. Exclusion of the people whose subjectivity is being constructed by others is a painful issue, and language is central to the process of exclusion. One needs to ask who is the audience? Academics of the global North? Governments and policy makers? Or the absolutely ordinary queer people of the South? It is only fair to question the utility of an approach which (while stylistically most elegant) cannot be explained to the oppressed who experience its reality. We challenge anyone to explain the following to an African woman farmer or rent-boy: “Subject positioning on a grid is never self-coinciding; positioning does not precede movement but rather it is induced by it; epistemological correctives cannot apprehend ontological becomings; the complexity of process is continually mistaken for a resultant product.”

If the people we seek to mobilize cannot comprehend what we are saying, minds will remain unliberated. They will refuse to communicate. We will remain in ignorance about our ignorance. A liberatory theory which will lead to successful evolutionary change may be conceptually complex but must remain linguistically translatable to the language of the people.

Scholars have quite rightly exercised caution in extending a feminist critique of science to climate science. Sachs and Israel warn that: “Opening up discussion and investigation of the science that lies at the foundation of climate change discourse may seem like a dangerous move, one that could support the political forces of climate change denial, which seek to continue the business-as-usual capitalist exploitation of the working class, women, and the natural environment.” This argument applies with force in a broad struggle to defend the honour of the human species since we need all


the allies we can get. Still, we cannot allow our agenda to be set by climate denialists. The danger of false solutions is that it blunts our edge. Similarly, a science which is blind to its shortcomings needs to be held accountable. We cannot be afraid to engage. As such, I follow previous feminist theorists in analyzing the IPCC reports as a critical datum.

While science by consensus will always have its limitations, it is significant that the world largest gathering of scientists and peer reviewers have mainstreamed an analysis of uncertainty into its reports. This has been defined, agreed upon in committees, and redefined. IPCC scientists have been asked to include a measure of uncertainty for every conclusion. This must surely represent positivistic science’s greatest combined effort at dealing with uncertainty:

"Based on the Guidance Note for Lead Authors of the IPCC Fifth Assessment Report on Consistent Treatment of Uncertainties .. the AR5 WGII relies on two metrics for communicating the degree of certainty in key findings:

1. Confidence in the validity of a finding, based on the type, amount, quality, and consistency of evidence (e.g., mechanistic understanding, theory, data, models, expert judgment) and the degree of agreement. Confidence is expressed qualitatively.
2. Quantified measures of uncertainty in a finding expressed probabilistically (based on statistical analysis of observations, model results, or expert judgment)"^{30}

But the presence of ‘expert judgement’ is surely the beginning of the end of positivistic science. It is an acknowledgement that in the face of climate change there is no objectivity. It re-introduces values back into science, and as a result gives intersectional theorists the opportunity to introduce ethics. The agreement on a common set of values would do much to remove ‘expert judgement’ from its current twilight zone and allow us to hold different forms of experts to account. It is a pity that IPCC itself continues to act as if it could measure its uncertainty, and that it does not acknowledge what it has done. However, perhaps by IPCC 6 the assembled scientists will have realized knowledge is heuristic. Perhaps by that time phenomenology will have come into its own.

In the meantime it is vastly encouraging that IPCC 5 has not only mainstreamed a methodology for uncertainty, conceptually flawed though it may be, but it has also begun to draw the practical consequences of this analysis. Thus it resists the temptation to prescribe yet another technofix which would re-inscribe the dominance of hard scientists. Instead it acknowledges the limits of what science can do:

"..carbon dioxide removal technologies.. are not mature and have biogeochemical and technological limitations to their potential on a global scale and carry side effects and long-term consequences on a global scale... The literature highlights the importance of a systemic, cross-sectoral approach to mitigation. Approaches that emphasize only a subset of sectors or a subset of actions may miss synergies between sectors, raise the costs of mitigation, cause unexpected consequences, and prove insufficient to meet long-term mitigation goals."\(^{31}\)

It sounds like they are calling for system change. It must surely be significant that such a major concatenation of scientists have expressed concern about unintended consequences. From nuclear energy to chlorofluorocarbons, scientists have been more inclined to herald the possibilities of new technologies rather than the risks. Now it would seem that scientists are not incapable of learning from experience. Climate change may have forced positivistic science to move closer to ecosystems thinking. We have come a long way since the days when Jackson complained: "What makes us think we can adequately assess these proposed projects? Only our Cartesian assumptions that we know enough to run the world, despite the fact that we are billions of times more ignorant than knowledgeable."\(^{32}\)

**Conclusion: The Wheel Turns**

The development of positivistic science has been co-terminous with the expansion of slavery. Since its inception Black women have studied this science with a jaundiced eye, first through the experiential knowledge generated by the whip on the back, justified by scientific racism, and then through the many generations of struggle it took us to get to a place where we could write about it. Black women have subjected this science to a rigorous analysis centered around the foundation of positivism on the objectification of Black bodies.\(^{33}\) They have spoken back through novels, plays, music and visual arts.\(^{34}\) They have then reflected critically on these forms of expression. As a group we can truly claim to know positivist science. And the outcome of centuries of cogitation on the matter is uncertainty. Bhana notes that: "Reconceptualizing agency within the coercive systems of imperialism and slavery requires thinking through our definitions of significant action and who is capable of such action."\(^{35}\) Ndlovu says we should use our agency to accept: "A way of knowing that does not require proofs, a way of knowing that respects the ‘opaqueness’ of the body, a way of knowing that is comfortable with

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31 IPCC op cit, pp. 22.
35 Bhana Young, Hershini ‘Rude’ Performances: Theorizing Agency in Gordon- Chipembere (ed.) Representation and Black Womanhood, pp. 61.
the unknown, the forgotten and the silenced; a way of knowing that allows us to realize the limits of the archive.”\textsuperscript{36} Sometimes it is respectful not to know. Baderoon asks: “What will we do in order to pursue the imperative to know? I have shown that the life of this most visible of icons offers us a theory of the private as a way to understand the complexity of African subjectivities.”\textsuperscript{37} And Lewis suggests that admitting what we cannot know frees up the power to move on: “.. the most powerful revisionism, the most radical interventions into truth-telling about Baartman may not be projections about what the ‘actual’ Baartman thought or experienced, but the recognition of her role in textualizing others’ subjective and cultural needs – both in the past and in the present.”\textsuperscript{38} What this conversation narrates is that there is an alternative theory of uncertainty, born in the violent objectification of the Black body and honed through centuries of debate and interrogation. This epistemology is well aware of how much we cannot know. While at one stage even learning to read was a crime punishable by the lash, it seems that some of us have pushed through to the end of this particular road and have accepted that there are of necessity limits to knowledge. We know enough to act as we ought to act. There are times when we do not need more research but instead an acceptance of our ignorance amid a sense of ethical responsibility.

After all, how much more do we need to know to accept Sobukwe’s invitation? “Here is a tree rooted in African soil, nourished with waters from the rivers of Africa. Come and sit under its shade and become, with us, leaves of the same branch and branches of the same tree.”\textsuperscript{39} Reforestation is lovely, because not only do the branches and leaves of trees store carbon, but forests moderate the weather and over the years provide the perfect environment for the formation of humus. Storage of soil carbon, though not taken seriously in the UNFCC proceedings because it is notoriously difficult to measure and thus cannot provide the basis for a carbon market, has the potential to store up to three times more carbon than the aboveground growth of trees.\textsuperscript{40} It may yet save us during the next three decades as we turn our social systems towards mitigation. Maybe we should embrace uncertainty and occupy the ecosystem.

Intersectional analysis helps us think through climate change since, although the roots of our oppression lie in our various identities, it is as a species that we are going to either adapt or die out. It allows us to see both the problem - oppression on the basis of identity - and the solution in the place of the origin of humankind:

“.. anarchism as a form of social organization, as a basis of organizing societies .. is an integral part of our existence as a people. I refer to the communal system of social organization that existed and still exists in different parts of Africa,

\begin{thebibliography}{9}
\bibitem{36}Ndlovu, Siphiwe Gloria, \textit{Body of Evidence: Saartjie Baartman and the Archive}, in Gordon- Chipembere (ed.) \textit{Representation and Black Womanhood}, pp. 27.
\bibitem{37}Baderoon, Gabea \textit{Baartman and the Private: How can We Look At A Figure That Has Been Looked at Too Much?} in Gordon- Chipembere (ed.) \textit{Representation and Black Womanhood}, pp. 83.
\bibitem{38}Lewis, Desireé \textit{Writing Baartmann’s Agency: History, Biography and the Imbroglios of Truth} Gordon-Chipembere (ed.) \textit{Representation and Black Womanhood}, pp. 118.
\bibitem{39}Sobukwe, Mangaliso \textit{Inaugural Address} in \textit{Speeches Of Mangaliso Robert Sobukwe}, pp. 11.
\bibitem{40}Hepperly, P. and T. LaSalle \textit{Regenerative Organic Farming: A Solution to Global Warming}, Rodale Institute, 2008
\end{thebibliography}
where people live their lives within communities and saw themselves as integral parts of communities, and which contributed immensely to the survival of their communities as a unit.\textsuperscript{41}

For while these communities may be today riven by power differentials embodied in identities, the idea of community itself and the psychology of every African as expressed in the proverb ‘I am because you are’ is our greatest hope. It retains a moral force which centuries of slavery, genocide and colonialism have not succeeded in completely eradicating. From the solidarity which structures our personality development around family, clan, tribe and nation can spring the benevolence towards other collective identities, such as species, ecosystem and planet, which has to be the mainspring of our work. Ultimately, oppressed people cannot liberate our minds out of fear, hatred and anger. Freedom has to come out of love: the most political concept of all.

\textsuperscript{41} Mbah, Sam and I.E. Igariwey \textit{African Anarchism: The History Of A Movement}, Bolo’Bolo Anarchist Collective, Cape Town, 2013, pp. 86.