

Science is Culture

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Science's Roles & Goals in Our Society

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Is Everything Culture?

What is culture?

What are some aspects of “Western” scientific culture?

- Language (acronyms?)
- Heroes?
- Elders?
 - Who/when do you need to ask permission, etc?
- Body contact?
- Personal Space?
- How express emotions?
 - Sad, angry, excited, celebrating, life transitions?
- Gender roles?
- Food/Meals?
- Fashion/Clothing?
- How let people know you want/don't want to engage?
- Certainty? How comfortable with uncertainty/ambiguity?
- Task- or Relationship- oriented?
- Reductionist or see everything connected?
- Linear vs plural?
- Metaphors?
- Creation Story?
- Rites of Passage & Rituals?

This by the way, this is often much clearer to cultures from outside...

Science as culture!?

“The vision of science is not specifically Western. It is no more Western than it is Arab or Indian or Chinese...One of the central facts about science is that it pays no attention to East and West and North and South and black and yellow and white. It belongs to everybody who is willing to make the effort to learn it.” --Freeman Dyson



“The project that science’s sacredness makes taboo is the examination of science in just the ways any other institution or set of social practices can be examined” –Sandra Harding, via Vandana Shiva, *Staying Alive*

Quotes to Chew On:

“Science is one thing, wisdom is another. Science is an edged tool, with which men play like children, and cut their own fingers.” ~ Sir Arthur Eddington



“It's these funny little cuts on the side that give it away. Those analysis droids only focus on symbols. Huh! I should think that you Jedi would have more respect for the difference between knowledge and... heh heh heh... wisdom.” ~ Dexter Jettster (Star Wars: The Clone Wars)



Culture, Imagination and the Future

Is it surprising that the same culture that brought us:



The assembly line



Giant mono crop corn fields



Repetitive non-place-based suburbs

Contd:



Prized uniformity in tomatoes– helps with packaging and transport

Vs.



Mono crop, largely cloned (naturally) potato



Snapshot of Peruvian potatoes

With further technological prowess? Cloning



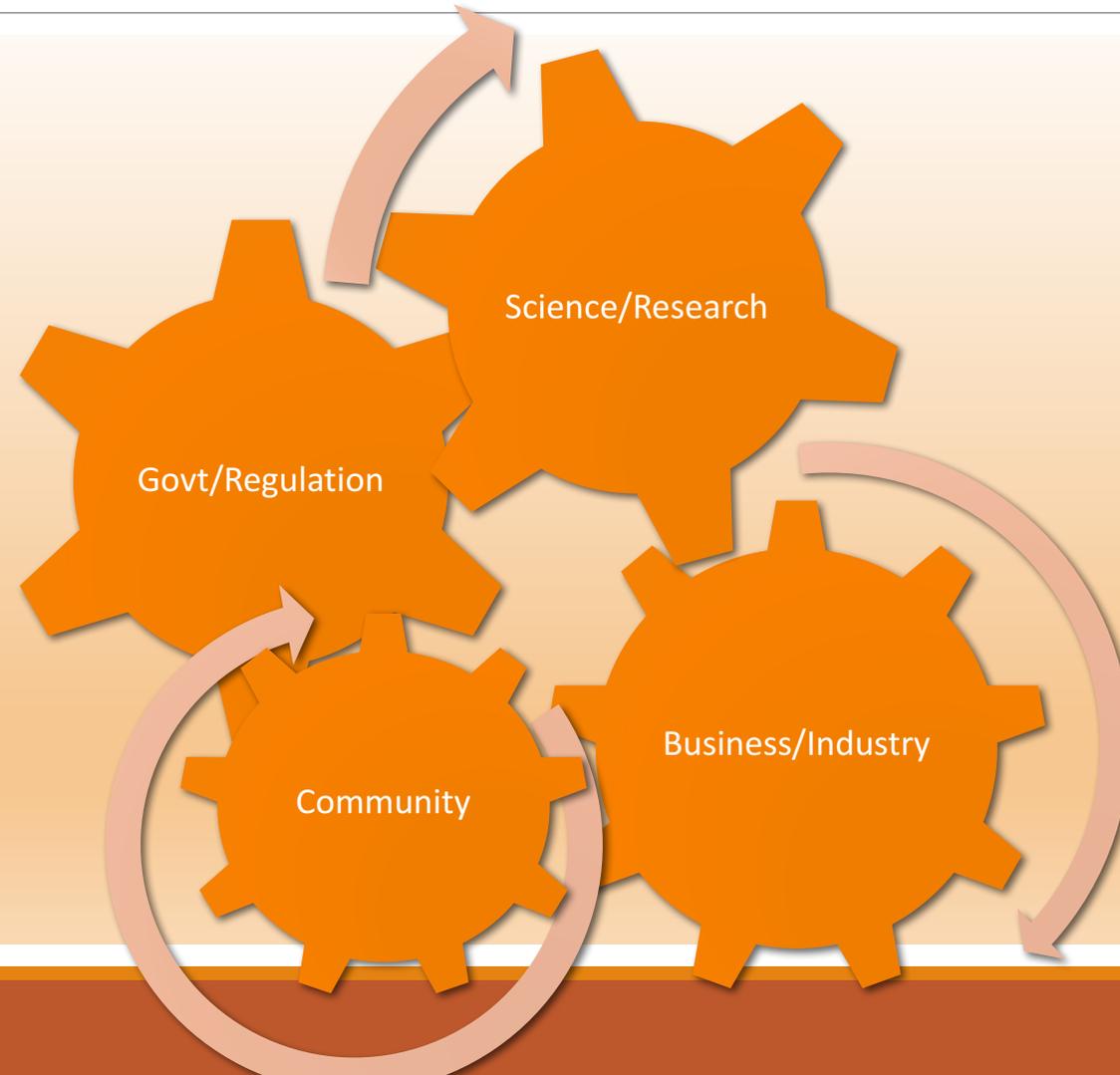
"Your scientists
were so preoccupied
with whether they
could that they
didn't stop to think
if they should."

-Dr. Ian Malcolm (*Jurassic Park*)

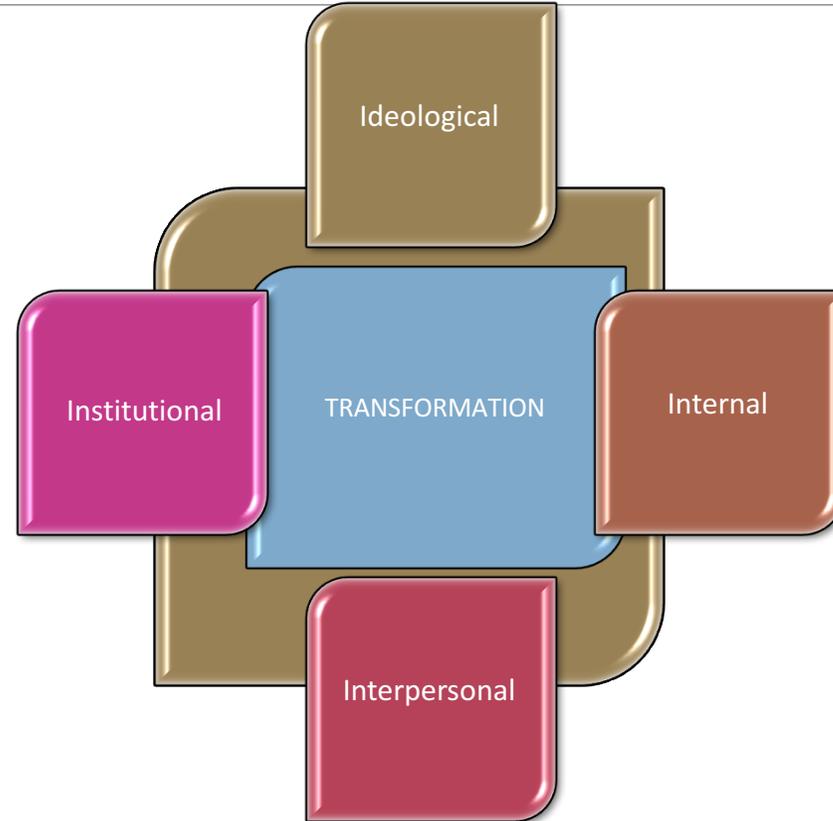
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Like All Things: Science is Intertwined



4 Is break out



Behavior Patterns in Power Relations



Tools for Change
Common Behavioral Patterns that Perpetuate Power Relations of Domination
 By Margo Adair & Sharon Howell, with William Aal

Tendencies of people in **Privileged positions**

Tendencies of people in **Oppressed positions**

Defines parameters, judges what is appropriate; often patronizes.	Feels inappropriate, awkward, does not trust own perception, looks to expert for definition.
Assumes responsibility for keeping system on course. Acts	Blames self for not having capacity to change situation.
Self-image of superiority, competence, in control, entitled, correct.	Self-image of inferiority, incompetent, being controlled, not entitled, low self-esteem.
Presumptuous, does not listen, interrupts; may raise voice. Includes bullying, threats of violence, and violence.	Finds it difficult to speak up, timid, tries to please. Holds back anger, resentment, and rage.
Seeks to stand out as special.	Feels secure in background, feels vulnerable when singled
Assumes anything is possible, can do whatever one wants and assumes everyone else can. Sees no limits in current situations.	Feels confined by circumstances, limits aspirations. Sees current situations in terms of past constraints.
Initiates, manages, plans, projects.	Lacks initiative, responds, deals, copes, survives.
Sees problems and situations in personal terms.	Sees problems in social context, results of system, "them."
Sees experiences and feelings as unique, feels disconnected, and often needs to verbalize feelings.	Sees experiences and feelings as collectively understood and shared. No point in talking about them.
Sees solutions to problems as promoting better feelings.	Sees solutions to problems in actions that change
Thinks own view of reality is only one, obvious to all, assumes everyone agrees with their view. Disagreements come from lack of information, misunderstandings, and/or personalities.	Always aware of at least two views of reality, their own and that of the dominant group.
Views self as logical, rational. Sees others as too emotional, out	Often thinks own feelings are inappropriate, a sign of
Believes certain kinds of work below their dignity.	Believes certain kinds of work beyond their ability.
Does not believe or trust ability of others to provide leadership.	Does not believe has capacity for leading.
Unaware of hypocrisy, contradictions.	Sees contradictions, irony, hypocrisy.
Fears losing control, public embarrassment.	Laughs at self and others. Sees humor as way to deal with
Regards own culture as civilized, regards other's as underdeveloped, disadvantaged. Turns to other's culture to enrich humanity while invalidating it by considering it exotic.	Feels own culture devalued. Uses cultural forms to impact situation. Humor, music, poetry, etc. to celebrate collective experience and community. Sees these forms as being
Sees oppression as a problem in the past and wants others to "just get over it"	Reminded in countless ways daily of the pervasive presence of oppression.
Feels uncomfortable reading about these patterns.	Feels validated reading about these patterns.

Power & Privilege- Brief Intro

White Privilege: Unpacking the Invisible Knapsack

by Peggy McIntosh

*"I was taught to see racism only in individual acts of meanness,
not in invisible systems conferring dominance on my group"*

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DAILY EFFECTS OF WHITE PRIVILEGE

I decided to try to work on myself at least by identifying some of the daily effects of white privilege in my life. I have chosen those conditions that I think in my case attach somewhat more to skin-color privilege than to class, religion, ethnic status, or geographic location, though of course all these other factors are intricately intertwined. As far as I can tell, my African American coworkers, friends, and acquaintances with whom I come into daily or frequent contact in this particular time, place and time of work cannot count on most of these conditions.

1. I can if I wish arrange to be in the company of people of my race most of the time.
2. I can avoid spending time with people whom I was trained to mistrust and who have learned to mistrust my kind or me.
3. If I should need to move, I can be pretty sure of renting or purchasing housing in an area which I can afford and in which I would want to live.
4. I can be pretty sure that my neighbors in such a location will be neutral or pleasant to me.
5. I can go shopping alone most of the time, pretty well assured that I will not be followed or harassed.
6. I can turn on the television or open to the front page of the paper and see people of my race widely represented.
7. When I am told about our national heritage or about "civilization," I am shown that people of my color made it what it is.
8. I can be sure that my children will be given curricular materials that testify to the existence of their race.
9. If I want to, I can be pretty sure of finding a publisher for this piece on white privilege.
10. I can be pretty sure of having my voice heard in a group in which I am the only member of my race.
11. I can be casual about whether or not to listen to another person's voice in a group in which s/he is the only member of his/her race.
12. I can go into a music shop and count on finding the music of my race represented, into a supermarket and find the staple foods which fit with my cultural traditions, into a hairdresser's shop and find someone who can cut my hair.
13. Whether I use checks, credit cards or cash, I can count on my skin color not to work against the appearance of financial reliability.
14. I can arrange to protect my children most of the time from people who might not like them.
15. I do not have to educate my children to be aware of systemic racism for their own daily physical protection.
16. I can be pretty sure that my children's teachers and employers will tolerate them if they fit school and workplace norms; my chief worries about them do not concern others' attitudes toward their race.
17. I can talk with my mouth full and not have people put this down to my color.
18. I can swear, or dress in second hand clothes, or not answer letters, without having people attribute these choices to the bad morals, the poverty or the illiteracy of my race.
19. I can speak in public to a powerful male group without putting my race on trial.
20. I can do well in a challenging situation without being called a credit to my race.
21. I am never asked to speak for all the people of my racial group.

Peggy McIntosh is associate director of the Wellesley College Center for Research on Women. This essay is excerpted from Working Paper 189, "White Privilege and Male Privilege: A Personal Account of Coming To See Correspondences Through Work in Women's Studies" (1988), by Peggy McIntosh; available for \$4.00 from the Wellesley College Center for Research on Women, Wellesley MA 02151. The working paper contains a longer list of privileges. This excerpted essay is reprinted from the Winter 1990 issue of Independent School.

Ethical Issues in the Field?

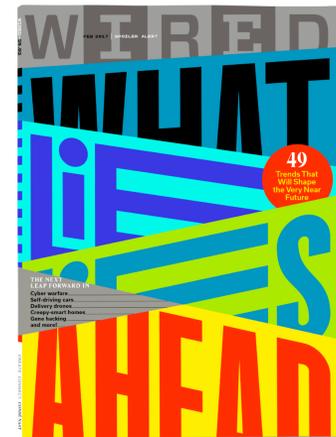
“Researchers have the best of intentions, but the system rewards bad behaviors.” – John Arnold, Arnold Foundation



“Of 1,576 researchers who responded to a recent online survey from *Nature*, more than half agreed there is a “significant crises” of reproducibility”- From *Waging War on Bad Science*, by Sam apple, *Wired* Magazine

At the same time, Science is feeling under attack:

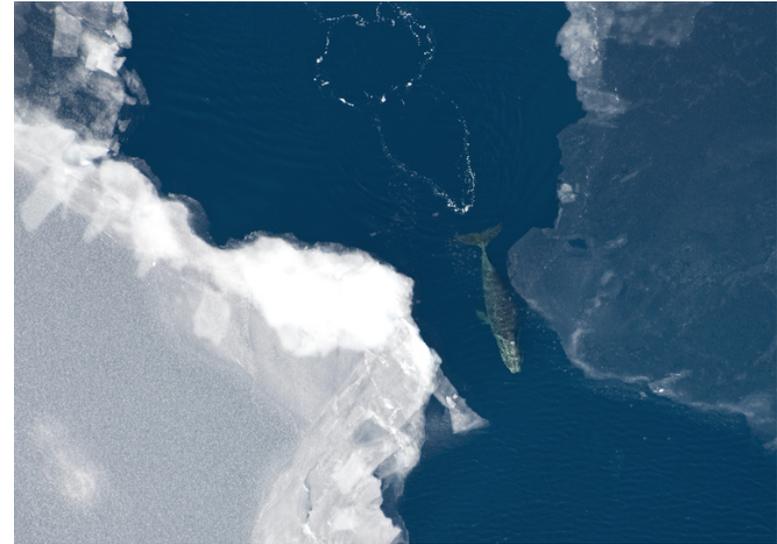
“March for Science” April 22



Mini Case Studies

Indigenous Knowledge: The bowhead whale census

- 1977 International Whaling commission imposed a ban on the harvest of bowhead whales.
- Indigenous Alaskans formed the Alaska Eskimo Whaling Commission, composed of one representative of each bowhead-hunting community to fight the ban.
- The fight against the ban was a political and scientific battle on the whale census along the north coast of Alaska.



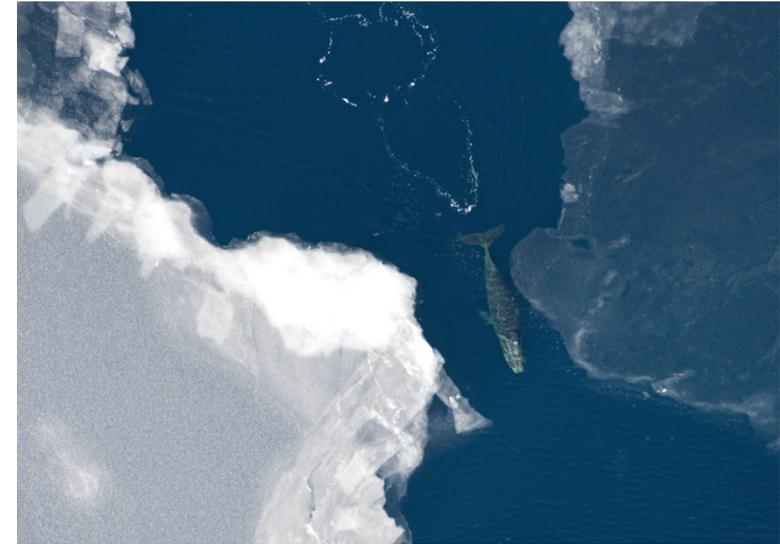
Indigenous Knowledge: The bowhead whale census

- The scientific census started with visual counts of migrating bowheads made from sites on high cliffs or pressure ridges in the shore fast ice along the open lead through which the migratory path lead. Whale counts produced an estimate population of 2000-3000 bowheads.
- The Alaska Eskimo Whaling commission felt the count was not accurate as it was based on assumptions that the migrating bowheads passed within sight of the census location and when the lead was closed the bowhead stopped migrating.
- The subsistence hunters travel on the ice when the lead is closed and go by boat to the pack ice across the lead and reported seeing whales.



Indigenous Knowledge: The bowhead whale census

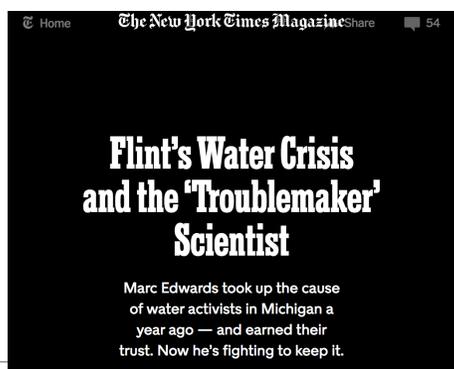
- As a result of interactions between whalers and scientists similar to collaborative field work and analytical workshops, the census was expanded to include other components such as acoustic and aerial.
- Acoustics help detect migrating bowheads when the lead was closed as whales were found to breathe through cracks in the pack ice or force their blowholes through thinner ice.
- By flying transect perpendicular to the shore and well beyond the visual range of the surface location, the aerial component showed that bowheads do in fact migrate on a front broader than the confines of the nearshore lead.



Mini Case Studies



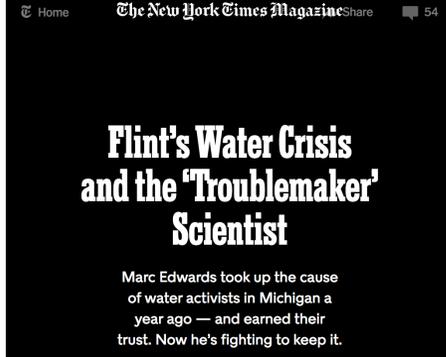
“Before D.C.,” he told me, “I think I was a normal professor.” In the sciences, normal professors with tenure do not maintain websites on which they publish incriminating emails obtained under the Freedom of Information Act. Or habitually refer to unethical bureaucrats as ...



Edwards himself didn't discover the corrosive chemistry of Flint's water. LeeAnne Walters, a mother of four, did that after her children broke out in rashes. In early 2015, Walters began investigating.

had Walters collect water samples from her house and send them to Edwards's lab for analysis. In one sample, the lead levels were so high that the water qualified as hazardous waste.

"When they first switched," she said, "it had an odd smell. A really odd smell. You knew something was wrong. You turn the shower on, and you could smell it. You take a shower, five or 10 minutes later, you begin to itch. You knew there was something wrong. That's why people were complaining. But nobody was listening" — until Virginia Tech



a recent conference on citizen science: “We don’t want our day saved,” Muñoz said. “We want to save our own day.”

Paul Schwartz, a water activist who worked with Edwards and Lambrinidou in D.C., told me there were times when Edwards “would be helpful and supportive, and there were times when he shoved us aside and inserted himself right into the middle of the story.”

Best Practices

- ❖ Look locally 1st! Especially with the University!
- ❖ Communities should be agents of their own change
- ❖ Communication for social change should be empowering, horizontal (versus topdown), give a voice to the previously unheard members of the community, and be biased towards local content and ownership.
- ❖ Asset-Based
- ❖ If you're working with Indigenous communities, plan to visit at least 4 times to discuss research plan before starting.
- ❖ Allow Indigenous communities to help define the problems or research objectives. Native people intimately understand concerns
- ❖ Include request for travel to Indigenous communities & open access publications.

Going forward

General Environmental Justice-Inspired questions:

- Who will benefit?
 - In what ways?
- Who will bear the burdens?
 - In what ways

For Engaged Research:

- What research are you engaged with?
- What are some possible ethical dilemmas?
- What are some possible interfaces with community-- from design, to finish?
- Who will have access to the results?

Resources

On-campus:

- IDI- Intercultural Development Inventory available to all on-campus. Michelle a Qualified Administrator
- ELOKA
- Environmenter Center
- CU Engage
- Just Transition Collaborative

Books and Articles:

Meaning of Ice- Shari Fox Gearheard

Tending the Wild- Kat Anderson

Indigenous Notions of Ownership and Libraries, Archives and Museums; Sharing and Preserving Indigenous Knowledge of the Arctic Using Information and Communication Technologies- feat. Heidi McCann

Indigenous Science- G. Cajete

Decolonizing Museums-A. Lonetree

Medical Apartheid- Harriet Washington

Red Alert: Saving the Planet with Indigenous Knowledge-D. Wildcat

Indigenous peoples and the collaborative Stewardship of Nature: Knowledge Binds and Institutional Conflicts-Anne Ross, K. Pickerling Sherman, J.G. Snodgrass, H. D Delcore, R. Sherman

Climate, Culture, Change: Inuit and Western Dialogues with a Warming North-T. B. Leduc

Sacred Ecology-F. Berkes

Watching Ice and Weather Our Way-Conrad Oozeva, C. Noongwook, G. Noonqwook, C. Alowa, I. Krupnik

Cosmic Serpent- Jeremy Narby

Staying Alive, Vandana Shiva

An Indigenous People's History of the United States - RoxanneDunbar-Oritz

Professor explores intersection of climate change and social justice- Cornell Daily Sun

Documentaries/Film:

Inuit Knowledge and Climate Change
People of a Feather

The Leech & the Earthworm- documentary

Websites:

"Matching Researchers to Local Stakeholders" with MarineScienceMatch.com:

Center for Open Science <https://cos.io/>

Audio:

Build 2020-

<https://molina.bandcamp.com/album/build-2020-manifesto>