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## **SCIENCE, POLITICS AND THE PURSUIT OF TRUTH**

A Fresh Approach to Fact Finding and Negotiating the “Truth”

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*“As an adolescent I aspired to lasting fame, I craved factual certainty, and I thirsted for a meaningful vision of human life-- so I became a scientist. This is like becoming an archbishop so you can meet girls.” - Matt Cartmill*

### **1. “Are we being poisoned?”**

Most of us were taught that a “fact” is something that has been proven through scientific, legal, or rules-of-logic reasoning. Once established, facts become incontrovertible and irreversible knowledge until better proofs appear. But are facts really established only through analysis and competing assertions of the truth of a particular matter? Aren't many “facts” actually negotiated? Consider the following.

A dozen people are gathered in a room at a local community center. They are halfway through an expected yearlong odyssey to answer this and a dozen similar questions. The suspected and feared culprit is hydrogen sulfide (H<sub>2</sub>S), a chemical compound that is emitted as a colorless gas with the odor of rotten eggs. Everyone has smelled it and the human nose is extremely sensitive to it even at low concentrations. H<sub>2</sub>S is heavier than air and potentially poisonous, corrosive, and flammable at high levels and acute exposures. But what about chronic low-level exposure: Is that harmful? Are people exposed to this chemical, like the proverbial frog in a slow-boiling pot, being damaged?

The particular emissions in question are a periodic byproduct from a 38-megawatt geothermal energy plan in the Puna District south of Hilo on the Island of Hawaii. The plant is near Kilauea Volcano. Hawaii is committed to clean energy independence and geothermal is an important part of the emerging fuel mix to get away from fossil fuels. Hawai'i Island has the

hottest geothermal resources in the state. It is the Iceland of the Pacific. But there are problems.

Neighbors and anti-geothermal advocates claim damages and resent the intrusion of an industrial energy plant in a rural area. For some, it is a not-in-my-backyard issue, with H<sub>2</sub>S and other science and health questions merely part of a larger battle strategy. For others, it is an open question that needs answering. Plant operators and local and federal regulators see no evidence to substantiate the health harm claims. Local community members think otherwise.

So in the face of escalating and often vitriolic local arguments, the Mayor of Hawai‘i County, Billy Kenoi, has commissioned a Joint Fact Finding Study Group that is investigating a number of the science issues that the community has raised. The group is composed of knowledgeable and science-literate community members on both sides of the issue, plus several outside experts who have academic backgrounds in gas chemistry, bio-statistics, epidemiology, and volcanology. The questions: Does the plant emit H<sub>2</sub>S, is the H<sub>2</sub>S damaging people’s health, how is H<sub>2</sub>S being monitored, and what studies should be done to ensure the community’s long term health and safety?

The Mayor is committed to taking the results forward, finding future funding, and moving ahead with whatever negotiated result the group can offer.

## **2. “SIPSD” – The Science Intensive, Politically Snarky Dispute**

My particular line of work as a mediator and planner focuses on stubborn, irritable and sometimes seemingly “wicked” public policy problems. Many of these involve the regulations and laws that oversee and manage energy, natural resources, public health, and public investment. More often than not, SISPDS involve the operating plants of industrial corporations, defensive government agencies, and outraged communities that have lost confidence in governmental, corporate, and scientific institutions. There are lots of sharp-elbowed data-fights.

In the context of such conflicts, good process, better communication, and improved relationships — the usual domain of negotiated mutual gains solutions — are essential but insufficient. Coming to grips with the veracity of competing criticisms and defenses is just as essential. This means finding a way to get a plausible set of facts on the table in the midst of highly charged debates. Consider the following SIPSD examples:

1. *Genetic Transmogrification.* In half a dozen states, the agricultural practices associated with genetically modified organisms (GMOs) are under attack from environment and food safety groups. The battles to establish the truth of each side's claims and counterclaims are being fought out in legislatures and the courts with everyone bringing forward their own science. Critics argue GMOs and associated practices pose a threat to public health. Defenders say the science their critics are using is flawed.

2. *Forest Stewardship.* Members of a Native American tribe want full stewardship rights in a national forest that is part of their customary home. They assert a long tradition and cultural obligation of good land practices before the federal government was involved, and want to take care of the forest on their own. Federal representatives explain their duty to provide public access. Government agents talk in terms of "acres," "management areas," and "best forestry practices". The tribe talks about culture, history, and the lives of animals and plants.

3. *Desalination.* California, suffering severe drought, proposes to open a large coastal desalination plant to produce more fresh water for thirsty water users. Environmental skeptics and community opponents argue that the plant's subsurface intake systems will inhale and grind up local marine life. Proponents say: "we desperately need the water and we have mitigation strategies to ensure no harm to marine life."

4. *Vaccinations.* Worried parents contend that mandatory public health vaccinations put their children at a higher risk of autism and other behavioral disabilities. Public health officials argue there is no evidence of harm and debunk recent studies by anti-vaccination experts as "junk science." Still, as a practical matter, government wants to tighten vaccination policies to prevent pandemics.

Is there a factual pathway forward that can reduce some of the political frictions on any of these issues? Daniel Patrick Moynihan famously said: "Everyone is entitled to his own opinion but not his own facts." Moynihan was wrong. In the instantaneous world of the Internet and blogosphere, on reality television shows, and on front-page editorials about local and national political dramas, everyone is (it seems) permitted their own facts. Sometimes, in the give and take of high profile science fights, the challenging voices are right, on the dangers of lead in paint or tobacco as a carcinogen, for example. And sometimes the

challenging views are wrong (as in “Alar on apples causes cancer,” “Laetrile cures cancer,” and “Vitamin-C prevents the common cold.”)

Amplified by media coverage and electronic tools for expressing outrage, many such collisions involve major battles in longer ideological and philosophical debates in which science is used as a tactical shield or sword. The battles sometimes seem like pitch-perfect examples of Friedrich Glasl’s nine-stage model of conflict escalation.<sup>1</sup> In a seminal article on conflict, he described how positions stiffen, differences are amplified, views harden, debates are exaggerated, and retaliation and revenge become motives in themselves. In the science and fact-intensive controversies over GMOs or vaccinations, further stirred by tweets, facebook posts, and instagrams, the battles often turn vitriolic, fracture communities of interest, and further fuel right-left political differences.

In the pursuit of litigation and legislation, scientific and technical facts and the argumentation under and around them are used as positions, offensively or defensively. So if Moynihan was wrong, what *are* “facts,” and can they actually be negotiated? The usual answers from academic experts imply immutability and a quick response of “no” But in the realm of SISPDs, facts are negotiated all the time. Even scientists working to recommend new procedures for pollution abatement or mosquito control admit that their sciences aren’t bulletproof, and require consensus-seeking discussions when it comes to applied decision-making.<sup>2</sup>

Facts turn out to be strangely mutable. In general parlance, a “fact” is something that is considered to be indisputably the case, verified, backed by empirical proofs, and assumed to correspond to some certain aspect of reality.<sup>3</sup> But facts also are established differently, through various professional lenses. Facts in science must be proven by repeatable experiments conducted under accepted scientific methods. Facts in law are built on evidence that is subject to cross-examination and then determined by an adjudicator. Facts in philosophy are epistemologically and ontologically “true,” meaning they correspond with the way “knowledge” is created and states of “being” are evaluated. And facts in history simply don’t exist. They are written by the “winners” and then repeatedly revised by challengers.

Science isn’t devoid of its own politics, nor is it apolitical when it comes to planning and policy making. “Scientists,” says Virginia Postrel, “have gotten way too fond of invoking their authority to claim that ‘science’ dictates their preferred policy solutions and claiming that any disagreement constitutes an attack on science. But, even assuming that scientists agree on the

facts, science can only tell us something about the state of the world. It cannot tell us what policy is the best to adopt.”

In the raucous world of SIPSDs, finding methodological errors, cognitive biases, or conflicts of interest are common ways of deconstructing all facts. But all alleged facts “come with their own shakiness, their own shimmer of uncertainty. When we pull the thread, there’s a tangle waiting.”<sup>4</sup> In my world, helping parties move beyond the deadlock of sometimes ‘fact-free’ conversations, nothing can be considered a fact until we agree it is a fact. Until then, we treat alleged facts as opinions, assertions, and beliefs. Facts are negotiated social, cultural, political, and economic constructions. In SIPSDs, as in many other domains, consensus is the coin of the realm.

### **3. How Different Groups and Professions Engage**

“Culture” has many definitions, but the one I like most is: “*Culture is the way we do things around here.*” Depending on the specifics of where and what the applied *here* is, this definition sweeps together many possible dimensions, and allows for a less general and more specific analysis of the cultural contexts involved in a negotiation. The unit *here* could be an ethnic group, a neighborhood, a political party, a profession, a church or any group that claims an identity. And it will always involve overlapping cultural views, since all of us are more than one thing.

When negotiators from different constituencies come together to grapple with SIPSD problems, they interact with the communication constraints imposed by the way they do things in their particular *here*. Posturing and extreme positioning is normal and expected, especially if the parties to an issue are using the old and new media to press or defend their points.<sup>5</sup> Government agents, for example, often speak in a certain “officialese” that keeps them within the safe boundaries of their legal and regulatory mandates. Unless they are operating in assured confidentiality settings, corporations and industrial groups typically put out only the information that is required of them by law, and withhold information that they view as “business proprietary”. Communities and advocacy groups, on the other hand, may come to the table distrustful of both government and industry and express their anger, fear, and arguments with high emotion.

Scientists, engineers, lawyers, economists, politicians, and community advocates also bring distinctly different and profession-centric ways of engaging. They search for information and screen for facts through their own *here*. Consider the following professional lenses and

worldviews that come into play when people sit down to work on GMOs, H2S, or vaccinations.<sup>6</sup>

<i>Indices</i>	<i>Engineers</i>	<i>Lawyers</i>	<i>Economists</i>	<i>Politicians</i>
<b>Cultural Values</b>				
<u>Believe in:</u>	The laws of physics	Statutory laws	The laws of economics	The law of survival
<u>Have respect for:</u>	Technology, computations, materials, designs	Authority, precedent, the sanctity of contract; rules in general	Theories and statistical data	Patrons, parties, and partisan loyalty

<b>Cultural Perspective</b>				
<u>See themselves as:</u>	Builders and problem solvers	Defenders of justice, partisan advocates	Planners and policy advisers	Defenders of the public interest; mediators, ultimate decision- makers
<u>Express themselves through:</u>	Numbers and works	Technical words and documents	Money	Approvals and directives
<u>Suspicious of:</u>	Timely project “simple-mentation” and worker performance	Parties’ good intentions and pledges	Socio-political variables	Rival bureaucrats and ambitious subordinates
<b>Negotiating Style</b>				
<u>Team role(s):</u>	Leader or technical specialist	Leaders, spokesperson, technical adviser, or excluded	Leader or financial adviser	Leader
<u>Negotiating focus:</u>	Technical specifications	Parties’ rights and duties	Costs, prices, payments	Satisfying superiors, avoiding criticism
<u>Future concern:</u>	Project implementation	Conflict resolution	Cash-flow risks	Project completion
<u>Communication style:</u>	Precise and quantitative	Precise and logical, but perhaps argumentative	Technical and conservative	Cautious and self-protective

Beyond these organizational, professional, and disciplinary differences, SIPSDs have additional characteristics that tend to ignite and amplify conflict. SIPSDs usually braid together political, moral, economic, social, and technical arguments when government, industry and activist groups sit at the same negotiating table. Such disputes involve not just stakeholders, but “rights” holders, overlapping governmental jurisdictions with different missions and authorities, other interest groups who are not at the table, high economic and political stakes, and problems that will often have intergenerational consequences. Equally important, they almost always involve incomplete or contested scientific information and technical uncertainty.

#### **4. Negotiated “Joint Fact Finding”**

Joint Fact Finding (JFF) is a specialized negotiation process that key leaders can set in motion to help prevent, manage or resolve SIPSDs. At its simplest, JFF is a carefully designed working group made up of stakeholders, rights-holders, and scientific and technical experts that is asked to engage in a rigorous analytical deliberation. More often than not, a mediator or facilitator is used to assist. With or without third-party help, a JFF carves out key technical and scientific questions that may be at the heart of a controversy, and maps areas of factual agreement that all parties can respect. The process illuminates

the reasons for disagreement and puts those areas in a proper context, thus helping to build a platform for policy agreement.

Depending on the situation, JFF can be embedded as part of a larger consensus-seeking effort or set up as a “stand alone” process. Because it can easily be tailored to accommodate the circumstances, Joint Fact Finding may be conducted under different names, including: “Independent Review Panels,” “Technical Advisory Groups,” “Stakeholder Panels,” “Study Groups,” “Peer Review Meetings,” “Policy Dialogues,” “Adaptive Management Working Groups,” “Science Advisory Roundtables,” or “Independent Scientific and Technical Advisory Panels.”

Joint Fact Finding accomplishes three objectives. First, it focuses on the best scientific and technical information available and sorts out key factual signals in the white noise of heated disagreements. Second, it is a cooperative process that creates a small “port in the storm” and reduces some of the unnecessary friction that emerges when factions take sides on a big SISPD. Third, it helps build sounder public policy by creating an agreed-upon base of knowledge.

JFF doesn’t replace legislative, judicial, executive or regulatory decision-making processes, but it is usually by initiated by a political leader in one of the branches of government to help streamline some of the disagreements that are at the root of opposing stances. While no two JFF processes are the same, a group’s charter or mission is usually specific and fashioned to bring back practical results.

A JFF could focus on developing an agreed-upon foundation of facts that might be considered for developing a new law, rule, standard or policy. It might take specific aim at narrowing the range of factual disagreements or conducting a specific inventory of pertinent information. Or a JFF could be used to develop an agreement by all parties on the specific research that is needed to advance policy options or make a decision, conduct a balanced review of the facts that sit behind different policy options, or produce specialized work products such as estimates, trends and forecasts, or cause-and-effect analyses.

JFF negotiations are being used in a growing number of circumstances ranging from the development of new regulations, policies and science priorities for children’s health to the management of storm water runoff. Several JFF negotiations have focused on the preservation of future agricultural lands and the appropriate metrics to be used for measuring agricultural water use. One JFF negotiation developed new estimates

projecting the cost-per-kilowatt hour of electricity using a new generation of nuclear power plants in the U.S.<sup>7</sup>

In March 2015, negotiation scholars and practitioners from the U.S. and Japan met in Honolulu to take stock of the theory and practice of applying joint fact finding to SIPSDs.<sup>8</sup> While procedures varied greatly both within and between the two countries, everyone believed the critical ingredients for success included the following:

1. *A Political champion.* Someone in elected or appointed office, or a respected leader in the private or civil sectors, who will use their position to help convene a negotiation.
2. *Participation.* Agreement by key stakeholders and rights-holders to constructively engage in a JFF effort.
3. *A well-framed task.* Specific factual questions that will be the focus of the effort.
4. *Substantive and procedural rigor.* A structured process for data gathering, information exchange and synthesis at a high level of thoroughness and sophistication.
5. *Sufficient resources.* The time and funding needed to accomplish a solid effort.
6. *Skillful project management and consultation.* Facilitation and administrative support as needed, and sufficient to the scope and scale of the task.
7. *Diversity of skills and talents.* Identification and recruitment of the right mix of local and/or outside expertise needed for successful give-and-take science-centered discussions. “Experts” typically need to be willing and able to engage as collegial *partners*, investing substantial time in working with other stakeholders to devise research questions, explain their methods, and involve others in the collection and interpretation of data.
8. *A Nexus to Decision Making.* The results need to carry real weight and importance so any given JFF doesn’t simply become an academic exercise.<sup>9</sup>

## **5. Back to the Island of Hawaii**

As directed and funded by the County of Hawai'i, the specific mandate of the "Geothermal Public Health Assessment" JFF had three objectives: (1) identify key public health questions pertinent to the production of geothermal energy in the Puna region; (2) create a reliable inventory of existing studies pertinent to those issues that can serve as references for decision-makers; and (3) recommend the priorities and preferred methodologies for future scientific and monitoring studies that may be required or that can best assist the making of informed decisions that protect the long term health of the community.

After nine months and very hard negotiating, the JFF study group brought forward a series of findings and recommendations that included undertaking a comprehensive health effects study regarding chronic exposures of low levels of H<sub>2</sub>S, beginning with a meta-analysis; establishing a much improved air monitoring system to capture exposure data; ensuring that there is no ongoing contamination from an old nearby geothermal energy production test site, and improving real-time communication on incidents at the existing plant.

All of the recommendations were embraced; some are completed, and others are in progress.<sup>10</sup> As always happens in difficult and politically important negotiations, not everyone involved was perfectly happy; but they were reasonably satisfied. There was a consensus that everyone could "live with." New facts are now on the table and consensus is again the coin of the realm.

<sup>1</sup> Glasl, F. (1997) *Konfliktmanagement. Ein Handbuch fuer Fuehrungskraefte, Beraterinnen und Berater*, 5., erweiterte Auflage, Bern: Verlag Paul Haupt.

<sup>2</sup> See as an example the "NIH Consensus Statement on total knee replacement", a product of the National Institute of Health, at <http://www.ncbi.nlm.nih.gov/pubmed/17308549>

<sup>3</sup> <https://en.wikipedia.org/wiki/Fact>

<sup>4</sup> Adam Gopnik in "Closer Than That", *The New Yorker*, November 4, 2013. <http://www.newyorker.com/magazine/2013/11/04/closer-than-that>.

<sup>5</sup> See Peter Adler, David Matz and Douglas Thompson's "The Limelight Hypothesis", April 2014, <http://www.mediate.com/articles/limelight1.cfm>.

<sup>6</sup> Winifred Lang in "A Professional's View," *Culture and Negotiations*, Guy O. Faure and Jeffrey Z. Rubin, editors, Sage Publications, 1993

<sup>7</sup> <https://www.keystone.org/component/content/article/103-science-a-public-policy/services/236-nuclear-power-joint-fact-finding-dialogue.html>

<sup>8</sup> The output documents from the conference can be found at <http://www.accord3.com/pg84.cfm>.

<sup>9</sup> All of this, of course, can become expensive. For a starting point towards a potentially less costly set of related tools, see Honeyman, Adler et al 2013.

<sup>10</sup> See "Geothermal Public Health Assessment" by The Geothermal Public Health Assessment Group, September 9, 2103. <http://www.accord3.com/pg68.cfm>