

After The Fact

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NTEN Workshop Makes Great Strides Project Looks Forward to Second Year

By Jeanne Stevens

This past July, nearly one hundred individuals representing diverse constituencies of independent scientists, citizen activists, regulators, technical scientists, military officials, and academic scientists gathered in Amherst for ISIS's *Federal Facilities Cleanup Workshop: Technical Information*. The event was comprised of several interlocking sub-components, including the separate, privately-funded *Citizens' Forum* held on July 13th and a conference-wide *Youth Forum*. It kicked off the first in a series of focus group workshops aimed at forming the National Technical Experts Network (NTEN).

The purpose of the Workshop was to bring together as many stakeholders and advisory board members as possible and, through discussions, presentations, and surveys, to research the formation of our network. The workshop would also describe current NTEN efforts by ISIS, seek participant help in further defining the NTEN, and facilitate discussions about what the Network could and should be, including brainstorming how to get there. To accomplish this, ISIS went into the workshop with dual missions: the concrete goal of linking the various experts in federal facilities cleanup to learn from each other **and** the somewhat loftier goal of improving the science and science training for waste cleanup.

Continued on page 4

Were Neandertals the first humans? Read Robert Proctor's essay on page 13

Chemical War Herbicides, drug crops and collateral damage in Colombia



Kate Harris Photo

By Jim Oldham and Rachel Massey*

Editor's Note: For five years, ISIS has collaborated for sustainable development and protection of the rainforest with the Secoya people in northeast Ecuador. This work has spawned a broader ISIS Amazon Project that addresses a range of environmental and indigenous rights issues in Ecuador and beyond. One current area is to gather information on U.S.-sponsored spraying of herbicides in Colombia, a tactic in the "war on drugs" in the region. This article is excerpted from a longer paper which soon will be available from ISIS and on our website (<http://isis.hampshire.edu>).

As this issue of *AtF* goes to press, a House-Senate Conference committee is putting the final touches on a \$15 billion dollar foreign aid bill. Covering items from support for the United Nations family planning organization to rewards for countries that support the U.S. war in Afghanistan, the bill also includes \$625 million for President

Continued on page 8

Letter from the President:

An Interdisciplinary Look at Terrorism

Dear Readers:

It seems inevitable this year for every organization to write about the attacks of September 11th, even though doing so makes it evermore cliché. It is a fine line to walk between addressing the situation and capitalizing on the crises for our own advantage. At the same time, we cannot ignore that the events of this fall are unmistakable examples of how our own sciences and technologies (and international policies) can have terrible unforeseen implications.

Our mission at ISIS is to make the practice of science more conscientious, democratic, and context-based. We study the history behind scientific problems, the socio-political culture around them, and the ethical and financial considerations underlying them because science happens in a context of innumerable factors. Those factors are more complex than we are able to encompass, but the best we can do is to try. It is dangerous and irresponsible to behave as though the practice of science, including one's own science, takes place in a controlled experimental environment.

While recognizing the factors which influence our scientific choices and their outcomes, we need not accept that those influences are right, and they do not necessarily excuse what happens. As one of our ISIS seminar speakers discussed this fall, the fact that Nazi medical experiments made great strides in cancer research does not excuse the crimes committed any more than it devalues the study of oncology. Our understanding must be sophisticated enough to include both good and bad as well as the fine lines between those simple extremes.

The analysis of the terrorist actions must be comparably integrative lest our nation react foolishly and compound our problems. There is no question that the massive taking of lives and the destruction of buildings is wrong—although there is likewise no denying that almost every nation of the modern world has taken part in such attacks, in “times of war” or when “need demanded it.” We do not excuse or forgive this year's assault... but should we ever excuse such violent destruction? What historic, political, philosophical, or economic conditions make it right, and for whom?

The dangers of over-simplified responses are evident. Domestically, we see t-shirts and bumper stickers blaring hateful messages toward bin Laden, Afghans, or even Muslims in general. People of middle-Eastern descent face hostility, suspicion, and ostracism. Even people with strong community ties and clear records of service and patriotism have received hate mail and threats because they *look like*



they come from Afghanistan. One of my Egyptian-born colleagues at IBM Labs was actually run off the road in California, and for a while debated whether to continue his career in science in the face of such uncalled-for aggression and bias. In retrospect we can regret the injustices suffered by African-Americans under the yoke of slavery or by Japanese-Americans during World War II, but far too many are turning against another conveniently-defined “other” during this new crisis. Overseas, the dangers of a simplistic response are even more obvious, especially in the path of a “war” against an impossible-to-isolate network of fundamentalists operating amidst thousands of innocents.

Similarly simple-minded responses in science are the daily grist at ISIS. It is easiest to point to historical cases like the notion of “bad humors” drawn from the blood by leeches, but even in the past 30 years we've seen AIDS called the “gay disease” and DDT promoted as an ideal pesticide. Inevitably we realize that there is more to a problem than is readily apparent. Sometimes a problem's complexities are intentionally suppressed—as in the case of lead additives in gasoline, where industry forces systematically withheld information on the health detriments of environmental lead (much like the later story of the tobacco industry).

So what have we learned from all of these cases? Hopefully, to think twice (or even three times) before accepting a solution, whether it be a new pesticide, a risk profile, an amazing new diet or a reply to terrorism. It is too easy to simplify the problem and rush into a response, and usually when we do so the outcome is other than we expected. On the other hand, no outcome can be totally anticipated, and the outcomes of our examples have included major benefits. How do we draw the fine line between hand-wringing inactivity and a headlong

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..... Michael Fortun
Production Editor:

..... Scott Tundermann
Other contributors:

..... Herbert Bernstein
..... Rachel Massey
..... Jim Oldham
..... Jeanne Stevens

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charge?

We don't—because in reality that fine line is more like a gray smudge that scribbles back and forth. Sometimes an immediate response is demanded and there is no time for meticulous debate; sometimes there just isn't any more information with which to evaluate the question. There is always a case for haste—getting a product to market, finding a cure, saving money, winning the race, winning the war. Or bringing justice. But we cannot ignore the need for prudence, even though that is rarely the gratifying position to take. In matters of science some espouse the “precautionary principle,” which says that we should withhold action whenever we lack certainty of a scientific measure's safety or at least that its dangers are “acceptable” (which leads to a whole sea of other questions, like “how much is acceptable” and “to whom or what is danger acceptable” and even “how much unanticipated harm can we tolerate?”).

In the case of September 11th, the US response is intended to punish those responsible and, more importantly, to make it impossible for them to commit another such crime ever again. But that satisfies only the heavy-handed aspects of our reply; what of prudence? What of precautions taken to protect the innocent or to address the historical, economic, and political factors underlying the situation? The situation in Afghanistan is tremendously complex, and it incorporates cultural and religious differences, the legacy of the Cold War, world economic disparities and much more. Just as with Nazi cancer studies, understanding does not excuse, but it may prove far more effective in the long run at preventing future recursions of horrors, whether ethnic abuses or hijacked plane crashes. A response which is effective in the short term may not be the most wise or lasting, and those which address only symptoms and not

the cause are weak medicine. Osama bin Laden and his cronies are not really the illness; they are destructive symptoms. Cutting away the obvious tumors, while necessary and beneficial, will not cure the cancer, and summarily attacking the affected area is clumsy.

ISIS supports a course of action akin to those we champion in the sciences: careful, responsible, and constantly under critical evaluation for unforeseen outcomes. The goal is not hesitancy or half-hearted steps; rather *whole*-hearted efforts consistent with

ISIS supports a course of action akin to those we champion in the sciences: careful, responsible, and constantly under critical evaluation for unforeseen outcomes.

our deepest human values. Indeed, we applaud the measures taken early in the operations to deliver food, medical supplies, and information to the people of Afghanistan.

While no one can foresee the future, we certainly hope for a speedy successful campaign, one with positive humanitarian measures (aid, restoration of women's, children's, and civil rights). We hope the eventual government is truly representative and stable. Radical fundamentalist groups thrive amid chaos and misfortune, and we will not disarm them without undermining their unfortunate opportunities.

In the best of worlds, using all our wisdom and with open hearts, we might even have an opportunity to make some real, lasting changes for the better out of the terrible events of September 11th and since. What better way to pay tribute to those who have died than to make the attacks not just more difficult but unnecessary? It's a lofty goal, but no more so than changing the way science is practiced and taught. I hope you'll support this goal as you have so graciously supported ISIS's central goal.

At the same time, I hope you'll take some time to keep up with our projects' important work—less world-shaking, perhaps, but nonetheless world-changing, both in their activities and in the approach they exemplify. This issue of *After the Fact* reports on the success of the Military Waste Cleanup Project's summer Workshop for citizen-activists and technical experts, an important step toward building our national network of concerned, committed people working on the huge problem of environmental restoration around military installations. Also in this issue, Amazon Project Director Jim Oldham and ISIS Junior Fellow Rachel Massey write about the deeply embroiled problems with herbicide spraying for coca crops in Colombia and its effects on poor farm families. And starting on page 13, we've excerpted a paper by Dr. Robert Proctor on the definitions of humanness and the many influences on those definitions in the context of paleontology—a classic case of interdisciplinary science studies.

In closing, I must say how delighted and grateful we are at ISIS to have your readership—the events of this fall make me truly appreciate all the friends of ISIS. Have fun with this issue of ATF and please feel free to call upon the ISIS staff and me with any questions or comments you may have. We wish you all the very best: happy holidays now and in the New Year!

Sincerely,



Herbert J. Bernstein
ISIS President

This and all back issues of *After the Fact* available at <http://isis.hampshire.edu/pubs/>

NTEN Workshop

from page 1

ISIS also went into the event with an open mind and lots of scratch paper. We know that for the program to be successful, it must be accessible and usable for both citizens and scientists. To create an environment conducive to generating ideas about the NTEN, ISIS built a broad agenda with many programs to inform stakeholders about technical topics (in general terms and via case-studies) and brainstorm sessions to elicit feedback about the NTEN.

Our staff worked diligently to



Workshop participants in a break-out session on "Going beyond the (advisory) board"

make the event a success and we were rewarded with a cornucopia of stakeholder input. That input, added to the first year of NTEN efforts, includes citizens' technical information needs, citizen-scientist partnerships already in place, many new contacts of people to help and to connect, capacity for scientific advisory networking on the NTEN, and networking mechanism analyses.

The major finding from the workshop was the need for more comprehensive, accurate and consistent technical information. This means less information segmentation, better communication by experts, better and increased numbers of experts, including community experts, working on the cleanup, less competition among experts on advisory boards, and a national network of colleges and universities training

young scientists to work with communities as well as to clean up waste.

ISIS gained valuable feedback on the capacity for scientific networking from a questionnaire distributed at the workshop about the NTEN and from NTEN signup sheets. The questionnaire asked about current citizen-scientist partnerships and programs already in place as well as potential collaborations. Respondents varied widely in their experience; responses included first-hand data on both the positive and negative aspects of such partnerships as well as suggestions about how to avoid possible pitfalls. The primary technical needs

citizens reported were more comprehensive, accurate and consistent technical information; assistance with analyzing technical documents; and advice on possible public health hazards in their communities. Finally, respondents indicated that all the networking mechanisms currently used in the NTEN, including an electronic listserv, a website and national workshops, are both viable and accessible.

Citizen-Scientist Partnerships Already in Place

Over the course of the first year of the NTEN, ISIS discovered several examples of installation sites where concerned citizens had found technical experts through Technical Assistance Grants (TAG) or similar funding sources and by reaching out into their own com-

munities to tap into already-present technical expertise. Citizens working on these cleanups were invited, along with their technical experts, to participate in the first focus group workshop.

Alaska Community Action on Toxics and SUNY Environmental Research Center Partnership

Alaska Community Action on Toxics (ACAT) is an Anchorage-based organization working to protect human health and the environment from the toxic effects of contaminants. ACAT efforts include a project on St. Lawrence Island, an approximately nine square mile site once used as part of the Defense Command since the mid-1950's and which now contains at least 23 sites contaminated with fuel spills of solvents, heavy metals, dioxins and furans, asbestos, and PCBs. The heavy contamination is severely affecting the health and traditional subsistence activities of the Yupik people who live in St. Lawrence Island's village of Savoonga.

ACAT initially contacted Dr. Ronald Scudato, Director of the Environmental Research Center (ERC) at the State University of New York at Oswego, through a non-profit associate who attended an ACAT conference. Dr. Scudato had established ERC in 1990 to promote undergraduate research in current environmental issues. Dr. David Carpenter is involved in the project with Dr. Scudato as a polychlorinated biphenyl (PCB) expert with strong connections to Native American culture through his work with the Mohawk community in New York state. He and Dr. Scudato presented at the workshop alongside ACAT's Pam Miller on the cleanup in Alaska. Based on his work with the Mohawks, Dr. Carpenter emphasized three principles about working with communities: respect, equity, and empowerment.

Beyond tolerance or admitting differences, he said, respect means honoring culture and tradition, treating every person as an equal and learning from

them. Equity involves sharing the resources of the grant within the community, including hiring local citizens and training community health researchers and aides.

Empowerment requires building expertise in communities so outsiders are no longer needed to deal with environmental health hazards. Projects must provide adequate training and help obtain laboratory resources (and the technical expertise to use such resources). Empowerment is not usually accomplished in the short term and often requires years of education. It is necessary, however, to incorporate empowering steps very early in a collaborative relationship. On St. Lawrence Island, for example, the training program is an integral part of the citizen-scientist partnership. The training helps community members diagnose health problems and develop their own community-based solutions to problems that will endure for many years.

Defense Depot Memphis, Tennessee Concerned Citizens

Doris Bradshaw, president of Defense Depot Memphis Tennessee Concerned Citizens (DDMTCC), delivered a presentation at the workshop addressing how to find resources in diverse communities in order that citizens may participate more effectively in cleanup. During her program, Bradshaw told how her group found the technical assistance necessary for their local site within her community, a strategy that emphasizes the major environmental justice principle that the community speaks for itself.

Recounting the events surrounding the closure of the Memphis Defense Depot in September 1998, Bradshaw explained how she located the experts in her community. DDMTCC was born at that time out of the concern of members of the Parent Teacher Association for the health and safety of the local school and immediate community. Bradshaw found help and coaching from other organizations early in the

process and her group discovered that working collaboratively enabled DDMTCC to benefit from other organizations' experience and avoid making some of their mistakes.

Through the training offered by the Center for Public Environmental Oversight (CPEO) and ArcEcology, both based in San Francisco, Bradshaw and DDMTCC realized that public involvement mandates had been cast aside by the Depot. They contacted the federal government and were told that they were the first community to complain to the Department of Defense Federal Advisory Committee (DERTF) about *how* the information was being communicated to the community. National travel to other sites, however, helped Bradshaw understand her neighborhood was not alone in this problem – rather, they were just one isolated community among many.

When DDMTCC began assembling experts around the cleanup issue, they found there were key experts within the community already, including scientists, teachers, attorneys and college professors. DDMTCC held community meetings and asked these local experts to read, interpret, and communicate the information in technical documents to the larger community.

Through this work, DDMTCC found a technical advisor who took the comments of these experts and generated an elaborate report of 'dos and don'ts' for the community, to assist them in public dialogue sessions with the Depot. DDMTCC formed a round table of experts from the community called the Environmental Justice Working Group, which has wide representation. For DDMTCC, finding the resources within the local community was never the problem so much as making the agencies follow their own laws.

Alma College, Alma, Michigan

In addition to the above examples, ISIS discovered many lessons to be learned from non-federal cleanups as

well. ISIS staff met representatives from Alma College at a US Environmental Protection Agency-hosted workshop featuring Technical Assistance Grantees and consultants. Representatives from Alma College attended the workshop and presented their model for community involvement and empowerment focused on the Superfund cleanup in their community.

The Alma representatives participate on a Community Advisory Group (CAG) called the Pine River Superfund Citizens Taskforce. This group provides a forum for the public disclosure of community health and environmental concerns and remediation alternatives. Underlying the Taskforce are the principles that citizen involvement in technical decision-making is essential in a democracy and that this involvement improves the technical work accomplished. According to the Alma representatives, public involvement improves cleanup if:

- the taskforce functions equitably;
- citizen members of the taskforce and the elected chairperson are 'core' taskforce members;
- those with key interests and technical specialists are not core members but participate as needed and requested by the core;
- the potential for conflicts of interest is examined and managed to minimize or prevent these conflicts;
- technical experts used by citizens are aware of their role in service to the community;
- scientists collaborate with community and seek to answer the community's questions; and
- industry leaders involved on the Taskforce are committed to developing a sustainable economy that does not harm the public's health.

Capacity for Scientific Networking

In general, many participants were interested and enthusiastic about the idea of working with college and university professors in a variety of fields

Continued on page 6

NTEN Workshop

from page 5

and energizing them through their students. Those participants commented that academic scientists are an excellent and overlooked resource.

Other participants had concerns that faculty and students do not have enough time to help or are not interested in or capable of committing for the long term, or worse, that their involvement takes time and energy away from affected residents' needs.

Of participants currently working with professors, the experiences vary widely. Some of those surveyed find the arrangement to work well, especially when the scientists are already local residents of the area. Those respondents reported they believe academics can offer a more objective view based on their scientific perspective without a political agenda-based bias.

For other respondents, the arrangement does not seem as clear cut.

Some participants commented that academics are not familiar with the technical, legal or political issues, that they lack expertise and/or relevant site remediation and fieldwork experience, and that they (incorrectly) assume problems rooted in racism and politics can be solved with science and technology.

See the box below for the group's lists of pitfalls and recommendations.

Networking Mechanisms

Based on one year of project activity, we conclude that an electronic listserv, a website and national workshops remain the best ways to network citizens and scientists. This assessment is based on the successful networking event of the recent workshop (and experience from other meetings, on a variety of topics, some technical) and NTEN Questionnaire results regarding computer use and proficiency and internet/email accessibility.

Results indicate that the majority of participants rate themselves as *good*

or *above average* with respect to computer proficiency and use the internet extensively for both work and home/non-work activities. Results also showed that over 80% spend more than three hours on-line per week reading email and/or researching cleanup-related questions; nearly half of that number spend over six hours per week engaged in these activities.

ISIS plans to expand online networking capabilities over the next year using electronic bulletin boards or other web-based mechanisms and possibly synchronous events.

Concluding Remarks

Many participants commented that the first NTEN workshop was an important undertaking, drawing together dedicated individuals with differing viewpoints. One participant referred to the knowledgeable presenters, many of whom are among the top in their field, saying "the expertise was sharp and deep, and we were able to hear from everyone." Another said it was "some of the most interesting information I've heard in a long time. [NTEN is a] very important project with significant long-term consequences."

When asked about what they liked best about the workshop, participants responded that they valued the diver-

Possible pitfalls between citizen stakeholders and academic scientists:

- short-term commitment of academic interest in the issues
- patronization of citizens by scientists
- scientists diminishing trust by not sharing information with citizens
- scientists who 'make a name for themselves' via their students' energy
- grad students who don't see residents' needs or treat them as a research topic
- scientists with a personal agenda, a vested interest with military or industrial clients, or conflicts of interest from past or current funding
- scientists not sensitive to and respectful of communities
- results that become 'political footballs'
- scientists who can't or won't work collaboratively with others on the cleanup

How citizens and academic scientists (and their students) can avoid them:

- set specific goals that are achievable
- don't assume the experts are catching all the issues
- encourage long-term sustained interest
- stay in constant communication
- sign a memorandum of understanding
- work so that experts' technical information is translated
- tell experts at the beginning not to use jargon
- provide incentives: funding, community membership, personal commitment
- let citizens choose the experts so that no professionals dominate the group
- seek experts at liberal arts and Campus Compact schools, not large universities
- regard each expert individually
- seek help from retired, enlightened federal officials and professors



Cal Baier-Anderson presents the Aberdeen Proving Ground case study at the Citizens' Forum

sity of attendees, networking opportunities, open and round table discussions, and interactions between audience and panelists which often resulted in raising new perspectives.

In support of this, one participant said “the FFCW was probably the most useful and rewarding workshop I have ever been to. Meeting and networking with the other participants was informative and exuberating. I gained numerous contacts and a wealth of information.”

Another participant contacted ISIS following the event to say her expectations for the event had been modest but to her surprise, the experience was life-changing! “On Saturday afternoon,” she said, “I had a moment of seeing more deeply than I ever have how things look from the perspective of people and communities who do not share the advantages we’ve had [in my community].” She added, “Reflecting now, it strikes me that the way the issue came up illustrated in real time something I think is central to ISIS and NTEN, the paradox that science, meant to be free of subjectivity, is in fact only useful and valid in a cultural context.”

Community Forum

ISIS hosted the separate-but-related Community Forum on Friday to offer citizens the opportunity to share stories with each other and coordinate their participation in upcoming workshop activities in the absence of those who play official roles in cleanup.

On Friday morning, this event began with case study presentations. These presentations continued past lunch until early afternoon, at which point participants selected among concurrent sessions dealing with how to understand what kinds of technical assistance are needed and where to find it, environmental justice issues related to



Youth forum participants share their experiences

cleanup, and how to participate more effectively on adversarial Restoration Advisory Boards (RABs).

Many participants found the forum to be extremely valuable as an opportunity to learn about both the similarities and differences in various community struggles. This was a unique networking opportunity and was greatly appreciated by those who were interested in asking questions of experts.

One participant commented, “I found the weekend very useful, moving. In general, citizen presentations were the most valuable to me. The structure of the weekend facilitated a range of dialogue and sharing, effectively. Bravo!”

Youth Forum

Our youth forum included individuals who are directly affected by public health threats posed by the military installations in their communities and who work on these issues at the grassroots level. The purpose of this component of the workshop was to connect young people from diverse communities with experienced technical experts and citizen scientists working on real environmental problems in training and networking that can support them back in their own communities. It was important to have them receive the same opportunities and training as the other participants, but with additional mentoring, written materials, and presentation ses-

sion. ISIS sought to “balance the field” between the training of citizen-scientists and concerned citizens in resource-rich and -poor communities by providing these young leaders with the opportunity to participate in a national event so they could network with and learn from professors, researchers, activists, and military and regulatory officials; they now have their own direct ties to the people they met.

The Youth Forum gave ISIS

an opportunity to tap our own community for youth mentors. ISIS staff, volunteers and Fellows joined the community mentors who accompanied each youth forum participant. These mentors offered special attention during the event and met with the forum periodically during the course of the weekend (thank you Heidi, Rachel and Ferdie!). The event also allowed us to work collaboratively with the Military Toxics Project, who generously provided resource materials about military waste and grassroots organizing to youth forum participants (thank you, Tara and Steve!).

ISIS will continue Youth Forum efforts at our next workshop and expand it so youth working on grassroots organizing projects in their communities will have the opportunity to meet and network with young students interested in environmental science.

ISIS looks forward to future, *even better* events—join us next year in California for the second NTEN workshop!

We thank the cadre of dedicated ISIS staff, volunteers, fellows and friends for their role in the success of the first NTEN workshop: Ferdie Adoboe, Herb Bernstein, Mary Bernstein, Jesse Doane, Rita Hardiman, Malcolm Harper, Ted Henry, Jackie Howard, Heidi Lenos, Rachel Massey, Pam Obuchowski, Jim Oldham, Jen Shea, Justin Schofer, Scott Tundermann, Erik Watkins, The Black Sheep Deli, & Portabella Catering. ﷻ

Chemical War

from page 1

Bush's "Andean Initiative" to fight drug production in Colombia and six neighboring countries.¹ Continuing policies begun under President Clinton,² this initiative earmarks the majority of aid to Colombia as assistance to the Colombian military and police forces, forces closely tied to paramilitary organizations responsible for the most serious human rights violations in that country's ongoing and vicious civil war.³

A key element of U.S. aid to Colombia is support for aerial spraying of herbicides to eradicate drug crops. Under U.S. sponsorship, large areas of the Colombian countryside have been sprayed by plane with herbicides intended to eradicate coca plants, the raw materials for making cocaine.

Many individuals and a variety of institutions within and outside Colombia have reported adverse health or environmental effects of the spray campaigns. In many cases, U.S. government authorities have dismissed these complaints as scientifically unsound or otherwise lacking in credibility. In this article, we review a selection of complaints that have been lodged against the spray campaigns and discuss the credibility of these claims. After a careful reading of arguments for and against the spraying, of news reports from Colombia, and of the scientific information available on the chemicals being used, summarized in the following pages, we draw these conclusions:

1. Aerial spraying has a significant impact on large numbers of people, particularly the rural poor, in Colombia.
2. There is strong evidence linking aerial spraying with serious human health impacts; large-scale destruction of food crops; and severe environmental impacts in sensitive tropical ecosystems. There is also evidence of links between fumigation and loss of agricultural resources, including large fish kills and loss of pasture land, as well as reports of sickness and death of livestock.
3. Many of the reported effects are consistent with the known effects of the chemicals being used and with the manner in which they are being applied. Reports of even more serious effects highlight the need for further study of hazards posed by the particular mix being used in Colombia.

Background:

The Aerial Eradication Program in Colombia

The aerial eradication program is a campaign to spray herbicide mixtures over rural coca-producing regions in Colombia, with the goal of killing coca plants. The Colombian government has stated that the spray mixture contains the herbicide formulation Roundup Ultra (active ingredient:

glyphosate) and Cosmo-Flux 411F (a surfactant added in Colombia).⁴

According to the U.S. Embassy in Bogotá, the aerial eradication program is directed primarily against large coca producers.⁵ But news stories from sources including *The New York Times*, *The Washington Post*, the *St. Petersburg Times*, and the BBC make it clear that small land owners, peasant farmers, and indigenous communities have been directly affected by the spray campaign. Some of these people grow coca or poppies alongside other crops; many do not grow any drug crops.⁶

Complaints about the Aerial Eradication Program: Reports from the Ground

Numerous individuals and community groups in Colombia have registered formal complaints about adverse effects they attribute to the spray campaign. Many of these complaints were reviewed and summarized by the National Environmental Justice Advisory Council (NEJAC), a Federal Advisory Committee to the U.S. Environmental Protection Agency (EPA). NEJAC issued a letter on July 19, 2001, stating that

aerial eradication has seriously affected weak and marginalized communities of poor farmers, Indigenous Peoples, and settlers. Hundreds of complaints from these communities were registered with local and national offices of the Colombian Human Rights Ombudsman. Aerial spraying of the herbicide has caused eye, respiratory, skin and digestive ailments; destroyed subsistence crops; sickened domestic animals; and contaminated water supplies.⁷

Affected communities have lodged two principal complaints:

Complaint 1: Aerial spraying causes adverse human health effects.

The Health Department in the southern Colombian Province of Putumayo reports receiving complaints of dizziness, diarrhea, vomiting, itchy skin, red eyes, and headaches in the aftermath of aerial spraying. Skin reactions were particularly prevalent in children.⁸ Also in Putumayo, a representative of the indigenous Cofan people was quoted by the BBC as saying that the people of his community were suffering from headaches, fever, and rashes associated with the spraying.⁹ In Nariño province, a physician in the town of Aponte reported that aerial spraying on indigenous people's lands had caused "an epidemic" of "rash, fever, diarrhea and eye infections."¹⁰

In February 2001, the Health Department in Putumayo published a preliminary report on interviews conducted with residents, health care providers, and police in the municipalities of Orito, Valle del Guamuez, and San Miguel.¹¹ These municipalities were targeted by spray campaigns from De-

December 22, 2000 to February 2, 2001. According to the report, medical personnel in three local hospitals reported increased visits due to allergic skin problems such as dermatitis, impetigo, and abscesses, as well as abdominal pain, diarrhea, gastrointestinal infections, acute respiratory infection, and conjunctivitis following spraying in the rural areas surrounding their respective municipalities.

In August 2001, a commission from the European Network of Brotherhood and Solidarity with Colombia visited the Province of Santander. The commission reported that “contrary to official declarations about the harmlessness of glyphosate, we were able to verify skin conditions (rashes and itching caused by the skin drying to the point of cracking) in both children and adults who were exposed directly to spraying while they worked their land or played outside their homes.”¹²

Even in neighboring Ecuador, communities near the Colombian border have reported illnesses after aerial spraying was conducted on the Colombian side. In October 2000, the health center in Mataje, Esmeraldas, a community of 154, reported treating 44 residents and another 29 people from surrounding areas for skin and eye irritation, vomiting and diarrhea in the aftermath of spraying.¹³ The Ecuadorian press also reported in June, 2001, that the Marco Vinicio



A Cofan mother shows sores on her toddler's face and arms and describes intestinal problems they suffer two months after their village was sprayed.

United Nations has collected extensive evidence that herbicides are being sprayed on small farmers' food plots. “We know that despite the government's policy, sometimes small farmers' plots are hit as well, and that legal crops such as bananas and beans are being fumigated by mistake,” he told a news conference in Bogotá.¹⁵

Within the Colombian government itself, the Human Rights Ombudsman reported in February 2001 that the aerial spraying had destroyed crops in eleven government-sponsored crop substitution and alternative development programs. The Ombudsman expressed special concern about the effects of spraying on indigenous communities, including Cofans, Awa, Paeces, Sionas and Pastos.¹⁶ Colombia's Comptroller-General's office has stated that aerial eradication

of crops is damaging the environment and failing to curb drug production. The Comptroller-General's statement concludes that “the majority of the environmental damages are irreversible,” and calls for a halt to spraying until scientists can study the environmental effects of the herbicide.¹⁷

In January 2001, the BBC and the *New York Times* reported on the effects of spraying in Putumayo. The BBC quoted Jesús Ortega, Mayor of the small town of Puerto Guzmán: “Several months ago they sprayed here... but they did not respect the conventions laid out in the government

“We know that small farmers' legal crops are being fumigated by mistake.”

Klaus Nyholm, UN Drug Control Program representative in Colombia and Ecuador

Iza hospital, in Sucumbíos Province, which borders the Colombian province of Putumayo to the south, was treating 10 to 15 patients a day for skin, respiratory, and other problems that local doctors attributed to the spraying.¹⁴

Complaint 2: Aerial spraying has destroyed food crops, sickened or killed livestock and farmed fish, and caused damage to important tropical ecosystems.

Sources including the UN Drug Control Program, municipal police within affected areas, and human rights monitors have documented adverse effects of aerial spraying, including the destruction of many acres of food crops; harm to livestock and farmed fish raised by poor rural communities; and damage to natural ecosystems.

According to the UN Drug Control Program's representative in Colombia and Ecuador, Klaus Nyholm, the

decrees. It was done in an indiscriminate manner, without considering that it was going to affect agricultural food crops such as bananas, yucca, corn, and beans as well as pastures and forests. They sprayed water courses, cattle, and people.” Ortega cited spontaneous abortions among livestock following the spraying, as well as adverse health effects in people.¹⁸ After viewing the Valley of Guamuez from an army helicopter, a *New York Times* reporter added his own eyewitness account to farmers' complaints about the destruction of crops: “fields that once were bright green with coca and other plants were a pale brown, wiped free of vegetation for miles around.”¹⁹

An inspection and accounting by the municipal police in the single township of Valle de Guamuez (population 4289) in the Province of Putumayo found that 17,912 acres had

Continued on page 10

Chemical War

from page 9

been sprayed with herbicides as of February 21, 2001. Of this area, less than 12% was dedicated to coca cultivation. Crop and animal losses in the 59 settlements and neighborhoods that make up the township included: 2263 acres of bananas, 1030 acres of yucca, 1032 acres of corn, 7064 acres of pasture, 1665 acres of other crops (coffee, peanuts, fruit trees, timber, and vegetables), 1112 acres of forest, 38,357 domesticated birds (chickens, ducks), 719 horses, 2767 cattle, 6635 guinea pigs, 128,980 fish (from aquaculture), and 919 other animals (pigs, cats, dogs).²⁰ A similar review for the municipality of La Hormiga, also in Putumayo, reported the destruction of 20,239 acres of food crops and adverse effects in 171,643 farm animals (including large livestock, poultry, and fish).²¹

In the Cimitarra River Valley in Santander, the European commission cited above found that, after aerial spraying between August 5 and 25, 2001, the 242 families interviewed (less than 10% of the total number affected) had lost a total of 1350 acres (over two square miles) of food crops including corn, yucca, bananas, rice and yam; they also

reported adverse effects on 600 acres of fruit trees and pasture land. The report also notes that “the lack of food and the contamination of water supplies caused the death of a number of domestic animals (including cattle, mules, and chickens) as secondary impacts of spraying.”²²

Plausibility of Complaints

Responding to complaints of adverse effects from the aerial spraying campaigns, the U.S. government has argued that reported effects are implausible or impossible, given the toxicological properties of the chemicals used in the campaigns. Our review suggests that, in fact, the complaints lodged by affected communities are plausible and that many



Spray damaged crops documented by a Witness for Peace delegation to an agricultural school and alternative development projects in Putumayo.

of the reported effects would be expected based on what we know about the formulation’s toxicological properties.

A fact sheet distributed by the U.S. State Department defends the aerial spray campaign on the basis of the following claims:²³

- “Glyphosate has been extensively tested & evaluated.”
- The U.S. Environmental Protection Agency has “approved glyphosate for general use.”
- “Glyphosate is poorly absorbed from the digestive tract and largely excreted unchanged by mammals.”
- “When received orally or through the skin, [glyphosate] has a very low acute toxicity.”
- A “major peer-reviewed article...concluded that ‘under present and expected conditions of use, Roundup herbicide does not pose a health risk to humans.’”
- “Toxicological studies have shown that glyphosate is less toxic than common salt, aspirin, caffeine, nicotine and even Vitamin A.”

However, there are some significant omissions in the State Department’s claims.

1. Even assuming application according to U.S.-approved label instructions, the label and product safety information make it clear that Roundup Ultra spraying can cause:²⁴
 - skin and eye irritation in people who are sprayed directly or contaminated by drift, or come in contact with crops immediately after dusting;
 - illness and gastrointestinal irritation in people or animals if they ingest large quantities of crops or contaminated materials shortly after spraying;
 - fish kills and ecological harm to aquatic ecosystems that are contaminated or sprayed;
 - plant death and associated environmental damage if desirable plants are sprayed.
2. The State Department fact sheet focuses on the active ingredient, glyphosate. However, Roundup Ultra, the herbicide formulation that has been used in Colombia, also includes a surfactant that, according to an open letter to the U.S. Senate from a group of concerned scientists, “for some health endpoints, is more toxic than glyphosate and thus contributes significantly to the toxicity of the mixture.”²⁵ In fact, a Japanese study of attempted and successful suicides through ingestion of Roundup concluded that the surfactant was probably the main cause of Roundup’s acute toxic effects.²⁶
3. In Colombia at least one other additive—an additional surfactant known by the brand name Cosmo-Flux 411F—is added to the chemical mix.²⁷ The label for Roundup Ultra warns that “this is an end-use product. Monsanto

does not intend and has not registered it for reformulation.”²⁸ Since neither the U.S. nor the Colombian government has made available any studies on these additives’ effects, alone or in combination with Roundup Ultra, there is no basis for assuming that these products are safe when sprayed in the vicinity of rural populations, their food crops and water sources. In fact, the British chemical company ICI, manufacturer of one of the ingredients of Cosmo-Flux, recently refused permission for its use in the spraying program, apparently responding to concerns about health effects from unintended use of their product.²⁹

4. The concentrations of chemicals being used in Colombia are significantly higher than those recommended by the manufacturer. According to information provided by the Colombian Congress to Dr. Anna Cederstav of the Inter-American Association for Environmental Defense, the mixture sprayed contains 55% Roundup Ultra, 44% water, and 1% Cosmo-Flux by weight.³⁰ Cederstav has calculated that this formulation represents a dilution ratio (by volume) of two parts Roundup to three parts water, as compared to the 1 to 12 ratio mandated by the EPA-approved label.³¹
5. The article cited by the State Department as justification for the spray campaigns assesses the hazards from “present and expected conditions of use” of glyphosate herbicides. However, these conditions are not met in Colombia, where airplanes apply herbicides over acres at a time with no prior warning to land owners. For example, the Manufacturer’s label for Roundup Ultra warns against applying the herbicide “in a way that will contact workers or other persons, either directly or through drift.” The label also calls for the removal of livestock prior to spraying and a waiting period of two to eight weeks before harvesting crops or using sprayed areas for grazing. The label warns against contact of the “herbicide with foliage, green stems, exposed non-woody roots or fruit of crops... desirable plants and trees, because severe injury or destruction may result.”³² In the U.S., such failure to follow the label instructions would be a violation of Federal law.³³
6. In addition to hazards from oral and dermal exposure to the chemical mix under “expected conditions of use,” aerial herbicide application over residential and farming land is likely to expose humans and animals to exposure through inhalation.³⁴ Laboratory studies suggest that in-

halation of Roundup can be significantly more dangerous than ingestion of the same formulations. In one study, the exposure level required to kill 100% of the test animals through inhalation was just 4% that required to kill 100% of the test animals through ingestion.³⁵ Therefore, the tests and studies cited as justification for the spray campaigns may significantly underestimate the severity of likely health effects, both for people and for animals.

Conclusions

Adverse effects of the spray campaigns in Colombia have been reported by affected communities, Colombian government authorities, and outside observers. The number of such reports, the diversity of the sources, and the detail of their documentation justify, in our opinion, calls for a moratorium on spraying. Such a moratorium would allow time to review crop eradication policies and study health and environmental effects. Many of the reported effects are, in fact, predictable based on publicly available information about the toxicological properties of glyphosate herbicides and standard guidelines for these herbicides’

British company ICI, manufacturer of a Cosmo-Flux ingredient, recently refused permission for its use due to concerns about the health effects from this unintended use of their product.

use. The human health effects reported by large numbers of people, including government authorities, appear to be both reliable and consistent with known effects of the chemicals being used. The crop losses and environmental impacts, also broadly reported, are natural outcomes of the widespread aerial spraying of powerful and concentrated herbicides. Some reported effects on animals, such as fish kills, are also consistent with known effects of glyphosate. The predictability of these outcomes raises grave concerns regarding the policy choices behind the spraying campaigns that cause them.

Other reported effects, such as widespread livestock deaths and some of the most serious human health impacts, are not clearly explained by known toxicological properties of the chemicals used in the spray campaigns. However, several “unknowns” in the situation may be implicated in these effects. These factors include the use of higher than recommended concentrations; methods of application that violate label instructions and may have led to significant inhalation exposures; secondary effects such as contamination of water and loss of feed supplies; and use of additional ingredients whose toxicological profiles in combination with glyphosate herbicides are unknown or undisclosed. Any scientific studies intended to gauge the effects of spraying will need to consider these factors. The fact that significant exposures may have been via inhalation makes further investigation of livestock deaths particularly important. ❧

Endnotes for “Chemical War”

* Our interest in the human health and environmental effects of the spraying come in part through the influence of Ecuadorian colleagues who worry as the impacts of Colombia’s war spill into their country, and in part through the work of ISIS Junior Fellow Rachel Massey who has been working on this issue for over a year. Rachel’s research on herbicide use in the drug war began at Pesticide Action Network of North America where she served as a liaison with concerned Colombian scientists; since then she has helped coordinate communication and collaboration between scientists, human rights workers and environmentalists and has spoken on the subject in a variety of forums including the annual meeting of the Amazon Alliance in Washington, DC; at Wellesley and Hampshire Colleges; and on the WBAI radio program Talk Back. Her previous articles on Colombia include “Echoes of Vietnam” in Rachel’s Environment and Health Weekly (12/7/00), reprinted in the Journal of Public Health Policy (2001), and “Casualties of the ‘War on Drugs’” with Elsa Nivia, in the Global Pesticide Campaigner (August 1999).

¹ Dan Morgan, “Foreign Aid Balances Concerns,” *Washington Post* (November 16, 2001), p. A45.

² In July 2000, President Clinton signed into law a \$1.3 billion aid package for Colombia and neighboring countries including \$860.3 for Colombia; 75% of the aid for Colombia went to the military and police forces. For details on U.S. aid to Colombia, see Center for International Policy, Colombia Project, <http://www.ciponline.org/colombia>.

³ Human Rights Watch, “The ‘Sixth Division’: Military-paramilitary Ties and U.S. Policy in Colombia,” (September 2001). At <http://www.hrw.org/reports/2001/colombia/> (visited 11/26/01).

⁴ Dra. Maria Eugenia Jaramillo, Congreso Colombiano, personal communication to Dr. Anna Cederstav, Staff Scientist, Interamerican Association for Environmental Defense (IAED) (August 2001). Also see letter from Eduardo Cifuentes Muñoz, Colombian Human Rights Ombudsman, to Rómulo González Trujillo, Colombian Minister of Justice (July 12, 2001).

⁵ U.S. Embassy in Bogotá, Narcotics Affairs Section, “The Aerial Eradication Program in Colombia: Background and Environmental Impact,” at <http://usembassy.state.gov/bogota/www/hg1yp.html> (visited 11/7/01).

⁶ See, for example: Judy Mann, “Waging Chemical Warfare in Colombia,” *Washington Post* (March 16, 2001), p. C11; Jared Kotler, “Colombian Candidate Questions Plan,” *Associated Press* (August 26, 2001), available at bbc.co.uk/spanish/news010117colombia.shtml; Juan Forero, “No Crops Spared in Colombia’s Coca War,” *New York Times* (January 31, 2001); Paul de la Garza, “Roundup Works — But Too Well?” *St. Petersburg Times*, (August 6, 2001).

⁷ Peggy Shepard, Chair, National Environmental Justice Advisory Council, letter to Christine Todd Whitman, Administrator, U.S. Environmental Protection Agency (July 19, 2001).

⁸ Juan Forero, “No Crops Spared in Colombia’s Coca War,” *New York Times* (January 31, 2001).

⁹ “Guerra contra los cocaes,” BBC World Service, at <http://www.bbc.co.uk/spanish/news010117colombia.shtml> (11/7/01).

¹⁰ Marjon van Royen, “Driven Mad by Itch,” *Colombia Labor Monitor*, published by NRC HANDELSBLAD [Netherlands] December 28, 2000.

¹¹ Departamento administrativo de salud, Oficina de Planeación,

Sección Epidemiología, “Efectos de la fumigación: Valle del Guamuez y San Miguel Putumayo,” preliminary report, Feb. 2001.

¹² Red Europea de Hermandad y Solidaridad con Colombia, “Informe Sobre Los Efectos de las Fumigaciones y las Constantes Violaciones a los DDHH en el Valle del Rio Cimitarra,” Equipo Nizkor—Serpaj Europa, September 3, 2001. (Contact nizkor@derechos.org for more information.)

¹³ El Comercio, Quito, (October 22, 2000) cited in A. Maldonado et al, *Reporte de la Investigación de los Impactos de las Fumigaciones en la Frontera Ecuatoriana*. June 2001.

¹⁴ “La muerte viene del cielo,” *La Hora*, Quito, (June 27, 2001).

¹⁵ Cesar García, “U.N. Calls for Drug Crop Monitors,” *Associated Press* (July 24, 2001).

¹⁶ Eduardo Cifuentes Muñoz, Human Rights Ombudsman, “Sobre el impacto de fumigaciones en 11 proyectos de desarrollo alternativo en el Putumayo,” Resolución Defensorial No. 004, February 12, 2001.

¹⁷ Michael Easterbrook, “Government Study Raises Doubts on Drugs,” *Associated Press* (September 2, 2001).

¹⁸ “Guerra contra los cocaes,” *BBC World Service* (January 18, 2001), at <http://www.bbc.co.uk/spanish/news010117colombia.shtml> (visited 11/15/01).

¹⁹ Juan Forero, “No Crops Spared in Colombia’s Coca War,” *New York Times* (January 31, 2001).

²⁰ Luz Angela Pabón España, Municipal Police Inspector, Valle de Guamuez, Putumayo, Colombia “General Summary of Losses due to Fumigation through 21 February 2001.”

²¹ Lisa Haugaard, Latin American Working Group, “Ten questions for Colombia Policy”, question 7. At <http://lawg.org/10questions.htm>.

²² Red Europea de Hermandad y Solidaridad con Colombia, 2001.

²³ U.S. Embassy in Bogotá, 2001.

²⁴ Roundup Ultra sample label (current January 13, 1999), at <http://www.cdms.net/ldat/ld178005.pdf> (visited 11/7/01).

²⁵ Scientists’ Open Letter to the U.S. Senate, at http://www.usfumigation.org/NGOsign-onletter/open_letter_to_the_u.htm.

²⁶ Sawada, Y., et al, “Probable toxicity of surface-active agent in commercial herbicide containing glyphosate,” *The Lancet* 1:8580 (1988), p. 299.

²⁷ Eduardo Cifuentes Muñoz, Colombian Human Rights Ombudsman, Letter to Rómulo González Trujillo, Colombian Minister of Justice (July 12, 2001).

²⁸ Roundup Ultra sample label, 1999.

²⁹ Antony Barnett and Solomon Hughes, “ICI pulls out of cocaine war,” *The Observer* (July 1, 2001).

³⁰ Scientists’ Open Letter. Also see Muñoz letter.

³¹ Dr. Anna Cederstav. Personal communication October 2001.

³² Roundup Ultra sample label, 1999.

³³ Ibid.

³⁴ Linda Farley, Pesticides and Birds Campaign, American Bird Conservancy, “The Environmental Effects of Glyphosate, “Roundup” on Colombian Ecosystems,” (Nov. 20, 2000), at <http://www.usfumigation.org/NovPressConfSpeakers/LindaFarley/LindaFarley.htm> (visited 11/7/01).

³⁵ T.T. Martinez, W.C. Long, R. Hiller, “Comparison of the Toxicology of the Herbicide Roundup by Oral & Pulmonary Routes of Exposure,” *Proc. West. Pharmacol. Soc.* 33 (1990) pp 193-197.

Three Arguments about Human Recency:

Molecular Anthropology, the Refigured Acheulean, and the UNESCO Response to Auschwitz

Dr. Robert N. Proctor gave an ISIS seminar in October entitled "When Did Humans Become Human?" This is an excerpt from his longer (draft) paper, available from ISIS (as is a video of the talk).

When did humans become human? Did this happen five million years ago or fifty thousand years ago? How sudden was the transition, and is this even a meaningful question? Strange as it may seem, there is radical disagreement over the timing of human evolution, understood as the language-using symbolic cultural creature of today. No one knows whether speech, consciousness, or the human aesthetic sense is a fairly recent phenomenon (circa 50,000 years ago) or 10 or even 100 times that old—though it seems that recency currently enjoys the upper hand.

For many years, it was fashionable to project "humanness" (whatever that might mean) into any and every hominid scratched out by a paleontologist; Lucy was "our oldest ancestor," an *Australopithecine* "woman" (vs. "female"), and even older hominids were sometimes granted humanity. Today, however, it is more common to see the *Australopithecines* as far more chimp-like; "humanness" is often not even granted to *Homo erectus*, the earliest in our genus (itself an arbitrary designation) and there are those who do not want to see the *Neandertals* or even early *Homo sapiens* as "fully human."

What is going on here? What makes us want to grant or withdraw humanity from a given or presumptive ancestor? What is the evidence one way or another, and what larger prejudices are at stake?

Here, I would like to explore some of the separate lines of evidence leading to the idea that humanness is a relatively recent phenomenon—no more than 150,000 years, and perhaps even

as recent as 50,000 years, since that is when you get the first self-representation, the first compound tools, and other developments that could be interpreted as signs of human intelligence. Now I don't want to get bogged down in definitions, and to avoid doing so, let me



Dr. Robert Proctor speaking at his ISIS seminar in October.

operationalize "humanness" by equating it with language and culture and simply black box some of these definitional issues for the moment, to make sure I get across the novelty implicit in recent thinking with regard to human recency.

Just to give a couple of examples: it was widely thought several decades ago that the two, three, and then four million year old hominid fossils being found in Africa had "culture" in the Boasian sense—including folkways and mores, fables and religion, and so forth. Humanness in the wake of the 1950 UNESCO Statement on Race was pushed back even into the middle Miocene—as when Louis Leakey suggested that *Ramapithecus* circa 14 million years ago (mya) was a "hominid" and "tool-user"—both of which were taken to mean that the creature was human in a deep and inclusive sense.

The equation of hominid and humanity fit with the older tradition of humans as an evolutionary *Sonderweg*:

only humans use tools, tool-use implies language, language implies culture, language and culture are unique to humanity, and so forth; it also had certain advantages for career-conscious fossil-finders, since it was surely preferable to have found some kind of human rather than some kind of chimp. It was not until the 1960s that Vince Sarich and Allan Wilson showed with DNA analysis that humans shared a common ancestor with chimps as recently as 5-6 mya—and not until the 1980s that this idea was widely accepted. (A few maverick evolutionists as recently as the 1960s could maintain that humans and apes had not shared an ancestor since the Eocene—roughly 50 million years ago by modern counts.) It is also noteworthy that it took a racial inegalitarian (Vincent Sarich) to discover the more recent split.

Much of that consensus—equating hominid and humanity—has been broken in the past couple of decades, and here I want to explore how and why that came to pass. It has partly to do, of course, with Jane Goodall's celebration of non-human tool use and, to a lesser extent, the rise of "pop ethology," evolutionary psychology, and sociobiology, but there are several other key transitions that warrant an accounting. I want to focus on three of these transformations, or "crises," all of which have given force to the idea that humanness may be a relatively recent phenomenon:

1) **Archaeology.** The crisis lies in interpretation of the oldest tools—specifically the Oldowan and Acheulean assemblages of the Lower Paleolithic, the oldest tools to have epochal names attached, and the oldest to count as evidence of hominid or human "culture." The key question here is whether Oldowan and Acheulean artifacts can be considered evidence of a cultural "tradition" in any interesting sense. An argument can be made that they can-

Continued on page 14

Human Recency

from page 13

not, or at least cannot in the conventional Boasian sense, given their apparent stability and uniformity over vast stretches of time and space. Oldowan tools persist for roughly a million years in Africa (from 2.5 mya to 1.5 mya), and Acheulean tools last even longer, from about 1.5 mya to .2 mya. It has been argued that one reason these tools are so stable is that their users were not transmitting knowledge of their use by abstract symbolic language, and that some other mechanism must account for their endurance.

One possible implication is that their inventors were not yet human in any interesting sense (i.e. not linguistic creatures); some kind of

The point is not that tools may be used for good or ill but that political evil may be creative and political good-will stifling.

non-linguistic transmission may have been involved (e.g. imitation), the way Japanese macaques copied Imo the inventive one, who sorted grain from sand by tossing them both into the water (grain floats). The apparent cultural stability of the Acheulean remains a puzzle.

2) **Paleontology:** The crisis (=turning point) derives from the recognition of fossil hominid phyletic diversity—another innovation of the 1960s and '70s, following spectacular south and east African hominid fossil finds (Mary Leakey's *Zinjanthropus*, Louis Leakey's *Homo habilis*, Donald Johanson's *Australopithecus* "Lucy," etc.) showing that more than one species of hominid must have coexisted at many points in the course of hominid evolution. Many paleoanthropologists today place the total number of hominid species at about twenty—in three or four separate genera (*Australopithecus*, *Paranthropus*, and *Homo*, perhaps also *Ardepithecus*). Hominid diversity seems to have peaked about two million years ago, when three, four, five, or possibly even more separate

hominid species coexisted on the planet. The present situation, in fact, where there is only one surviving species—*Homo sapiens*—seems to be an unusual state of affairs in the five-million-year span of "human" evolution. There may have been other periods with only one hominid (prior to about 4.5 million years ago, for example), but the last 30,000 years or so—since the extinction of the *Neandertals*—is certainly unusual in having only one living representative of the hominid family. Fossil hominid diversity was not accepted without a struggle, however: there was a certain degree of ideological resistance

stemming from the liberal anti-racialist climate of the post-Auschwitz era, when it was dogmatically assumed that only one hominid species could exist at any given time (the "single species hypothesis"). This is interestingly tied to the re-evaluation of race in the early post WWII era, when a broad cultural consensus emerged that the humans living today are more or less equal in terms of cultural worth and standing in the Family of Man—culminating in the 1950 UNESCO Statement on Race, which branded race an "unscientific" category and "man's most dangerous myth" (Ashley Montagu's epithet).

3) **Molecular anthropology:** Another crisis stems from the recognition that all living humans have descended from a small group of Africans who lived roughly 135,000 years ago. "Modern humans" are therefore relatively recent in a biological sense, though nothing is necessarily implied about cultural recency. This "Out-of-Africa" scenario has received immense coverage in the popular press—through its vivid emblem of an "African Eve," of course, but also through the clarity and simplicity of its opposition to the "multiregional" or "Regional Continuity" hypothesis—

according to which the diverse local *Homo erectus* populations in different parts of the world didn't go extinct (as proposed by the molecularists), but gave rise to the *Homo sapiens* that eventually evolved in those regions. The opposing molecularist, sequence-based recency thesis has become the dominant view; it has done this partly through the strength of its molecular methods, but also by successfully tarring the multiregional model (originally proposed by Weidenreich) with older polygenist traditions, which presumed deep and usually invidious racial divisions.

All three of these transformations—archaeological, paleontologic, and genetic—have been important in the rising stock of human recency. Of course, the factors I have mentioned are not the only elements at work; there are others—like the triumph of Gould and Eldredge's punctuated equilibrium, or efforts by paleoanthropologists like Richard Klein, who argues that the explosive growth of human innovativity circa 50,000 years ago—Pfeiffer's "Creative Explosion" or Diamond's "Great leap forward"—may be traceable to some sort of "neural mutation." Recency is not the same as suddenness, however, and the idea of recency has become (interestingly) at least as popular among anti-Gouldians as Gouldians. Indeed it was two anti-Gouldian aspects of the thesis that first piqued my own interest in human recency, namely: 1) the idea that *Homo sapiens* was not fully formed *de novo* circa 150,000 years ago, and that language capacities may have developed relatively late in human evolution; and 2) the awkward fact that the human cultural "Big Bang" seems perilously close to the point of human racial differentiation and dispersal (in the extreme recency model), raising the specter that some "races" may actually have become "human" earlier than others—a common idea among segregationists and polygenists as late as the 1950s-60s. Both of these are non-Gouldian concerns and can be

rectified with an expanded theory of recency consistent with racial egalitarianism and punctuated equilibrium.

Let me make two methodological points about opportunities for historical inquiry in this area. The first is simply a call for historians of science and technology to entertain paleoanthropology and the paleolithic. Paleoanthropology is a fascinating and understudied area of modern technoscience, full of adventure and ideology; but so, too, at least in this latter aspect, is the paleolithic itself. Prehistoric tools have generally not become the objects of analysis by historians of technology—and the explanation is that “historical” events are those that post-date the invention of writing circa 3000 BC. The parochialism of such an approach has long been obvious to practitioners of oral history, archaeology, and historians of material culture, etc; but the history of tools prior to text remains rather remarkably undertheorized—by historians, at least. I therefore make a pitch for “deep history of technology,” closer collaborations with archaeologists and prehistorians, a serious reckoning with that 99.9 percent of hominid experience that predates what historians define as “history proper” (since the invention of script), perhaps even an increased attention to human evolution as central to our understanding of humanness in general. The textual turn in anthropology in this sense needs to be complemented by a non-textual (or pre-textual) turn; we need to end the disciplinary divide that has isolated prehistorians from historians of technology.

A second point is that we need to look for the political good in the technically bad and vice versa, the politically bad in the technically good. The point is not that tools may be used for good or ill, but rather that political evil may be *Continued on back cover*

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Human Recency *from page 15*

creative, and political good-will stifling. Nazi tobacco research is an obvious case of the former (the fertile face of fascism)—the UNESCO Statement on Race is, I'd argue, a heretofore unnoticed example of the latter, since one of my claims is that the racial liberalism of the 1950s-60s was partly responsible for delaying the recognition of fossil hominid diversity by 10 or 20 years.

Confusion and Projection

The idea of human recency comes from many different directions, only a few of which have been mentioned here. The ideological aspects are interesting, because people seem to be getting different things out of recency. Some people seem to like the fact that “we are all Africans,” there is a kind of “Black Athena” resonance in the molecularist account of the paleolithic, especially in its popularization by the media. But there also seems to be support for recency from those who reject the single hominid hypothesis. Hominid family bushiness (in contrast to a narrow family tree) seems to reopen one of the questions at the root of the UNESCO statement: how deep can human biodiversity go? It raises the difficult question of what it must have been like to have multiple species of humans living at the same time, but also how far back into hominid past can one reasonably project human qualities?

My personal view as of this writing is that humanness is a linguistic rather than a biological (or phyletic-typological) concept—and that if intelligent creatures are discovered in some other part of the universe, they should probably be accorded some kind of “human rights.” Humanity in this sense is a moral category that transcends biological specifics. There are obvious ethical conundra in such a view (e.g., with regard to the “humanity” of non-linguistic *homo sapiens*)—there is also the intriguing question of what kind of answer we should give if and when machines of human construct begin to ask for “rights” of one sort or another.

Of two things we can be sure: 1) the history of science is often a history of confusion, and 2) ideologies often come in cumbersome packages. Arguments developed for dealing with racial differences and prejudices have been projected onto dealings with fossil hominid diversity; that was true before the UNESCO statement on race, but it is also true afterwards. There are those who feel that it is morally wrong to claim that the *Neandertals*, for example, were anything less than fully human. They may or may not have bred with “us” (the molecular evidence suggests they didn't); their replacement by “us” may have been peaceful or bloody (there is no evidence either way). What we can safely assume, though, is that no matter how much evidence we get, the prehistory of tools, bodies, and beliefs will forever be a fertile field for projection and wishful thinking. 



The Institute for Science
& Interdisciplinary Studies
893 West Street
Amherst, MA 01002

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