THE ETHICS OF WEAPONS RESEARCH— A FRAMEWORK FOR MORAL DISCOURSE BETWEEN INSIDERS AND OUTSIDERS (1)

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My aim, as a social psychologist, is to develop a framework for moral discourse about weapons research by insiders and outsiders. I represent weapons research as a joint venture of science and (military and political) intelligence—two knowledge-generating enterprises. To enable outsiders to reason from the methodological perspective of intelligence, I formulate principles of inquiry of intelligence. For example, "all observations are subject to deliberate deception by the adversary." The main body of the paper contrasts this "adversarial epistemology" of intelligence with the "cooperative epistemology" of science. To enable outsiders to reason from the moral perspective of intelligence, I also pose moral principles for intelligence. My oral history of an intelligence officer involved in nuclear weapons testing fleshes out these principles. But the moral outcomes of weapons research are more closely tied to the epistemic principles than to moral principles of science or intelligence. Lastly, I show how the adversarial epistemology of intelligence can help insiders and outsiders negotiate the moral trade-offs in weapons research.

INTRODUCTION

The Central Moral Question in Weapons Research

> For what moral constraints on weapons research are we willing to lose a battle, a city, a war, the nation...?

I propose this as the central moral question in weapons research. Outsiders cannot ultimately impose moral constraints on weapons research because they cannot monitor it. Outsiders would have to breach barriers designed to thwart enemy intelligence agencies and to override the decisions of people who are willing to sacrifice their lives for national

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security goals. Insiders cannot ultimately impose moral constraints on weapons research because, under threat, their moral commitments to national security goals override their moral commitments to military and civilian codes. What I wish to contribute, as a social psychologist, is a framework for moral negotiation by insiders and outsiders.

Overview

I offer a new representation of weapons research, as a joint epistemic (knowledge-seeking) venture of science and intelligence. To enable outsiders to reason from the methodological perspective of intelligence, I formulate principles of inquiry of intelligence in comparison with principles of inquiry of science. The main body of the paper is devoted to development of this "adversarial epistemology" of intelligence in comparison with the "cooperative epistemology" of science. To enable outsiders to reason from the moral perspective of intelligence, I also briefly pose moral premises for intelligence. My oral history of an intelligence officer involved in nuclear weapons testing fleshes out these premises. I argue though that the moral outcomes of weapons research are more closely tied to the epistemic principles of Intelligence than to the moral principles of either Intelligence or Science. Lastly, I show how attention to the principles of inquiry can help insiders and outsiders negotiate the central moral question of weapons research.

Archived oral histories of pioneers in radiation medicine, my oral history interviews with retired military intelligence professionals, and my background experience as daughter of an undercover intelligence officer comprise the empirical base of my study. (Arrigo, 1999). Social psychology, organizational theory, and philosophy of science are the chief disciplinary bases of insight.

A NEW REPRESENTATION OF WEAPONS RESEARCH

Weapons research is typically represented as applied science that is either ennobled by military goals or corrupted, depending on one's political stance. Instead, I represent weapons research metaphorically as a joint venture of science and intelligence, treated in parallel as knowledge-generating enterprises. Although the ultimate goal of the Manhattan

Project was political, the daily work of intelligence professionals and scientists alike was generation and control of knowledge.

The Joint Venture of Science and Intelligence

Former Secretary of Defense William J. Perry (1994-1997) elevated innovation in weapons to the principal strategy of military defense. Abbreviating a report from Perry's office (FitzSimonds, 1995: pp. 3 and 20):

> Military leverage derives from an ability to innovate and exploit change faster than the adversary can adapt to it. Prudence dictates that the military presume the obsolescence of apparently state-of-the-art systems, operations, and organizations and that it develop the capacity to adapt very rapidly to profound changes it did not anticipate. Clearly, peacetime innovations must be successful at the start of the next war, whether by pretest or some other means. Political constraints on weapons development, such as international arms limitations and budget decline, not only fail to inhibit innovation but seem to be a critical factor in driving it, for they offer greater stimulus to profound innovation.

This doctrine of perpetual "Revolution in Military Affairs" joins science and intelligence as epistemic practices. Weapons research may be likened to a joint venture between firms that exchange resources. Management theorists cite as pressing reasons for alliance the importance of large fixed costs (e.g.,for communications satellites), rapid technological development (as with database systems), and complex markets for supplies and products (e.g., U.S. taxpayers and Congress) (Nooteboom, Berger, and Noorderhaven, 1997). Additionally, in weapons research Intelligence and Science each enhance the social significance of the other as an epistemic enterprise. The Manhatten Project, Operation Crossroads (the 1946 Pacific nuclear tests), Project MKULTRA (the CIA's early Cold War program of mind control research), and the Strategic Defense Initiative ("star wars") may all be considered joint ventures of intelligence and science. In these cases intelligence supplied the market research, so to speak, and science supplied the product research.

The progressive weapons research of the Revolution in Military Affairs generates moral problems beyond the reach of traditional just war theory. Weapons research often entails testing on convenience groups of nonenemies outside of the context of war. Testing serves to gauge the effects of proposed weapons on intended and unintended human targets, to develop support operations, and even to protect those involved in weapons production and delivery. For example, in 1945 Manhattan Project scientists became concerned about the exposure of bomb production workers to plutonium. J. Robert Oppenheimer authorized a metabolic study of plutonium on unwitting hospital patients, which continued at least until 1979. The 1993 exposé of this plutonium experiment by the Albuquerque Tribune (Welsome, 1993) instigated the public uproar that led President William Clinton to appoint an Advisory Committee on Human Radiation Experiments (1995). In the last section, I apply moral lessons from the adversarial epistemology to the plutonium experiment.

Definitions

For the purpose of moral discourse, in this essay Intelligence (capitalized) will refer to the ideology, methodology, lore, and practices of inquiry for national security goals in the United States. Intelligence does not refer to agencies, which may themselves have incompatible goals, nor to individual practitioners, who may themselves fill incompatible roles. Similarly, Science (capitalized) will refer to the ideology, methodology, lore, and practices of inquiry, not to research institutions, nor to individual scientists. For simplicity, the targets of Intelligence will be referred to generically as the Adversary—an enemy nation or its agents, a rival intelligence faction, a terrorist group, dissident citizens, or, potentially, any current ally or colleague. The public policy makers, political appointees, and military commanders who are the directors and consumers of Intelligence will be referred to generically as the Client.

A passage from the archived oral history of Willard Libby illustrates the impossibility of distinguishing individual practitioners of Science and Intelligence. It also indicates how the Client and the Adversary coalesce Science and Intelligence. Libby was a member of the Atomic Energy Commission (AEC) (1950-1959) and the 1960 Nobel laureate in chemistry for his work on carbon dating. Here is Libby speaking from an Intelligence perspective (Libby, 1978):

> I was put on the Atomic Energy Commission by President Eisenhower because of my helping on the hydrogen bomb decision. There weren't all that many scientists who were willing to stand up and talk. I didn't talk publicly; I talked privately, very effective places. And I knew where the buttons were. Power shifts from time to time, and you have to keep up with it. But I was appointed for that reason.

To confound the principles of inquiry with the organizations and individuals who perform the inquiry creates confusion in moral reasoning about weapons research. In particular, attempts to resolve moral problems by establishing moral codes for scientists must fail in weapons research, for scientists often have deeper commitments to national security doctrine than to science ethics.

THE ADVERSARIAL EPISTEMOLOGY OF INTELLIGENCE

The first stage of my plan is to render the methodology of Intelligence accessible to outsiders. To this end I formulate a theory of knowledge, or epistemology, of Intelligence. This is an "adversarial epistemology," in contrast to the ideally "cooperative epistemology" of Science. The adversarial epistemology should enable outsiders to reason from the perspective of Intelligence without mastery of political and military history and the arcane lore of Intelligence.

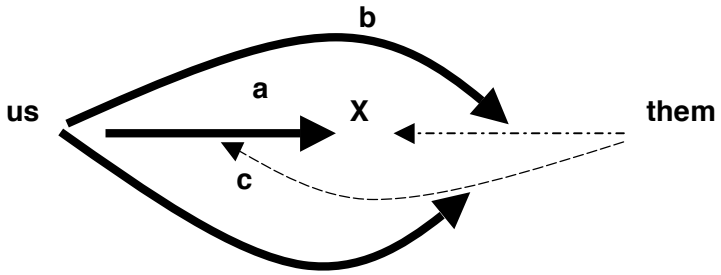
Most principles of the adversarial epistemology of Intelligence can be elaborated from these four premises:

1. The ultimate goal of inquiry is advantage over an Adversary.
2. The Adversary is dangerous and implacable.
3. All observations are vulnerable to deliberate deception by the Adversary.
4. Clients govern the broad topics, opportunities, and constraints of inquiry.

1. The ultimate goal of inquiry is advantage over an Adversary.

Adversarial epistemology arises where competition for knowledge is crucial to the attainment of a limited good, such as military and political power. It is intrinsically partisan, because the value of knowledge depends on its utility to us. Knowledge from which advantage has faded passes into domains with cooperative epistemologies, such as science and history. Adversarial epistemology aims for a temporary, not permanent, stock of knowledge of particulars. Indeed it may be safer to repeat certain inquiries than to stock knowledge of particulars that may be stolen by the Adversary or exposed to public censure. The permanence sought by the adversarial epistemology lies in heuristics, such as the tradecraft of espionage, and in strategy, such as Perry's program of continual innovation in weapons. Advantage determines the value of the knowledge, and this introduces a gap between the validity of knowledge and the value of knowledge. On occasion, ignorance, error, or deliberate omission may serve advantage better, as when knowledge might evoke fears or sympathies or moral obligations that would compel us to act contrary to our advantage.

In the adversarial framework, the firmest criterion for knowledge of a phenomenon is that our observations and interpretations make sense with respect to the self-interest of all parties powerful enough to affect the phenomenon or our observations or interpretations of it. As knowledge seekers in competition with the Adversary, our (a) study of a phenomenon, such as uranium fission, leads us (b) to study also the state of the Adversary's knowledge of the phenomenon, (c) the state of his knowledge of our knowledge of X, and so on.



For example, in 1941 both Germany and the United States had nuclear bomb programs—first level inquiry. Neither country had succeeded, and each sought to discern the progress of the other—second level inquiry. After the defeat of Germany, the British captured ten German atomic scientists and, following the U.S. attack on Hiroshima, secretly recorded the

scientists' private conjectures about U.S. atomic bomb development—a third level inquiry. Scientists may also conduct secret intelligence on the progress of their competitors, but competitive rewards depend on publication of results, so the levels of secret knowledge collapse periodically. For Intelligence though, the structure of inquiry tends to complicate itself even after defeat of the Adversary, as others compete for the Intelligence of the defeated. Up until 1993 at least, the British had not released the original tapes of the German atomic scientists, only translations of excerpts of the conversations (Cassidy, 1993).

2. The Adversary is dangerous and implacable.

The circumstances of competition are believed to prevent reconciliation of opposing interests, so any concession to the Adversary or lapse in wariness will be exploited. When stakes are high, the Adversary may attempt to destroy us, not only to thwart our inquiry.

Knowledge is critical preparation for action but it is not sufficient for committing to an action. In the words of philosopher of science Charles Peirce (1839-1914), "the principle upon which we are willing to act is *belief,*" and rightly so, because, in the short run, rational empirical methods are as likely to guide us poorly as to guide us well (Skagestad, 1981: p. 206) (3). Belief supports speed of action but undermines accuracy. The dangerousness of the Adversary thus creates a trade-off between speed and accuracy.

Right action also requires proper character. The adversarial epistemology must therefore incorporate standards of belief and character, such as adherence to core military values, and methods of assessing belief and character, such as background checks and surveillance by counterintelligence. Another measure of belief and character is the willingness to sacrifice oneself and others, which presents problems of discrimination. Col. Carl Eifler, head of the Office of Strategic Services, who served behind the Japanese line in Burma, said, according to his biographer: "I figured we would all be killed. I really wasn't concerned about whether I was violating any law" (Moon, 1991: p. 310).

Dangerousness directs attention to prevention of surprises. Unlike scientists, we must forgo the ideal of perfection of knowledge in limited fields. Instead, we must spread our epistemic resources widely for brief inquiry into unlikely domains so as not to leave them unattended for exploitation by the Adversary. Thus dangerousness creates a further trade-off between accuracy and comprehensiveness. But ultimately there is no empirical method for anticipating the unanticipated. We must transcend empiricism, as in responding to the Adversary on the basis of the most destructive intentions imaginable from his actions.

Further, there is no final accounting of past events. As long as adversaries remain, any recounting of a past event may offer new opportunities and liabilities. For example, after the war, some German atomic scientists who wished to direct a nuclear energy program in Germany argued that their failure to produce the bomb had been due to wartime shortages and to their moral reservations (Cassidy, 1993).

3. All observations are vulnerable to deliberate deception by the Adversary.

The ever present possibility of deliberate deception by the Adversary creates the key differences between adversarial and cooperative principles of inquiry. The scientist confronts errors in observation and analysis due to unrepresentative samples, faulty instrumentation, omitted dated, misused statistical analyses, and so forth. The same problems of self-generated error confront us, too. Where possible, we leave these problems to scientists, historians, economists, and other epistemic subcontractors, so to speak. Our more serious problem is error imposed by the Adversary through strategic deceptions. Does the jiggle of the seismograph needle indicate an earthquake or a nuclear test conducted in a cavern for seismic disguise? (Van der Vink, 1994).

Regardless of the Adversary's knowledge of a phenomenon, he may deceive us about the nature of the phenomenon itself, about his knowledge of it, about his knowledge of our knowledge of it, and so on. The American and British inspection of Soviet biological weapons facilities, beginning in 1988, exhibits the layers of deception. According to the former director of the Soviet program, the Soviets set up mobile production equipment facilities to dupe the inspectors. The inspection teams, alerted to the ruse by Soviet defectors, nevertheless pretended to be duped so as not to

jeopardize Mikhail Gorbachev's *rapprochement* with the West (Alibek, 2000).

Unlike Science, systematic observation may increase the vulnerability of Intelligence by creating a mechanism for deception. For example, observation of encoded messages renders the code-breaker vulnerable to deceptive messages. Indeed, the more we trust a method, a fact, an expert, an organization, or an ideal, the more attractive it becomes to the Adversary as an opportunity for deception. Techniques to limit our predictability, such as generation of huge amounts of meaningless data, actions that sacrifice our manifest interests, and out-of-character behavior may improve our overall epistemic performance by thwarting deception.

Science can progress in explanation of phenomena through simplifying reductionist approaches, such as genetic, neurological, or psychological approaches to human behavior. For Intelligence though, the constant threat of deception undermines simplifying, reductionist approaches. Suppose, for example, in World War II we were to observe from a high altitude a convoy of enemy tanks. Closer inspection might reveal we had fallen prey to a perceptual deception of inflated-rubber tanks disguised as battle-ready tanks (Russell, 1981, p. 198). The purpose of the perceptual deception would still be at issue. To lure an attack at the site? To garner military aid from allies? Or suppose we were to observe a convoy of enemy tanks approaching our border. Close inspection might confirm they were indeed battle-ready tanks. Yet false diplomacy might convince us that the maneuver was a feint directed against a greater, common Adversary (Epstein,1986, p. 128). In this case we would have fallen prey to a conceptual deception. The course of deception, moreover, may change in response to our inquiries.

The best analytic strategy for detection of deception is to search for inconsistencies. This focuses inquiry on anomalies rather than regularities, as in science. Intelligence inquiry therefore is minutely contextualist and cannot rely on general or abstract laws. This one time, the satellite warning system may react to the sun's reflection from cloud tops and falsely signal a ballistic missile attack—as it did to Soviet warning-system headquarters south of Moscow in 1983 (Hoffman, 1999: p. 16). Science and engineering produced the satellite warning system. Military intelligence produced the pattern understanding of then-current U.S. aggression that led a Soviet missile officer to declare a false alert. We seek epistemic subcontractors who have cooperative epistemologies—

scientists, historians, economists, linguists, and others—to portray the background of natural phenomena against which deceptions can be detected.

Counterdeceptions of the Adversary likewise require detailed, contextualized portraits of persons and events. To carry a deception forward in time, we must control the Adversary's perception of a well defined context over a period of time sufficient for the deception to yield its effect. This demands constant feedback about the Adversary's responses to our manipulations. Defense against deception and perpetration of counterdeception require secrecy.

Secrecy shapes organizations through selection and monitoring of personnel for loyalty, compartmentalization of inquiries to minimize vulnerability due to negligence and treachery, and so on. As organizational obstacles to inquiry accumulate, we are apt to compensate by shifting among policies that permit secrecy. Personnel selection criteria oscillate between educational specialization and generalization, academic and agency training, official cover (e.g., military attache) and unofficial cover (e.g., journalist), and so on. Organizational structure oscillates between flatness and steepness in hierarchy, centralization and decentralization, collaborative and competitive relations between divisions, and so on. The flows of information permitted by the organization further shape the representations and possible solutions to problems. For example, studying foreign intelligence according to geographic regions (Mideast, Latin America, etc.) may conceal patterns of transnational terrorist activities. Thus secrecy presents us with an epistemic puzzle from the field of artificial intelligence: what is the relationship between the structure of an organization and our capacity to solve a problem within the organization?

4. Clients govern the broad topics, opportunities, and constraints of inquiry.

Intelligence seeks to provide the Client with accurate and timely information about the military and economic strength of the Adversary, the intentions of the Adversary, and, most difficult, the effects of Clients' earlier decisions (Mandel, 1977). Ideally, Clients use Intelligence in critical decisions and thus execute their decisions more effectively. Clients therefore seek narrative rationales of cause and effect that will suggest solutions to problems and justify decisions to constituencies (Gates,1989). Intelligence, in contrast, seeks knowledge of patterns (Lincoln and Guba, 1984) with

which to apprehend situations, to recognize deceptions, and to stage deceptions. From pattern understanding of how things work, Intelligence draws the elements that might contribute to the Client's rationale for policy goals or their means of implementation. Intelligence thereby transforms its own knowledge into information as a product for the Client.

The Client-researcher relationship emphasizes the difference between the utility and the validity of knowledge. In the extreme case, the gap between the two may result in strategic ignorance: the Adversary cannot learn from us what we do not know; we are not obliged to take into account knowledge that would hopelessly complicate decision making; and critics cannot hold our Clients accountable for unforeseen consequences.

Clients rarely understand how the actions of the Adversary determine our methods of inquiry. Sometimes Clients direct or forbid inquiries in ways that do not serve their true goals. Programs of espionage, for example, cannot be stopped and restarted according to the convenience of foreign diplomacy, because dismissing agents invites betrayals and reestablishing a network of agents requires many years. In such cases we may risk disobeying the short-sighted directions of our Clients in order to achieve their long-range goals. Of course, this leaves us vulnerable to censure by those whom we serve.

In rapidly fluctuating situations, where the pertinent knowledge is very local and transient, our readiness and expertise may render us the only agents who can conduct successful secret maneuvers towards an urgent goal. Therefore our epistemic expertise may drive us into covert operations.

The Adversarial Epistemology as an Aid to Moral Reasoning

Analogical Moral Reasoning

The specification of premises in the adversarial epistemology reveals similarities between Intelligence operations and many civilian endeavors familiar to outsiders. Adversarial inquiry, to varying degrees, characterizes government regulation of industry, industrial espionage, jury trial, child custody battles, tax evasion and IRS audit, welfare and Medical fraud, insurance underwriting and claims adjudication, workplace drug testing and computer monitoring, biometrics, double-blind clinical trials and placebo studies, personnel selection, educational testing, parental surveillance of teenagers, poker, courtship, and gossip. We are all Intelligence agents and

routinely make small-scale moral trade-offs in the manner of Intelligence professionals. Outsiders might pause to consider the routine intelligence operations in their workplaces, both authorized and unauthorized, institutionalized and personal. What are the goals and methods? Who are the adversaries? What are the moral outcomes and trade-offs? The epistemic principles of Intelligence focus attention on the common tasks of inquiry and deception. At the same time, the principles screen out the particular social functions, ideologies, institutional settings, historical developments, and forces of corruption with which we commonly identify these various adversarial endeavors.

Explicit premises allow insiders and outsiders to employ structurally sound, analogical reasoning (Holyoak and Thagard, 1997: p. 36) to identify moral experience of outsiders that is relevant to weapons research As a demonstration, consider the trial statement of Susan Crane, a school teacher who disarmed a Trident D-5 missile in 1996 to commemorate the 50th anniversary of the bombing of Hiroshima: "Each day thousands of children die around the world from hunger-related diseases. And still we build Trident missiles. These missiles are cared for in air-conditioned or heated rooms, never neglected, never homeless. We take better care of these weapons than our own children" ("Trident Disarmed," 1996). Although Crane's act of resistance was extraordinary, childcare does not meet the premises of the adversarial epistemology, so her analogy would be excluded from insider-outsider moral negotiations.

Process-Oriented Moral Reasoning

By articulating general processes of Intelligence investigations, the moral epistemology enables outsiders to make sharper moral assessments in weapons research through appreciation of the dynamics of operations. Consider the 1977 U.S. Senate investigation of the CIA's Project MKULTRA on behavioral modification. A 1956-1957 subproject, for instance, sought a technique "to induce brain concussion without giving either advance warning or causing external physical trauma, [so that] the person upon recovery would be unable to recall what had happened to him (U.S. Senate, 1977: p. 167). Director of Central Intelligence Stansfield Turner testified: "We are focusing on events that happened over 12 or as long as 25 years ago. It should be emphasized that the programs that are of greatest concern have stopped" (U.S. Senate, 1977, p. 1). Principles of the adversarial epistemology would enable the critic to reckon sympathetically the costs to Intelligence of stopping such programs. The

principles would also lead the critic to ask Turner for an account of process: On what Intelligence rationales did the programs stop 12 to 25 years ago? By what general organizational mechanisms did they stop? What programs replaced their functions?

THE ETHICS OF WEAPONS RESEARCH

I assert that the ethics of weapons research is essentially the ethics of Intelligence. Insofar as scientists and research institutes uphold ethical principles that run counter to Intelligence objectives, they present logistical, not moral, obstacles to weapons research. Intelligence overcomes such logistical obstacles through choice and management of scientists (e.g., Willard Libby), surveillance of projects, compartmentalization and deceptive construal of projects to conceal their significance, and so on, as may be deduced from the epistemology of Intelligence.

As the second stage of my presentation plan, I briefly pose a set of moral premises for Intelligence to render the ethics of Intelligence accessible to outsiders. The oral history of an undercover Intelligence officer involved in radiation research fleshes out these premises. Then I discuss the moral premises in relation to the adversarial epistemology.

The Moral Premises of Intelligence

1. ***The moral superiority of our cause***. There is objective good and evil among political systems. Our system is objectively morally superior because it affords the greatest autonomy to individuals and social units. Therefore it is our moral obligation to defend against the Adversary.

2. ***No recourse to third-party adjudication***. No deity, international body, or other third-party adjudicator will protect the good against the evil. The duty of Intelligence is to protect our idealized social system against the Adversary, not to embody the social system. (That is, we may require unconstitutional methods to protect those who uphold the United States Constitution.)

3. ***The duties of realist inquiry and discriminating reportage***. The essential moral obligation of Intelligence is to assess affairs with the Adversary as realistically as possible and to report truthfully to trustworthy Clients.

4. ***Differential protection of constituents***. The moral obligation of Intelligence to protect particular persons and social units corresponds to their functional and symbolic significance in our political system.

The overall result may be called strategic ethics: consequentialism with respect to the Adversary (the ends justify the means), military virtue towards self and colleagues (courage, commitment, discipline, integrity, etc.), and sacrifice of subordinates and lesser Clients when tactically necessary to defend against the Adversary (expendability/self-sacrifice).

The second premise, no third-party adjudication, distinguishes Intelligence ethics from practical ethics in most civilian enterprises. Civilian adversaries are usually subject to some common normative authority such as police, a judicial system, regulatory agencies, consumer markets, or community opinion.

Major Tegtmeyer, Agent and Victim of Atomic Weapons Research

Passages from my oral history of U.S. Air Force Major (Retired) Ray Tegtmeyer illustrate the moral principles of Intelligence (Tegtmeyer, 1995) (4). This case shows the difficulties intelligence professionals may face in accepting their expendability when their sacrifices are not acknowledged.

> I was born in 1919 in Oklahoma and endured the Great Depression. Then Pearl Harbor: I entered the war—with a photographic memory and a quick wit for physics. I developed a gun sight at MIT. I was Ground Safety Director for the Berlin Airlift at Rhein/Main Air Force Base, with responsibilities extending to Berlin and Paris. I served as an intelligence officer. My “cover” role was Air Force safety director. Our country says, if you are ever caught as an agent, it doesn’t know you. But would I do it again? Yes....
>
> At the Nevada Test Site [late 1950s] I plotted fallout patterns from weather reports, knowing full well what communities were going to be hit, and I saw scientists moving their families out. But my reports to my superiors were 95% on the mark. In the long chain of command, if there is harm to victims at the bottom—to the Elizabeth Wrights of St. George, Utah, for their

> cancers, their stillbirths, and the genetic defects of their children—then the man on top is responsible. But I myself must safeguard the record until it has been declassified.
>
> I was a guinea pig myself for ten years [1950-1960]. Orders were handed to me as the Berlin Airlift was winding down, "You have been selected to return to the States to participate in a government experiment." The experiments were for our country. I was going to do my part. I had a Q clearance, for nuclear projects. Any blight on your character would disqualify you. But you see, my having that Q clearance was a ploy of theirs. They could depend on me for secrecy in the facilities where I was experimented on.
>
> In the beginning I had complete, absolute, total trust in my superiors. Today and in recent years it's been very, very difficult for me to trust anyone.... "This won't hurt you," the scientists said; "We are here to protect you." I lost my teeth; I lost my hair; I had numerous melanoma. They said nothing ever happened to us. I changed so much my children abandoned me....
>
> But your idea, that university scientists shouldn't do secret experiments on human beings—ohhhhh, I disagree! We won't get the volunteers we need to build our nation up.
>
> And an oath is this: I have given myself and would give myself for my country. Period!

Accepting Major Tegtmeyer's account for the moment, Intelligence insiders might pause to consider how they would relate to his predicament, as a colleague or as family member. Or insiders might review unacknowledged harms to themselves or their colleagues in the line of duty. In such cases, how do insiders reconcile personal injustices with Intelligence ethics? An Intelligence analyst reported to me that he could not protest plagiarism of his work by his superiors because of trumped-up security risks. His response was cynicism, not the consequentialist defense provided by Intelligence ethics. But what is the best that can be done to reconcile civilian and Intelligence ethics with regard to fate of an individual Intelligence professional?

Moral Implications of the Adversarial Epistemology for Weapons Research

The profound harm to Major Tegtmeyer—and to tens of thousands of other "atomic veterans"—did not result from the direct intentions of his colleagues and collaborating scientists. Rather, it was an unintended consequence of the intended actions of all these individuals acting in concert, including Tegtmeyer himself. From the moral perspective of Intelligence, Tegtmeyer was more worthy of consideration than the majority of citizens, and his case, if acknowledged at all, would be deemed aberrant. But from an epistemic perspective, he was a more useful experimental subject than most other candidates, and his case is natural and more or less predictable.

My thesis is that the moral outcomes of weapons research, and of Intelligence operations in general, are better understood as consequences of the epistemic principles of Intelligence than the moral principles of Intelligence. One of the firmest empirical findings of social psychology is the poor correspondence between the intentions and the behaviors of individuals (e.g., Milgram, 1957). Further, the behaviors of individual members of an organization do not add up in any sensible way to organizational outcomes (Weick, 1979: pp. 95-97), and unintended outcomes typically overshadow intended outcomes (Giddens, 1984: p. 11). Adam Smith's famous metaphor of the "invisible hand" refers to the mechanism by which group outcomes follow from apparently contrary or irrelevant intentions of individual participants (e.g., in Wray, 2000). The epistemology of Intelligence provides the following "invisible hand" explanation for severe abuses of citizens and even colleagues in weapons research—in spite of the overall good intentions towards compatriots expressed in the ethical premises of Intelligence.

The "Invisible Hand" Explanation for Abuses of Citizens in Weapons Research

The security doctrine of perpetual innovation in weapons systems joins Science and Intelligence as epistemic partners in weapons research. Weapons development and testing are hazardous activities that use up people, places, resources, and social trust. Organizational constraints wrought by secrecy, such as compartmentalization of information and strict hierarchy, obscure the moral implications of secret research to participants and thwart moral review. Competition with the Adversary in methods of

destruction ratchets up the efficacy of weapons and ratchets down norms of acceptable social conduct. Further, the uncertain connections between means and ends tend to invalidate consequentialist moral rationales for risks and injuries in weapons research. Dangerous circumstances demand swift decisions. Political conditions change unpredictably. Government makes and executes policies that may disregard the information produced by Intelligence. And the course of history may undermine the value of the goals for which participants were sacrificed. The ordinary outcome of a once morally defensible project may thus appear as an atrocity of weapons research.

The "invisible hand" explanation attributes abuses in weapons research to the principles of inquiry. It therefore predicts, by analogical reasoning, that all adversarial civilian inquiries will produce similar types of moral problems. For one example, many parents spy on their teenage children to detect illicit behavior. Commonly used commercial devices include home urinanalysis and hair analysis kits for drug testing, breathanalyzers for alcohol, automotive computers to record fast and erratic driving, and surreptitious recorders for telephone wiretaps. Parents even hire private investigators to tail their teenagers or to search their homes with drug-sniffing dogs (Salmon, 1999: p. 9). Such measures respond to the notable skills of children in concealing their illicit behaviors from parents. The ultimate goals of the parent—health, happiness, and liberty of the child—may be urgent and incontrovertible; nevertheless, the damage to the parent-child relationship may be grave and irreversible. The Inquisition provides a second example, distant in time and culture. In the late Middle Ages, when Christian ascetic practices became deeply politicized, the Catholic Church formalized the Inquisition (1233) to suppress heretical movements. Orthodox religious orders, such as the Dominicans, formed successful counterintelligence units (Durant, 1950: p. 780). Even the benign 6th Century monastic Rule of St. Benedict (c. 510-580) reads throughout like a security manual throughout, with the devil as Adversary. Benedict prescribed that monks "shall not give the kiss of peace [to a visitor] until they have prayed, to make sure that the visitor is not one of the devil's devices...." (Owen, 1958: p. 324).

The Direct Explanation for for Abuses of Citizens in Weapons Research

Contrary to the "invisible hand" explanation, the direct explanation for abuses in weapons research cites bad intentions and incompetence on the

part of perpetrators: the character defects of principal actors (self-aggrandizement, belligerence, greed, etc.); organizational dysfunctions (bureaucratic snafus, inter-service rivalries, rogue outfits); and unfavorable social or historical conditions (military-industrial complex, Cold War politics). The "invisible hand" explanation though predicts similar moral problems in all adversarial inquiries, in spite of great differences in the characters of principal actors, the organizational contexts, and the historical and social conditions.

APPLICATION OF THE ADVERSARIAL EPISTEMOLOGY TO THE CENTRAL MORAL QUESTION IN WEAPONS RESEARCH

At the last stage of my presentation plan, I return to the question: For what moral constraints on weapons research are we willing to lose a battle, a city, a war, the nation? The adversarial epistemology brings the moral reasoning of outsiders to bear on the moral problems that confront insiders. Outsiders can be transformed from the—sometimes uninformed and unfair—moral judges of Intelligence professionals to their partners in dealing with difficult moral trade-offs. Because it supplies the conceptual machinery for finer consequentialist arguments about weapons research, the adversarial epistemology can also lead to guidelines for moral trade-offs in weapons research projects.

"The Moral Impact Report"—A Moral Heuristic for Weapons Research

The element that knots Intelligence ethics to civilian ethics is moral dignity in society (Margalit, 1996: pp. 51-53). In terms of organizational theory, moral dignity is a form of social capital (4) that may be calculated as a nearly nonrenewable resource of great political utility—internationally, domestically, organizationally, and individually. Moral dignity, or indignity, of institutions, agencies, and participants is one of the regular outcomes of weapons research projects, and the principles of adversarial inquiry elucidate the causal process. In the evolution of weapons research projects, certain typical patterns of moral problems arise as consequences of the principles of inquiry. The moral problems that accrue, the settings in which they appear, the institutional roles of affected personnel, the moral challenges of critics, and demands for compensation for survivors can be anticipated in a general way. The strategy of concealing from the public possibly justifiable but unsavory projects has had only partial success. Concealment tactics may slow the erosion of an organization's reputation but do not restore lost moral dignity.

As an example, in the early 1950s, scientists considered it dignified to work on contract with the CIA (Greenberg, 1977). By the late 1970s, Director of Central Intelligence Stansfield Turner stated he must protect the reputations of scientists by concealing their affiliations with the CIA (U.S. Senate, 1977). Further, in 1995 the President's Advisory Committee on Human Radiation Experiments concluded its Final Report with a two-page excoriation of the CIA for withholding documents about radiation studies reportedly conducted under Project MKULTRA.. For otherwise, the Committee said, "it will be impossible to put to rest distrust with the conduct of government" (Advisory Committee, 1995a, p. 839). Of course, the CIA could not reveal such documents without overriding the second premise, that the Adversary is dangerous and implacable. Tainted projects from the past thread into networks of diverse projects in the present, and to pull one thread may jeopardize the whole.

It should simply be good epistemic practice in weapons research to examine the possible consequences of projects and to reckon the long-term costs of loss of moral legitimacy with Clients. Indeed, this was the recent advice of Frederick P. Hitz, Inspector General of the CIA (1990-1998): "If the intelligence information to be acquired is not of sufficient weight to withstand the withering criticism and embarrassment resulting from the possible revelation that the United States obtained it through espionage, then perhaps it should not be sought in that fashion" (Hitz, 2000, p. 10).

The "Moral Tracking Problem" in Weapons Research

The Manhattan Project plutonium experiment (Welsome, 1993) illustrates the tracking problem. Development of the atom bomb naturally led to production of bombs and then to a metabolic study of plutonium in hospital patients, in an effort to protect bomb production workers from exposure to plutonium. Albert Stevens, who had a diagnosis of terminal stomach cancer, was injected with a high dose of plutonium at the University of California Hospital in San Francisco in May 1945. Misdiagnosed, he survived for nearly 21 years, in weakness and great pain due to his bone absorption of plutonium. For many years a Berkeley laboratory regularly took urine and stool specimens from him at his home. Argonne National Laboratory confiscated Stevens' cremated remains from a funeral home in 1975 to assay the plutonium that remained in his bones.

By the original moral rationale, the gain in knowledge outweighed the harm of deceiving Stevens and the other 17 terminal patients, for the patients were expected to die long before the plutonium had deleterious effects. But this moral rationale did not apply to later study of the seven long-term survivors (12 to 44 years). A different moral rationale, justifying long-term debilitation of subjects and alienation and impoverishment of families, would have been required, especially as the study brought a broader range of confederates into the deception and coverup schemes (Welsome,1993).

A moral impact report for the plutonium experiment prospectus would have recognized that terminal medical diagnoses have a regular rate of error, and, following that path, could have anticipated the moral problems that arose with evolution of the project and the possibility of an exposé. An alternative course, promising moral dignity in the future, would have been to seek volunteers for the experiment among elderly personnel associated with the Manhattan Project. Many people willingly made much greater sacrifices for their country in that era.

CONCLUSION

I have aimed to engage the reader in the ethics of weapons research and to establish a framework for cordial moral discourse between insiders and outsiders. This framework began with my representation of weapons research as a joint epistemic venture of Science and Intelligence. Epistemic principles of Intelligence were formulated in comparison with epistemic principles of Science and further differentiated from the moral principles of Intelligence. The epistemic principles of Intelligence are more useful than the moral principles, because they are closer to specific directives for action in weapons research and less inflammatory for disputants.

Outsiders alone can use the adversarial epistemology to improve moral discernment in weapons research and to relieve themselves of “culpable ignorance” (Montmarquet, 1999). The 1977 Senate investigation of the CIA’s Project MKULTRA illustrated this potential. Insiders alone can use the framework to help them address contradictions between Intelligence ethics and their own civilian ethics. The oral history of Major Tegtmeyer illustrated this need.

Ethicist Alasdair MacIntyre (1984) warned that if a social phenomenon, such as weapons research, is represented as entirely unique, with no

analogues accessible to outsiders, then no moral views can be brought to bear except those of insiders. In that case, a society cannot begin to resolve the question of what moral constraints could prevail in weapons research, regardless of level of threat. The adversarial epistemology of Intelligence establishes strong analogies between the epistemic enterprises of insiders and outsiders. The stockbroker, the realtor, the receptionist, the psychoanalyst, the patent attorney, the journal editor, the high school teacher, the parent, the clinical scientist, and the intelligence professional all have a great deal to share about moral trade-offs in adversarial epistemic enterprises. Their common experience provides a basis for social negotiation of the central moral question in weapons research: For what moral constraints on weapons research are we willing to jeopardize military supremacy?

In closing, I ask the forbearance of Intelligence professionals for my simplified representations of their methods and ethics, and I invite them to improve on my efforts. I ask the forbearance of scientists for my reduction of scientific method to traditional (positivist) empiricism. I ask the forbearance of philosophers for my restriction of ethics to consequentialism and military virtues. These simplifications may charitably be taken as stations of departure for cross-disciplinary discourse.

NOTES

1. This article was expanded from a paper presented to The Joint Services Conference on Professional Ethics Washington, DC, January 27-28, 2000, and draws from my dissertation (Arrigo,1999). I am indebted to Ray Tegtmeyer for his courage and trust in my use of his oral history. I acknowledge with gratitude the crucial contributions of Harold William Rood, Keck Professor of International Strategic Studies at Claremont McKenna College. I also thank John Crigler and William Casebeer for review of earlier versions of the manuscript.

2. The Israeli intelligence theorist Issac Ben-Israel has also drawn the analogy between science and intelligence (1989) for instruction of the intelligence community.

3. Proper belief is the point on which Oppenheimer failed to satisfy the Personnel Security Board at his 1954 hearing (U.S. Atomic Energy Commission, 1971)).

4. Documentation of Ray Tegtmeyer's military service and excerpts from his declassified radiological safety report on Operation Plumbbob at the Nevada Test Site (1957-1958) appear in Arrigo, 1999: pp. 451-456.

5. The social capital of a firm is defined in terms of "supporting relationships with other economic actors, most notably, potential clients" (Pennings, Lee, and van Witteloostuijn, 1998: p. 426).

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