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Published by: The Hastings Center
Stable URL: http://www.jstor.org/stable/3560750
Accessed: 31/01/2011 02:39

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Physical Manipulation of the Brain

Man's increasing technological ability to control human behavior by psychosurgery and electrical stimulation of the brain has given rise to some difficult and provocative problems. What are the realistic social implications? Should legislation be passed controlling the field? Or would professional guidelines alone be sufficient? Is individual freedom threatened? Does the relief the treatment can offer over-ride the potential social hazards? What ethical issues are posed by direct intervention in the brain?

General public awareness of these questions has been slow to emerge. In recent months, however, the publicity given to the attacks of Dr. Peter Breggin on psychosurgery, the hearings of Senator Kennedy's subcommittee on health, and other events have brought the issues to the fore. Shortly before this new round of public attention, the Research Group on Behavior Control of the Institute held a conference to discuss "physical manipulation of the brain." The participants included the members of the behavior control research group together with a number of invited guests from the fields of neurosurgery and psychiatry.

An edited transcript of their discussion follows. Identification of the participants is listed at the end of the article.

GAYLIN: The Institute has convened this conference to introduce the ethical and value issues into the technical discussions of psychosurgery and electrical brain stimulation. We would like to find out from those of you involved in these fields four kinds of information. First, what kinds of techniques of psychosurgery and electrical brain stimulation are now being employed, what are they used for, and how well do they work? Second, what techniques are on the near horizon, and where is present research heading? Third, if you had unlimited time, talent, and funding at your disposal, what do you think would be desirable long-range research; or if not desirable, what is your prediction about the long-range developments? Fourth, what is the rationale for undertaking these long-range developments? What are the worthwhile goals for psychosurgery and electrical brain stimulation?

In all these topics, we are interested not so much in scientific exposition as in a social and moral interpretation. What are the moral dilemmas your present techniques raise? What opportunities and dangers do you see on the horizon? What are the urgent imperatives? About what generally accepted moral assessments do you feel uneasy? What procedures should there be for responding to the value question—regarding codes, legislative decisions, peer review, educated sensitivity of the practicing surgeons and physiologists?
DELGADO: There are two ways to control behavior: one is through the environment, the second (our subject) is through the brain. And in the brain we have mainly three types of controls: (1) mechanical, through surgery, (2) electrical, through brain stimulation, and (3) chemical, by placing drugs inside the brain (I'm not talking about drugs taken by mouth, only direct application of chemicals in the brain). Then, there is a fourth type of control, the effect of the environment on the electrical and chemical activity of the brain. Through the environment, we are really modifying the structure and substance of the brain electrically and chemically.

Experimental research of the brain may change the classical question of philosophy, which was, What is man? This is perhaps the residue of the Aristotelian conception of the soul. The question rather than, What is man?, should be, What kind of man are we going to construct? Through sensory inputs, and through brain manipulation, we are really constructing and modifying the materials that form the neurological basis of man. We have the power and the knowledge to understand how “man” is constructed inside the working brain, and to manipulate these building blocks that construct man. This conception may be dangerous because it changes the conceptions of freedom, identity, and integrity. This is an important question to which we should address ourselves.

LONDON: On the one hand, you're telling us about the immediate potential of the technology of brain implantation and about the philosophical implication—the practical philosophical implication—that we can define man as a constructible entity. On the other hand, this technology by itself doesn't do anything; it only does things in interaction with the environment. In your own writing you make a strong point about the need to reconstruct man by essentially educational, informational means. There's a great distance between being able to control behavior via brain stimulation, even with the most elegant internal computers, and restructuring society, its educational systems and so forth, by educating children. Where do you see the technology moving in the next 5, 10, 35 years? How do you see this technology progressing in such a way that it orients us toward that longer-range goal, and what are the dangers that you see in connection with that?

DELGADO: The main implication of brain research for education is that the research will make available unique information about the neurological mechanisms. Present technology may give us a new understanding about how education modifies children's brains. It is not possible, however, to educate children with electrodes. This new knowledge may change the philosophy of our educational system, which is based on the sanctity of the individual, and on the assumption that an individual exists at the moment of birth. This belief may be questioned. We should also try to clarify the biological bases of the potentials of the individual and what effect they have on democratic beliefs. We are forming the individual; we are constructing his brain.

GAYLIN: Dr. Delgado, you said in effect that for the first time man has the capacity to enter into or to control the mind. I am not convinced that communication is less "en-
The question rather than, What is man?, should be
What kind of man are we going to construct?
—José Delgado

tering into the mind” than insertion of an electrode. I’m not sure that we are more into
the mind when we’re into the brain with a cannula or an electrode than we are with an
emotion.

DELGADO: You’re absolutely right. Sensory
inputs have intracerebral correlates that were
unknown in the past but may be investigated
in the present. In the past, the brain was
considered an unreachable entity, but today
we can look at the working neurons. We
need to understand man from his cultural
outside and also from the inside of his cen-
tral nervous system. We need a convergence
between both approaches.

ORLOV: Do you really believe that we
should try to restructure society and reedu-
cate man in this fashion? Save a lot of money
by putting electrodes at $1,000 each, into the
brains of children?

DELGADO: Let me repeat what I’ve said.
We cannot educate children with electrodes.
The answer is, No. However, the informa-
tion obtained about learning, memory, emo-
tionality, etc. may be used to restructure a
different kind of education, and therefore to
create a different kind of child. I’m not sat-
isfied with the way in which our present
civilization is behaving. I do not believe that
we must be slaves of natural chance. Up to
now, man has been structured in a natural
way by nature. And the results are that we
are full of flaws. We should improve the
society in which we live.

EHRENSING: I’m asking about your [Del-
gado’s] concept of freedom. First, what hap-
pens to the concept of informed consent in
the context of asking what kind of man we
want to construct? And second, do you see
any validity in or a future for the ideal of
freedom?

DELGADO: Freedom is only a relative con-
cept. Are you free to speak Chinese, or Rus-
sian? . . . Not unless experiential inputs
 modify our brain and give us that freedom.

EHRENSING: I’m defining freedom very
broadly as self-determination.

DELGADO: No, this is the wrong notion. I
would like to redefine freedom as the use of
our intelligence within frames of reference
given by culture and by experience. We are
a conglomerate of cultural values, with the
symbols determined by culture and experi-
ence. Therefore, we are limited by the build-
ing blocks at our disposal; we do not invent
these building blocks, they are given from
the outside and they change the structure of
our brain. Education provides a frame of
reference for each child.

CHALKLEY: I was thinking of the devices
man has approved for the treatment of vio-
 lent behavior in the past, including pain,
torture, imprisonment, institutionalization,
surgery, external electrical stimulation of the
brain, chemotherapy, and psychotherapy.
Now would you rather try ESB or decapita-
tion? The principal reason, I’m sure, that
hanging was in use for so many years was
that torture was more expensive.

ORLOV: Dr. Chalkley, that’s a very flashy
answer, but I don’t really think it helps the
problem. What are the unintended and un-
anticipated consequences of the work Dr.
Delgado and others are doing? I might come
up with the conclusion: . . . full-steam
ahead! But what are they? Or what might
they be?

CHALKLEY: The basic question, I hope, is
essentially one that Dr. Delgado is asking:
how can you best get information to the
child? And you answer this by going into the
brain and discovering how it reacts.
Can we predict the consequences, given our present, or foreseeable, scientific knowledge?

—Herbert G. Vaughan, Jr.

VAUGHAN: I agree with Dr. Delgado’s emphasis on the need for an understanding of brain mechanisms in our thinking about the problems of society. We must beware, however, of assuming that a human infant is more of a tabula rasa than he is. The human brain has a particular genetically determined structure providing it with certain capacities that unfold during the course of interaction with the environment, both external and internal. We go too far in believing this structure can be modified when we talk about changing the definition of man, asking ourselves what kind of man we would want to construct.

This caution applies to psychosurgery in the following way. Although as therapists we may know in a particular case what we want to accomplish—relieve pain, stop seizures, induce a schizophrenic to acceptable modes of behavior. With the physical manipulation of the brain we usually accomplish a great many other things as well, and some of these are undesirable. As scientists we don’t think of the brain any more as a mosaic of centers and structures having to do with rather specific aspects of behavior and experience. Rather, it is a closely integrated system in which certain systems have an extraordinary overlap and interdependence of functioning. Narabayashi, for instance, does amygdalectomies on children with unacceptable behavior. His papers state that afterward the children behave better and that there seems to be no intellectual deterioration. But what about other side effects? To what degree can we predict the consequences of this or that lesion, given our present, or indeed foreseeable, scientific knowledge?

EDGAR: I think Dr. Delgado has said several times that one should not use electrodes to educate children but merely to find out what goes on in the brain as a consequence of other forms of education. Is that a technical limitation or an ethical position?

DELGADO: It’s both ethical and technical. Ethical, because we should not influence the brain in such a way that the individual lacks capacity to react, and technical, because by brain stimulation we cannot provide information.

PRIBRAM: I must correct the notion that you don’t put information into the brain when you stimulate it. You put in information in two senses. If I put an electrode in the lateral hypothalamus and then stimulate that only at certain times when the animal is in a certain setting, I’m putting information into that animal’s brain just as much as I’m putting it in the computer. And that’s terribly important because that means that—ethically, I wouldn’t do it—but practically, I certainly could educate a child by putting an electrode in the lateral hypothalamus and then selecting the situations at which I stimulate it. In this way I can grossly change his behavior. That’s within the range of possibility.

LONDON: If I understand correctly, Dr. Delgado was suggesting that by the exploration of the brain through the techniques he’s outlined elsewhere, we can learn more and can enhance our current routine techniques of education. By routine, I mean those not involving physical penetration of the brain; the aim is rationally to program man who’s already being programmed, who now is being programmed chaotically without conscious planning. Dr. Delgado doesn’t speak
for the situations in which he is ethically unwilling to put electrodes into the brain to educate.

SWEET: The innovator of manipulative techniques in man, seeking to apply the information that his colleagues in the animal laboratories have learned, quickly comes up against the realization that these gentlemen seem to forget about the animals that die. This is understandable. When something goes wrong with that experiment the animal is discarded and forgotten; he remembers the successful animal that has given him the information he was looking for.

Why don't we now consider where we stand on electrical stimulation of the brain at focal points, as contrasted with the kind of stimulation the brain receives when the individual sits and reads a good book? I would say that the situation is analogous to playing a piano with a carpenter's hammer or having a concert artist sit down at the keyboard. As far as my own willingness to work on human beings is concerned, I'm prepared to implant electrodes in the human brain only when the individual is in a serious, approaching what I would call a desperate situation from the standpoint of relief of pain on the one hand, or when his behavioral manifestations are so gravely at variance with accepted behavior that society probably can't allow him to move freely. Or the individual himself may recognize that he's about to be, or may well be, in that situation. Now it seems to me that our technical abilities at the present time are like those of a skilled craftsman who's trying to repair the sounding board on a concert grand piano when there's a giant crack in it. In that situation, you'd throw the sounding board away and get another one. But we don't do this in man.

We try to repair this terribly damaged human brain and see if we can make it operate better.

—William H. Sweet

SCOVILLE: With all due respect to Dr. Delgado, I'm closer to being in sympathy with Dr. Sweet. I work almost wholly on humans, and we are more aware of the disastrous effects that sometimes occur in neurosurgery.

I think that the present techniques for making surgical lesions will be replaced with chemicals—chemical lesions. The fractional psychosurgical lesion is a transitional stage in developing chemical alterations and, of course, possible electrical stimulation techniques. In light of the need for developing better techniques, I too want to congratulate José Delgado.

DELGADO: I would like to emphasize that my position is not aggressive but conservative. I think that electrical-stimulation technology is more conservative than surgery.
What I’m hoping is that instead of destruction, as Dr. Scoville said, we could perhaps place, not a lesion, not even a chemical lesion, but a modification, a pharmacological modification of the brain function.

**BEECHER:** I think Dr. Sweet has enormously simplified the ethical problems here by his insistence that he will work only from the therapeutic point of view. It seems to me that once you deal with the desperate need for therapy of some kind, you can try various things that would more or less be unacceptable in other controls. It’s important to keep that in mind.

**ORLOV:** I’d like to ask Dr. Sweet and Dr. Rasmussen, assuming that the technical problems were in fact solved and that you could with good consciences as doctors be satisfied with the results that you would get with your patients, are these techniques in fact things that you think ought to be done? In other words, is this a research-direction for man that you think one ought to take?

**RASMUSSEN:** The human brain is much more epileptigenic than the animal brain. Whenever the brain is injured in any way, there’s a resultant healing process, and a seizure tendency develops in a significant number of people. Now fortunately this is very directly related to the extensiveness of the scar. Nobody knows whether or not any of the patients with ingoing electrodes or instruments passed through the brain have ever developed seizures as a result of this—because nobody has asked this question. Literally thousands of people have had needles inserted. We pass ventricular needles into the brain for diagnostic purposes a number of times every day in every neurological center and we have pretty good evidence, from following these patients for other reasons, that a single penetration probably has one chance in a million of producing seizure tendency. The physician is always on the horns of a therapeutic dilemma! He can’t do anything without taking some risk. The physician is always in the position of weighing the risks of what he’s doing, the immediate risks and the long-range risks, with the possible therapeutic benefit—immediate therapeutic benefit, and the potential remote therapeutic benefit.

**LONDON:** Dr. Rasmussen raises a sort of Heisenberg principle of neurosurgery, if you will: when you put an electrode into the brain, from that point on you are of necessity exploring an abnormal brain. This obviously complicates the ethical issues. However, let’s say that this can be circumvented. Yet I’m still troubled by two assumptions I think Dr. Delgado is making that have not been discussed.

One is the notion that the information we’ll get from studying the biochemistry and physiology of the brain is somehow going to be significantly, perhaps vastly, more valuable than all the information we’ve acquired over the years from more routine social and psychological observational techniques. I wonder if our enthusiasm about the knowledge the brain might give us might only be because we’ve done everything else for so long; and we’re so clumsy at educating.

There’s another side to it, which is the assumption that it would be preferable consciously to program man, and that it is deplorable that he is sort of randomly and chaotically programmed by our current lack of precise knowledge of the effects of our inputs into the nature of man—genetics, genetic recombination and mutation. The physician is always on the horns of a therapeutic dilemma! He can’t do anything without taking some risk.

—Theodore B. Rasmussen
randomness of that system may not be unfortunate. And possibly the randomness and our lack of control over this system of informational input into the nature of man, this postgenetic rather than genetic random input, may also not be unfortunate.

VAUGHAN: Who decides what is an appropriate and justifiable physical manipulation? Can we assume that therapists, physicians, behavioral psychologists, and psychiatrists can make the choice as to the symptom or the behavioral change that is to be modified? Or should this choice in all instances be left to the individual? Under what circumstances do these two extreme alternatives have to be considered?

GAYLIN: Let us accept this as a basic premise: that we will always allow the individual an ideosyncratic response. That is true in almost every case. A person chooses to embrace and make a lover of his cancer: we allow him to do that. But that doesn't alter the fact that we consider the pursuit of various mechanisms for the treatment of cancer to be authentic and legitimate. But we now are talking about behavior control of various sorts and let's ask for some general guidelines as to where, whether the person wants it or not, we find it morally acceptable or reasonable, and where we are prepared to offer it if the patients do want it.

CLOUSER: How does one decide what is really therapy and what is actually reconstruction? That would be a problem partially because the reconstruction would proceed from somebody demanding something, saying, I would like so and so. Then the question is, If a patient expresses the desire for some "reconstruction," do you say it's "therapy"?

NEVILLE: The concept of justification is ambiguous here. On the one hand, what we mean by the problem of justification is finding the criteria for deciding when to do what. On the other hand, what several people meant was, Who has the right to do what and who gives consent? Who ultimately gives control? Ordinarily, we think the scientists are in charge of the criteria and the patient or his family is in charge of the consent. These are obviously difficult to separate in the kinds of cases we are discussing. How are they to be related in the field of psychsurgery?

MICHELS: What occurs in clinical situations has less to do with informed consent than with the power of transference in the doctor-patient relationship. Patients will consent to absurd things while appearing to be informed about what they are doing.

But it seems to me there's another question: does a person have the right to informedly consent to anything that might be done to him? Suicide raises the question most clearly. Does the individual have the moral, legal, ethical, or social right to kill himself if he fully understands the nature and meaning of his act and weighs the consequences thereof? Our laws say no. Well, if you can't kill yourself, can you cut out 98 percent of your brain? Or 97 percent? Or 0.38 percent? Where is the line? If you can't kill yourself to relieve pain, can you destroy your essential humanity to relieve pain? What are the limits of essential humanity? Are there any? Does the concept mean anything?

NEVILLE: You're right in pointing out that the ultimate problem turns out to be not a medical but a political one.
We've always tried
to do something
about abnormal behavior.
—Paul Weiss

CLOUSER: When we talk about justification for procedures, we give a reason showing that it's to somebody's benefit. What I would find helpful—since I think it is impossible to have a general formula or some sort of a deductive way for deriving a justification for a procedure—would be to get from you people [the scientists] hints as to where you're suspicious of your own reasoning, where you've gone wrong or have suspected your own motives.

SWEET: I would like to get what your thoughts are about the validity of specific criticisms to which my colleagues and I have been subject in our own institution. The criticism goes: “These fellows [my colleagues and I] may get so they can stop murderous behavior in individuals. And we're afraid they will succeed, because then this information could be misused in other hands and lead to the performance of this kind of a pacification operation on those who are dissenting in society.” Is this, then, a good reason for not seeking to learn how to control murderous behavior in those individuals who have demonstrable organic brain disease?

WEISS: Based on what you've said, it has become more and more clear to me that our basic question is whether what's happening today is different in kind and in degree from what we've been doing since the beginning of civilization. We've always controlled people from the outside; we've always tried to do something about abnormal behavior. Both Dr. Delgado and Dr. Neville voice the supposition that the brain is somehow “inner.” But one could look at the brain and any other part of the body as outer. The brain is a public object; people work on it from the outside. As commonsense civilized men, all recognize that individuals have irreducible privacies, inexpugnable rights, that they are beings who are irreducible and unduplicable, and that the only question is, What do we do about their public dimension?

I think Dr. Delegado takes the public side to exhaust the whole of what a man is. Is not a man more than what is available through public external determination?

PRIBRAM: What's your answer?

WEISS: I would say that there is a private being to man. We're looking for some way for him to express his private side in order to redefine what is to be publicly done to him. Are we asking him to tell us how his behavior is to be altered? This is not always the correct approach. We don't ask children whether they want to be educated; we don't even ask the parents whether they want to educate them. There are times when the state rightly takes over. There is a question, then, of assessing the value of the state versus the individual. It's not a purely political matter; it is also a problem of communicating what we actually know of men as they are. In every paper today it is affirmed that all men have a private integrity and a right to humanity. But as with the Ninth Amendment—which says that those rights not explicitly given to the U.S. government belong to the people—it is not said just what those rights are. We should ask, What is man? Our answer will tell us what his rights are.

MICHELS: It seems to me that if you pose the problem this way, the rest of us kind of have to shut up while you tell us whether you think there is such a thing as a natural or platonic way of looking at the world or whether you want to adopt the notion that it's the court or some arbitrary device of
The issue ... is whether it's justifiable, and under what circumstances, to radically alter the nature of the individual.
—Perry London

society which defines its values; or whether it's some funny mixture. Once you've said that, we can't get any farther. I happen to think that it's the courts that decide, but I would like to kind of pretend that . . .

WEISS: I have noticed how cautiously all have moved at the beginning. Arguments are minute, careful, and judicious, and based upon evidence. But suddenly gigantic conclusions are brought out about ethics, freedom, rights, education. But they don't follow from the arguments given. Can we not start from those minute pieces of evidence and see whether we can't force some kind of conclusions about man, what his exterior is, and relate this to his privacy? Then we can deal with these global issues.

GAYLIN: Professor Weiss raised what I do think is an essential question. He asked, Is there something substantively different about this method of modifying human behavior over traditional methods? I like the line in Dr. Sweet's paper, because of the implication, where he says, “it has been a rude surprise to many of us concerned with such patients to find that our procedures on them have evoked the most vitriolic criticisms we have met in our professional careers.” To a psychiatrist at least, the fact that it could produce this much passion, this much vitriol, suggests that it seems substantively different. We may come to the conclusion that there is indeed a substantive difference between entering the brain and manipulating it artificially as distinguished from manipulating it with ideas.

LONDON: I couldn't agree more with Professor Weiss about the issues raised. But there is something about this new technology that is different from most of the issues of public versus private interests which have preoccupied men in the past. Unlike compulsory education, unlike vaccination, unlike the traditional domain of conflict between the state and the individual, the arena of discourse here is the executive apparatus of the individual. The issue which we are all explicitly joining is whether it's justifiable, and under what circumstances, to radically alter the nature of the individual.

DELGADO: I think that there is something new. One, we are dealing with the brain directly, circumventing sensory inputs. Two, we can experiment with classical mental functions, such as memory, understanding, will, etc. This was not possible in the past. Three, we can relate mental functions to chemistry and to neural structure. This also is new. Therefore, I think that today we have new possibilities to study the brain technically, theoretically, and practically.

BERING: A very important point that has not been brought out is the difference between a surgical procedure on the brain and electrical stimulation of the brain. By stimulating the brain with electricity one can start and stop certain activities. The procedure is essentially reversible but a surgical lesion destroys part of the brain and is an irreversible, permanent anatomical change. If you don't like the result you're stuck with it and it can only be changed by making the lesion larger or another somewhere else. If in an aggressive person a lesion is made that renders him a very placid individual, you've actually changed this person. He isn't the same person any more.

NEVILLE: What images of man and society, or man in society, ought we to have, in light
of any special factors of electrical stimulation of the brain or of psychosurgery? In some respects, the moral problems of these techniques are the same as those of any techniques that involve radical surgery. In other respects, they're the same as those of any kind of behavior-control devices. What issues are peculiar to these techniques (or to these plus chemical therapy)?

Certain issues come out of a therapeutic interest. In trying to cure someone or to make him better, how would you define health? Our discussion so far has often turned on whether or not there is a fixed nature to man, of what would be normal for man. Is there any privileged status for what man previously has been? In my view, we need an approach to defining health that would allow one to make all sorts of changes in a person's nature if one could show that this was more valuable than the previous state. The point then is how you decide between one value and another. That's the general social and philosophical problem.

That kind of problem is distinct from the sort that arises out of society's interests in controlling behavior, where there is not necessarily a pretense to making the person better, but just protecting society from the person, or from certain aspects of his behavior. There seem to me three kinds of criteria against whatever alternatives there might be. One, the criteria of efficiency, on the one hand, and whether or not the technique works; two, the criteria of social costs; and three, the criteria of respect for the persons to be controlled. We would like to find, say, techniques for modifying criminal behavior that are most respectful of the criminals, so long as they're efficient and the social costs are not too great. The problem of decision-making here seems to me that of trying to fit these various criteria together relative to the alternatives of control techniques.

The brain, I think, should be conceived as a special environment for the person. Behavior-control techniques, especially these, seem to me to be altering the environment to make possible certain personal actions or certain personal continuities, careers, certain highly prized human emotions and the like. By conceiving of the brain as an environment that inhibits or fosters these human activities, we can conceive the techniques relative to the freedom and values of the person. The question has been raised of the privacy of the brain in the wider environment. There are lots of ways of defining privacy but it seems to me that in the social context, privacy is something that people demand for certain spheres of their life, and that society grants. Individuals and society may not always agree. Sometimes we would not like to have our brain be private, if, in fact, we can be freer, better, or cured of disease by intrusion.

I'm quite confused myself about the particular values used for defining what ought to be recognized as the private sphere. But it seems to me that the techniques we're discussing now raise two important practical questions. Modifying the brain, since it's the most intimate environment for our humanly prized emotions and thoughts, is likely to have more pervasive effects than modifying certain other kinds of environment. There are all sorts of exceptions to this, of course; if you change a person's language system, that also has pervasive effects. But I suspect an argument could be made that changing the brain affects more basic things than

_The brain, I think, should be conceived as a special environment for the person._

_Robert C. Neville_
changing one's language. The other point is that the environment in terms of which an individual is prepared to cope with infringements on his personality is more external than the brain. A surgeon operating on a person's brain has gone into the inside of his perimeter of defense, as it were, and the person can't cope with it very easily. So we need to be concerned with a need for an incremental adjustment of the person to whatever procedure is to be performed on the brain.

WEISS: I think there are two problems here. First, you have given us a social meaning of privacy, and you still haven't faced up to the question of whether there is any private, nonsocial, nonpublic meaning to it. The second is a very strange thought that you have about the brain as more "intimate." I don't know whether you have a kind of spatial image, that maybe the soul is at the center, the brain is closer to it, rather than the outside. But I can well understand a man saying nobody's closer to him than God. Right now, which is closer to me, this cup or you? You're closer to me, I'm interested in you. The supposition that somehow the brain is more intimate an environment than the others, I just don't see.

NEVILLE: I suppose the kind of image I had in mind was one of layers of mediations. The way by which external things affect a person is mediated finally and always through his brain. That is, the brain is the one mediation structure that cannot be avoided.

WEISS: I think you're mixing up a necessary with a sufficient cause. You can have the body as a necessary condition and therefore certain things can be done and prevented by manipulating the body; but it doesn't follow to identify the body with the mind. I know I have a mind, but it's only a theory I have a brain.

NEVILLE: I have no stock in the geographical metaphor except in terms of ordering
closeness of control techniques. But in the context of which kinds of manipulations of a person's environment could be ranked as closer to his person, it seems to me that no matter how we might communicate, short of telepathy, if someone moved a probe at the right place they would cut off all communication.

VAUGHAN: My experience as a neurologist is that people do consider the brain to be one of the areas in which the possibility of a surgical or physical procedure is most feared. Is there, within each of us, perhaps inborn, some fear that requires us to protect ourselves against encroachment upon the brain?

DELGADO: The inviolability of the brain is only a social construct, like nudity.

EHRENSING: I wonder if Dr. Sweet would care to comment on the quote from Dr. Neville's [paper]: "The famous case of Thomas, the engineer, patient of Drs. Ervin, Mark and Sweet, illustrates the point: when under the influence of calming electrical stimulation he consented to psychosurgical procedures for destroying certain brain cells, but when the effects of the stimulation wore off he refused consent. When was he in his 'right mind'? Fortunately, the staff persuaded him to give consent when he was not under the influence of recent stimulation. But then, perhaps he was under undue persuasive pressure." Could you comment on that at all? Does that present a particular ethical issue

The inviolability of the brain is only a social construct, like nudity.

—José Delgado
to you that you would care to share with us? And is that an accurate description of what happened?

SWEET: Yes, I think this is an accurate summary by Dr. Neville of that case report. The question you are raising seems to be this: how do we know that the patient is not under the influence of the electrical stimulation in some minor way a month hence, and if he were under this influence would his consent not be in some way spurious? Is that the question you’re asking?

EHRENSING: Somewhat. In a sense it’s an example of a procedure eliciting the consent for the procedure.

GAYLIN: I think he’s asking a broader question, because I know Dr. Neville is. He’s asking what changed that man’s mind. Isn’t that the broader question? How free was that decision and did you personally, as the surgeon involved, any questions about that?

SWEET: I think that the effort here would indicate that the process of giving informed consent can be a very complex one. Under these circumstances [in the case of Thomas], however, we felt that we were in a very strong position. This man consented to the surgical procedure when he was under the effects of this stimulation, when his behavior, in general, was far more socially acceptable; and then, at a subsequent time, when much of his other behavior was not socially acceptable, he was still amenable to this procedure as a consequence of the conversations he had at that time. I think we would have had a very serious problem if he had given consent only in periods in the poststimulation cycle when his behavior was calmer and more socially acceptable than usual, and if he had refused to do so when he was in a belligerent, fighting mood.

MICHELS: Let’s say the general social attitude toward the procedure was positive and the patient, when disturbed and belligerent, wouldn’t consent. When you stimulated his brain he seemed normal and during that phase, with your electrodes firing, he was willing to consent; but then you turned off the electrodes and he again wouldn’t consent. Again, suppose the social attitude is strongly positive. What would you do?

SWEET: At that stage of the game I would assume that a good many of the present critics would be muted, if not silent, and I would reconsider the matter.

With the raising of the political dimension of the consent procedure, the floor was turned over to Dr. Pribram to present his position on a biological bill of rights. As an introduction, he commented on the revolutionary fervor of the 1960s, and on the counterrevolutionary interest in control posing the very problem for our conference. The revolutionary problem was not, he asserted, to promote irrationality over a moribund rationality. Nor is the counterrevolutionary problem to reaffirm the claims of reason. The problem for both is that reason itself has become disreason, a distortion of reason. Irrationality is something else again.

In order to secure a more rational public life, in the face of advances in life science and control technology, and in recognition of current political forces, Dr. Pribram proposed a new bill of rights to be appended to the present constitutional amendments.

The first right is that of equal opportunity. This is a redefinition of liberty. Opportunity includes both the right of each to take equal advantage of the physical and social environment, and the right of each to profit equally from its resources.

The second is the right to territory. This includes a right to property, but also a right to have a clean and safe environment in which to fulfill oneself.

The third is the right to integrity, meaning a reasonable guarantee of individuality and personal identity. It is this right that most of all bears on the dangerous implications of behavior control. Dr. Pribram suggested that the problem of privacy ought to be formulated in terms of the right to integrity.
It’s veering from superiority to mediocrity that we surgeons worry about.
—William Beecher Scoville

The fourth of the basic rights is that of humanity. A reformulation of the right to happiness, this point stresses the need for us to come to terms with the positive content of the concept of humanity. With respect to biology, this includes a right to control one’s longevity and procreation.

Dr. Pribram explained the right to adequate medical care would be understood as part of the right to integrity. Dr. Weiss asked whether control over longevity includes a right to suicide, and whether control over procreativity includes a right to have as many children as desired, regardless of the population situation.

PRIBRAM: The right, yes. But it’s not necessarily the wisest course to exercise the right. The beauty of a bill of rights is that the right of the individual becomes balanced against the right of his social group and his society by the legal adversary procedures that take place over the years.

WEISS: Then you’re in conflict, aren’t you, with those who say that you haven’t the right to suicide, and that procreativity is a condition determined by the number of people that can be sustained. You can’t just say here’s a right, here’s a right, here’s a right. Someone else could come along holding up eight other rights against yours. That method won’t work, you see. You have to tell us why these are rights. You have to justify your rights. There has to be a principle for them; that’s how we would be able to adjudicate this question, by looking at what the principles are that make you put these down.

NEVILLE: Aren’t you [Dr. Pribram] implying an operational ethical principle to apply in evaluating techniques for physical manipulation of the brain? You are saying that operations are the fruit of complexity, not of simplicity. You suggest further that they’re the fruit of an optimal range of complexity and that if one is either too complex or too simple one loses options; there is an optimal middle range in which the number of options is optimized, so to speak. Would you go on then to say that a physical manipulation of the brain is moral if it moves the complexity toward that optimal range, and that it’s objectionable if it moves it in either direction away from it?

There’s something appealing about that. I notice the neurosurgeons are concerned with the blandness that’s created by some procedures. The diminution in complexity, really, seems to be dehumanizing and for that there must be a very, very impressive gain in order to make that an acceptable cost. And when you read a book like 1984, what disturbs you about it is the blandness of the creatures—not their being controlled. Am I reading you?

PRIBRAM: Very clearly. I haven’t thought of it as optimal, however; I thought increase would always give us greater value.

SCOVILLE: It’s a veering from superiority to mediocrity that we surgeons worry about. In other words, most of these people on whom we operate have many superior characteristics that are out of order, making them sick. The old-fashioned total lobotomy, as we call it, was simply a lowering to mediocrity. It made people easy to control and easy to handle but, God forbid, at what a cost!

We do many dangerous, disfiguring, destructive operations. Our criterion, for all its ambiguity, is that if the patient is rational and conscious we try to do an operation for which he is glad. The test comes three months
... here you have a case where no matter what you did there was injury done.
—Donald T. Chalkley

later when you say, are you glad you had the operation? If he's glad he had it, we are glad. If he's not rational we hope that his closest relatives will be glad he had it. Though it's a simplistic explanation, this is my criteria.

GAYLIN: But you see you've been using the wrong criteria. Couldn't a seriously damaged, lobotomized patient be reduced to that very primitive acquiescent point where his definition of being glad would not be one you would be happy with? He might because of that reduced state be precisely the person who would tell you, "Yes, I am glad."

PRIBRAM: With mental cases you generally shift to giving satisfaction to those who love them the most. What has disturbed me most in this whole meeting is that you've asked Dr. Sweet what he would have done if that chap on stimulation consented and without stimulation refused. I don't really give a damn what Sweet would have done, because the reason I would go to Sweet is to know whether he could get the results with surgery that he got under stimulation; and then I would decide what I would do. Just because Sweet invented that procedure and got that result, I don't see why his opinion as to whether he would operate is any more important than any person's in the room.

CHALKLEY: I would just like to describe a somewhat more complex decision that recently was forced on a hospital that will be unnamed. They had a Parkinsonian case, who was 50 years old. She had had Parkinson's disease since she was 20, and she was brought into the hospital, together with her mother who was her legal guardian, because the Parkinson’s was so severe that she was unable to take care of herself. She was put on L-Dopa and within 48 hours the symptoms disappeared completely. Within another 48 hours the mother, who was the legal guardian and the only one permitted to give consent, asked that they stop the treatment. The mother’s argument was that the girl had survived 30 years in this condition, that a cure of her Parkinsonian disease would force her to come in contact with a civilization that she, to all intents and purposes, did not know and to which she had never adapted. She would face complete reeducation. This rather startled the hospital. They asked the daughter. When the mother was in the room she agreed with the mother and said that she did not want to be treated. When the mother was out of the room she begged them not to take her off the therapy. When they took her off therapy, they could not get a response. Now the legal responsibility lay with the mother. It was obvious that if the girl was left on L-Dopa, it would be destructive to the mother who had built her entire life around looking after the patient. The child was 50, the mother was 80. The decision was made: they went to the mother and said, “We are going to court and seek a judgment to allow us to keep your daughter in therapy.” The mother withdrew the objections. But here you have a case where no matter what you did there was injury done.

GAVIN: Coming from a long line of pessimists, I see a few things that I have to express here. On the one hand, we have an available and increasingly more sophisticated technology, and this is paralleled by a rising alarm over everyday lives—not the pathologic kind that you read about in textbooks, but everyday lives. Now you combine this with recent conditioning of the public by the promises in popular magazines of this new molecular and brain biology, and you have a very frightening thing, namely, a kind of
openness to the alternative of turning people into vegetables. Prisons are running out of space. Numbers of criminals are increasing every day. Notwithstanding the expertise of the neurosurgeons, I don't know that we can enjoy the luxury of the neurosurgeon making the decision whether to operate much longer. I think it will soon be out of their hands.

RASMUSSEN: If you want to make a bad decision instead of us, that's one thing. But you're not going to be able to change the effect of an operation by making a decision. You can say a surgeon can do it but you can't make him operate—ever.

GAVIN: You can always find some hack.

Further discussion began with Dr. Bering pointing out that the costs to human functions involved in brain manipulation must be weighed against the costs of not developing the techniques and employing them. With analogies drawn from the development and use of the cardiac pacemaker and the imminent development of a visual prosthesis, he indicated both economic and personal costs on both sides. He also pointed out the greater flexibility, in cost terms, of the electrical stimulation procedures because their effects for the most part are reversible—while psychosurgery is irreversible.

Dr. Bering noted that much of the difficulty in costing out these procedures is that their results are so poorly known. Citing the controversial practice of amygdalectomy on hyperactive children, he said that we simply do not know the effects of this operation on the children's future capacities for learning.

MARK: I wonder if some of our ethical dilemmas aren't posed by the limitations of knowledge that we have about the kinds of cases we're dealing with. The word aggression and violence is really a very broad term. There are whole hosts of human conditions, some of which may be related to brain problems and some of which may not, which may engender aggressive or even violent behavior and to say that one kind should be treated medically, let alone surgically, presupposes a knowledge about the given individual. Now if we take out all the social aspects (i.e., the purely socially generated violence) and study only the brain-related violence, we're still faced with a tremendous dilemma because our information about the specific kinds of brain deficits, and how they're related to specific behavior, is still limited.

The neurology of behavior unfortunately is still in a rather embryonic state . . .

—Vernon H. Mark

If we address ourselves to the hyperactive child and ask, as Dr. Bering has very correctly done, what is the eventual cost to this child in terms of his impairment of learning after the procedure is done, I think we also have to ask the question, What is the impairment of learning in this child because of his disease process? Certainly we can't begin to detect, evaluate, or measure the limitation caused by the operation until we have some idea as to what is the limitation caused by the disease. Are we in fact dealing with a disease process, and how is it defined? The neurology of behavior unfortunately is still in a rather embryonic state; our information and our ability to do meaningful neurological tests that will focus, for example, on various aspects of the limbic system are still very poor. We have very good methods of detecting lower brainstem problems and we have good neurological tests for specific problems at a cortical-thalamic level. But our ability to look at and test the limbic
system—in the broad functional sense—is extremely limited, even when gross pathology is present.

SWEET: The kind of patient Dr. Bering is discussing—the hyperkinetic child that is destructive of furniture, others, and himself—may have to be restrained constantly in a bed with all four limbs tied down so that this incessant tendency for destruction will not occur. Such a child is, of course, totally untestable in terms of any refined testing techniques as to his current potential. And we don't get useful information in terms of brain functions from the great majority of such people whom we would hope to improve somewhat by surgery.

Dr. Pribram and others pointed out that aggressiveness cannot be understood only in terms of brain modification variables. The social setting must also be taken into account. Dr. Pribram cited studies with cats and monkeys in which identical brain operations produced opposite kinds of behavior, where the distinguishing variable was the social relationship between the animals in the group or between the animal and the experimenter.

Dr. Vaughan then pointed out that the social-environment issue makes it virtually impossible to do an adequate evaluation of treatments. A patient isolated in a hospital, perhaps tied down, is not in a position to have his responses to a natural social environment observed. There is a further difficulty, which is perhaps even greater, in gaining the knowledge necessary for using a brain-manipulation procedure effectively and safely. We shouldn't operate on human beings until we have that knowledge. But experiments on animals would hardly parallel changes of human behavior and emotion. Dr. Vaughan then asked under what circumstances it would be appropriate to subject patients to an exploratory procedure. He then proposed an order of treatments according to reversibility and least potential damage to the psychological structure of the individual. First we should try psychotherapy and drugs, the traditional psychiatric approaches. If these fail we could then consider some kind of direct brain manipulation. Before permanent lesions are made, however, trials should be made with methods of temporarily suppressing brain function, for instance through cooling or electrical stimulation. The problem with doing a reversible evaluation, Dr. Vaughan pointed out, is its expense in money, time, skilled people, and equipment. A quick lesion is a lot less trouble than a careful experimental trial.

Dr. Delgado, agreeing with Dr. Vaughan on the need for experimental justification for brain-modifying procedures, outlined the following five areas in which more experimental knowledge is needed. First, we need to know which parts of the brain are involved in various kinds of behavior. We know a little about this now, but need to know a lot more. Second, we need techniques to identify electrical and chemical events in the brain associated with the relevant kinds of behavior. Third, we need to know which areas of the brain are paired so as to produce or suppress activities. Fourth, we need to develop techniques for connecting these paired areas with feedback information so that undesirable behavior can be suppressed and desired behavior stimulated. Fifth, we need to find out what might be the secondary effects of manipulative procedures. Dr. Delgado expressed his belief that stimulation procedures are relatively safe, and that it is surgery that presents the problems. He said the greatest moral problem arises out of the fact that the techniques of manipulating the brain are relatively easy. It is easier to have an electrode implanted than to take a course in some subject.

MARK: Stereotactic surgery is one of the lowest-risk kinds of neurosurgical procedures in use and one of the easiest as well from a technical point of view. But it is still brain surgery and entails the same risks, even though they're much smaller, as other kinds of brain surgery. Furthermore, the technical aspects of doing stereotactic surgery, while fairly straightforward, are still time-consum-
... aggressiveness cannot be understood only in terms of brain modification variables.
—Karl H. Pribram

ing, and this puts it into a different category, for example, from the frontal lobotomy operations done during the 1940s. The frontal-lobe operations were in the beginning very inexact. It was possible for a number of people, who were not surgeons, to do frontal lobotomies. One of them, as I understand it, did 16,000 frontal lobotomies, using what was euphemistically known in neurological circles as an “icepick.”

PRIBRAM: Some did actually use an ice-pick on some patients.

EHRENSING: I bet not too many malpractice suits resulted from that.

VAUGHAN: Exactly. You've got a cooperative patient, that's one of the purposes of the operation.

MARK: I just wanted to emphasize that the problem of frontal lobotomies is not—from a technical point of view—the same as we're dealing with here in stereotactic surgery. It's very unlikely that stereotactic procedures are going to be done by people other than neurosurgeons. There is a very limited number of neurosurgeons in the United States, and as far as the number that does stereotactic surgery is concerned, it's even more limited.

LONDON: First I want to agree—urgently agree—both with what Dr. Vaughan and Dr. Delgado said about the problem that becomes apparent to all of us. It is evident that in many critical respects we know a great deal less about brain functions than we ought to know, or than we want to know, and the lack of knowledge makes the question of intervention very, very much more doubtful than it would otherwise be.

But the technology is getting easier and easier to use. And when you have the combination of easy technology and difficult acquisition of knowledge, you have deadly possibilities. The issue that arises is not how many fancy neurosurgeons there are who know how to use this technique; but the problem is the klotz factor in surgery. How many incompetents are there, or how many people who may be competent in other areas of clinical surgery but are not aware of their limitation of knowledge in this area, who are not aware of the secondary effects of the intervention but realize that their technical skills are absolutely adequate for them to go through the technical motions of the clinical procedure? And that, as Dr. Delgado points out, is becoming an increasingly dangerous situation. Unless the rate of firm knowledge, and the standards for defining what firm knowledge is, can accelerate at the same rate as the improvements in the technology, the situation that will arise more and more often is very, very dangerous. This makes for good guidelines—much better guidelines than now exist—guidelines that are vital in three areas.

First, the scientific status: how do we evaluate scientifically the nature of specific brain functions? How do we know when enough is enough? What kind of experiments do we require of animals and what kind of leaps of faith must we then take after experimenting with animals before we dare apply the same techniques to human beings?

Second, what is the minimal diagnostic requirement that we can place upon the clinician for assessing the extent to which he is really dealing with brain dysfunction in a patient, and for the relative wisdom of cutting him open, whatever that may mean?
Third, once the diagnostic criteria are established, what is to be done inside the person's head, and who is to do it?

Dr. Chalkley was then asked what forms of public policy might be employed to represent controls based on answers to these and similar questions. He answered that the most obvious and forceful form of control is the law. Citing cases involving both malpractice and experimentation without sufficient consent, he illustrated various precedents for medical and experimental legal limitation. He pointed out, however, that the rules of precedent are not always binding. Furthermore, there are different precedents in different jurisdictions. And, finally, the judicial process does not come to bear unless someone files a suit.

Another form of public policy rests in the administrative and regulative bodies of the government, such as HEW and the Food and Drug Administration. There are, however, immense practical difficulties in overseeing concrete medical and scientific practices. In the review of grant proposals, funding agencies ordinarily count on the grantee institution to provide review procedures for the propriety of the funded research. But the review boards of institutions generally examine only whether the proposed research accords with the canons of good science; they do not raise sophisticated ethical issues.

The discussion then focused on the problem of consent. Two main questions were raised. First, who is to give consent? This is especially complicated in cases of mental illness. Ideally, the person to give consent is the patient after he is cured. A certain amount of guessing about what the patient would want if he were cured is always involved in proxy consent. A case was cited of a man who had attacked his wife with a meat cleaver. After diagnosis indicated that destructive lesions be made in his brain, his wife was asked for consent. She gave it, but under the circumstances, she would have consented to anything, likely even decapitation. Second, when is consent informed? It is hard enough to explain complicated abdominal surgery to a layman. Is it possible to explain brain surgery where the outcome is so equivocal? What exactly should a reasonable person know to be in a position to give or withhold informed consent?

Feeling that some of these very practical but abstract questions could be best addressed with references to particular cases, the final session of the conference was devoted to a case presentation by Dr. Mark.

MARK: At the present time, we [in the Boston City Hospital—Massachusetts General Hospital neurosurgical-neurological group] are only considering for surgical intervention those people with focal brain disease and violent behavior who have temporal lobe epilepsy, who would be, in fact, candidates for surgical operation even if they didn't have violent behavior. We are, however, faced with the following specific dilemma. Patient Arthur P., 29 years old and an ex-Marine, has been showing episodic violent behavior of a particularly threatening and destructive kind. Arthur is six feet four and a half inches in height and weighs 267 pounds. He's built very much on the order of those huge tackles one sees on the Sunday television screen. He is an expert in both armed and unarmed combat. Just to give you an example of the kind of activity he engages in when he has his "violent attacks," he went into a rage when a judge in a county court said that he was going to confine him for three months because of repeated traffic violations. So he went into his cell, put his hand through a brick wall and took out the toilet bowl, in toto, ripping it out of the wall and shredding it through the bars. Another time he put his hands through the wall when he got angry at the Minneapolis Veterans Hospital, and so frightened his doctors and attendants that they refused to come into the room any more to see him. He also has injured people, usually in response to minor provocation.

This man has been studied extensively at various hospitals. He has spent a year at a
hospital for the criminally insane. The patient has never had a history of a seizure, except for one very peculiar episode that occurred when he was 11 years old and in which he seemed to have done some very unusual things that he didn’t remember and that didn’t make much sense. He’s been seen by a number of very competent neurologists, neurosurgeons, psychiatrists, and has received psychiatric treatment now for about six and a half years, of almost every variety. He’s been on the most intensive anticonvulsant and antidepressant medical regime, with absolutely no help whatsoever for his behavior changes. He had numerous brain-wave examinations that showed borderline changes. Then a pneumoencephalogram was taken, which showed that he had a distinctly and definitely abnormal left temporal horn with a dilatation of the lateral cleft and an irregularity of the supra cornual cleft. This pneumoencephalogram was repeated at a different hospital, and this confirmed the fact that this man had a very abnormal temporal horn on the left side. A neurological assessment by the head of neurology at Boston University was summarized by citing the fact that he felt that this man was a temporal-lobe epileptic even though he didn’t have seizures. Then they attempted to do a much more thorough electroencephalographic demonstration of his problem; this showed cascades of “spikes” from both temporal areas via sphenoidal leads.

This man has gone back to the Veterans Hospital in Minnesota. They cannot contain him in psychiatric hospitals—neither state hospitals in Minnesota nor in the veterans’ hospitals of the federal system. With all the management they’ve tried, they feel he is much too dangerous despite all the medication they’ve given him. At the present time they are trying to recommit him for life to the St. Peter Hospital for the Criminally Insane where he will be in permanent isolation, in a dungeon. He is very sensitive not only about the fact that he faces this kind of future, but also about the fact that he’s going to be imprisoned with a group of people who he feels are morally quite different. We’ve followed him now for two and a half years with the question of doing temporal-lobe surgery. We have not done so up to this point because we are not sure of our diagnosis. We are presenting this patient, not for debate, but to bring out some of the moral and ethical problems surrounding the violent patient.

GAYLIN: I presume that because you’re only considering violent people who have temporal-lobe epilepsy and would be candidates for surgery even if they did not show violent behavior, that he does not therefore fall into your category of an operable person.

MARK: At the present time he has never had a seizure.

GAYLIN: Right. So that if he showed no violent behavior the nature of his epilepsy would not warrant surgery.

MARK: Exactly. The fact is that we don’t really feel he has epilepsy.

GAYLIN: Exactly. Because epilepsy is not a matter of the . . .

MARK: EEG interpretation. He is not an epileptic in any definition of the word that we presently use, although he certainly is close to it in terms of his behavior, and in terms of a number of other facets that he has.

SCOVILLE: What is this man’s attitude toward seeking treatment? Is he asking for medical treatment or surgical treatment?

Another time he put his hands through the wall when he got angry . . .

—Vernon H. Mark
MARK: This man wants some kind of treat-
ment.

SCOVILLE: With your vast experience, Dr. 
Rasmussen, have you operated on people 
with grossly pathological behavior but with-
out overt seizure formation?

RASMUSSEN: We have a fair number of 
patients with varying degrees of this kind of 
episodic aggressive behavior, associated with 
temporal-lobe seizures. But they’ve all had 
unequivocal temporal-lobe seizures. For 
some of them the reason for operating was 
really the behavior rather than the seizures. 
That is, the seizures were relatively unim-
portant.

A court of nonphysicians 
would be a much more 
appropriate court to make 
the final decision
—Robert Michels

MARK: This is a man sensitive to every 
little change in his environment. For exam-
ple, when he tried to call Frank Ervin from 
Minnesota and couldn’t get him on three or 
four different occasions, he called me up 
and said, “I wonder if you could get Frank 
Ervin. I’m sitting here in the airport in Min-
neapolis and I have a live grenade in my 
pocket and if he does not call me back at 
this number within ten minutes, I’m getting 
on the plane, going to Boston, going to his 
house on Kendall Common Road, blow him 
and his family and myself up.” He responds 
to very small changes in his environment.

The more usual pattern of violence seen 
at the Boston Veterans Hospital indicates that 
trivial events would precipitate these rages. 
He would often be very distressed at his own 
behavior.

PRIBRAM: This means that epilepsy as such 
is irrelevant in this case. We are concerned 
with organic brain diseases.

MARK: This case would be establishing a 
precedent; I think that’s the ethical issue.

MICHELS: The case history we’re talking 
about here is not the case of Arthur P. but 
the case of Drs. Ervin and Mark—they’re 
the principals. Anticipating an unfavorable 
reply from this committee at Mass. General, 
they come to us, a committee constituted in 
a different way, and get an alternate view to 
take back and use in the discussion in Bos-
ton. For me there are two questions. One is, 
What do we do to Arthur? The other is, Who 
decides what we do to Arthur? There’s one 
sentence that I think was erroneous in the 
case presentation—I’d like to repeat it, I 
think verbatim. Dr. Mark said the commit-
tee of three distinguished Harvard col-
leagues, professors of psychiatry and neuro-
logy and surgery, was to review this, and 
that they “had absolutely no connection with 
the program.” Do you mean that three dis-
tinguished physicians, colleagues, professors 
of the same medical school, who I presume 
know all of you personally, people you see in 
your daily rounds, have no connection with 
the program? That stretches my credulity 
considerably. It seems by electing to place 
the final responsibility in a court of physi-
cians, you’ve created the web in which you 
are now struggling, trying to define the prob-
lem as epilepsy, a medical-scientific term, 
rather than in social-ethical ones. It seems a 
court of nonphysicians would be a much 
more appropriate court to make the final de-
cision.

LONDON: The real issue is this: you have 
the capacity to go into this man’s head, 
physically and directly. It is altogether plau-
sible that doing so in an intelligent, careful 
way will permit you to directly ameliorate 
his behavior. That capacity has absolutely 
nothing to do with epilepsy. It has absolutely 
nothing to do with an abnormal EEG. It’s
a simple technical fact. The man goes crazy. I'm talking now like a cop, or like a citizen who could get beaten up, or like an airplane pilot who doesn't like people walking around with live grenades. The man goes crazy all the time. He is a terrible potential menace to society and to himself.

You have a technology that permits you to address that directly.

In less than five years Dr. Delgado is going to make that technology so much easier that people without your sensibility and without your skill are going to be able to do that too. Then they're going to add two and two and get four, and say, "There's lots of people who act in lots of crazy ways and these doctors can't find anything wrong with their brain, their glands, or with their bodies; but they've tried every approach like drugs and psychotherapy and so on and so forth, and none of those things have worked. Now these doctors have very safe, potentially very effective, and very applicable techniques of going into the head. Why don't they do that?" That's what's going to happen. And you're cursed with ingenuousness, and the fact that you know that this capacity is developing in your own work. Your colleagues are understandably fearful of the responsibility that it engenders. So you come up with this kind of dilemma because they come up with what Dr. Vaughan quite correctly calls the specious requirement of a seizure, or a definition of epilepsy; but the problem has nothing to do with that. It has to do with the capacity and the behavior.

GAYLIN: You remember Dr. Delgado's caution to us. As the technology moves faster than the basic knowledge, we cannot wait for the basic knowledge because the technology is going to outstrip it. Second-rate people will do what Dr. Mark and his colleagues won't. Therefore, while we're waiting for the basic knowledge, the urgency is to set up certain reasonable protections and guidelines.

PRIBRAM: A bill of rights.

... we cannot wait for the basic knowledge because the technology is going to outstrip it.

—Willard Gaylin

GAYLIN: It seems to me that this is a constructive thing to come up in the meeting. It suggests that there's a possibility society can develop techniques for providing due process in cases that don't fit the old categories. The type of due process that we use for handling criminals and the type of due process that we use for commitment procedures may not exhaust the range of actions that society might wish to take to deal with problems involving value contradictions. One of the things that might come out of a study like ours is a way of designing alternate social institutions that could be used to make decisions in cases like the one Dr. Mark presented.

PRIBRAM: This is the case where you really need to go to the public. This is a social-policy decision, perhaps proximately being faced here by the surgeons, but in the larger sense faced by our whole society.

MARK: I agree that public participation in certain medical decisions is desirable as long as the public participants are knowledgeable and honest. I do not agree that the decision about a patient's treatment ought to be completely removed from the physicians charged with caring for the patient, nor do I agree that the seizures or other brain pathology is irrelevant to the patient's abnormal behavior. On the other hand, if a violent person has a normally functioning brain—then he doesn't need therapy—be it surgical or medical. If an individual with a normal brain is criminally violent, he should have legal rather than medical attention.
Conference Guests Included:


Edgar A. Bering, Jr., M.D., Chief, Special Program Branch, Collaborative and Field Research, National Institute of Neurological Diseases and Stroke.

Donald T. Chalkley, Chief, Institutional Relations Section, Division of Research Grants, N.I.H.

José M. R. Delgado, M.D., Professor of Neurophysiology at Yale University School of Medicine, whose experiments in electrical brain stimulation have received wide discussion and whose book The Physical Control of the Mind raises many of the issues discussed at the conference.

Vernon H. Mark, M.D., Director of the Neurosurgical Service at Boston City Hospital and Associate Professor of Surgery at Harvard Medical School; in Violence and the Brain, written with Frank Ervin, M.D., Dr. Mark discusses and assesses some of the major techniques and uses of psychosurgery.

Karl H. Pribram, M.D., Professor of Psychiatry and Psychology, Stanford University Medical Center, a neurosurgeon and neurophysiologist interested in social biology, and author of Languages of the Brain, which sets out a theory of the neurophysiology of behavior.

Gardner C. Quarton, M.D., Director of the Mental Health Research Institute and Professor of Psychiatry at the University of Michigan.

Theodore B. Rasmussen, M.D., Director and Professor of Neurology and Neurosurgery, Montreal Neurological Institute, McGill University, a pioneer in neurosurgical treatment of behavior disorders associated with epilepsy.

William Beecher Scoville, M.D., Clinical Associate of Neurosurgery at the University of Connecticut Health Center and Associate Clinical Professor of Neurosurgery at Yale University Medical School; President of the International Society of Psychosurgeons.

William H. Sweet, M.D., Professor of Surgery at Harvard Medical School and Chief of Neurosurgery at Massachusetts General Hospital.

Conference Participants from the Institute Research Group Included:

Daniel Callahan, Director of the Institute, moderated the conference.

K. Danner Clouser, Associate Professor of Humanities and Philosophy at the Milton S. Hershey College of Medicine, Pennsylvania State University, specializing in medical ethics, philosophy of psychology, and philosophy of medicine.

Harold Edgar, Associate Professor of Criminal Law, Columbia University Law School, specializing in law and the life sciences.

Rudolph Ehrensin, M.D., Assistant Professor of Psychiatry, Louisiana State University Medical Center, interested in the behavior problems of adolescents.

James R. Gavin, M.D., a biochemist at the National Institutes of Health, interested in the social aspects of science.

Willard Gaylin, M.D., Clinical Professor of Psychiatry, College of Physicians and Surgeons of Columbia University; President of the Institute of Society, Ethics and the Life Sciences; Cochairman of the Behavior Control Research Group.

Bruce Hilton, Associate for Publications, Institute of Society, Ethics and the Life Sciences.

Perry London, Professor of Psychology and Psychiatry at the University of Southern California, whose book Behavior Control surveyed the entire field; Dr. London practices clinical psychology.

Robert Michels, M.D., Director of Training, and Associate Professor of Psychiatry at the College of Physicians and Surgeons, Columbia University; Secretary of the Institute of Society, Ethics and the Life Sciences, and Cochairman of the Behavior Control Research Group.

Robert Neville, Associate Professor of Philosophy at the SUNY College at Purchase, and Associate for the Behavioral Sciences at the Institute; Staff Director of the Behavior Control Research Group.


Herbert G. Vaughan, Jr., M.D., Professor of Neurology, Albert Einstein College of Medicine, whose special research is the development of a visual prosthesis through electrical stimulation of the brain.

Paul Weiss, Heffer Professor of Philosophy at Catholic University of America, whose book Man's Freedom deals with the scientific control of man.