HUMANISM IN HUMAN EXPERIMENTATION: 
SOME NOTES OF THE INVESTIGATOR’S 
FIDUCIARY ROLE*

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Today, perhaps the first and only duty of the philosopher is to defend man against himself, to defend man against that extraordinary temptation to inhumanity to which—almost always without being aware of it—so many human beings today have yielded. —Gabriel Marcel (9)

Modern medicine is painfully torn between its technologic possibilities and its traditional trusteeship of the integrity and dignity of the persons it serves. Positioned squarely between the sciences and the humanities and uniquely combining both in the lives of individuals and communities, medicine can be man’s most potent instrument for enhancing his existence. Yet, in few endeavors is man so much in danger of being overshadowed by one of his creations. Can medicine somehow unite its humanistic and scientific elements and become the genius of a new humanism, in which technology serves human purpose? Or will medicine become the paradigm of a technocratic anti-humanism, in which man himself becomes an abstraction?

This tension between human concerns and technologic possibility is exquisitely adumbrated in research with human subjects. Here, the traditional mandate of the physician as helper comes increasingly into conflict with his new mandate as scientist and fact-gatherer. Can medicine remain faithful to both trusts—to be the most scientific of humanities and the most humanistic of the sciences (13)?

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The reality of human experimentation forces the investigator to a conscious selection of a set of personal values. But a close inquiry into some of the central ethical issues in experimentation is essential for the practitioner, as well. The same forces of science and technology are just as profoundly transforming the nature of the everyday relationship between the physician and his patient. Indeed, the same care we employ in experiment ought to be used more often in the more mundane affairs of clinical practice.

This discussion is deliberately focused on the personal transaction between subject and investigator, rather than on normative principles. There is a real danger of succumbing to the powerful abstractions of science and research if we do not root our considerations in persons. It is easy to slip quite unknowingly into the callous and careless use of human beings to serve some attractive ideal like "advancing knowledge," or "elegant experimental design," or "benefiting mankind." Unless our consideration is embodied in a concrete human relationship and we the investigators examine our personal actions in that relationship, we risk the "extraordinary temptation to inhumanity," which the French philosopher Gabriel Marcel perceived to be one of the great evils of our times (9).

The social control of experimentation will not preserve us from that evil. Research is a realm in which social dependence on technical expertise is inescapable. Human experimentation committees, regulations, and adults are essential, but they are also insufficient alone to guarantee the humane use of human beings. There are too many precedents in human affairs for violating the spirit of the law while observing the letter. Regulation can become a substitute for individual responsibility. It is impossible to monitor each measure introduced in the course of an investigation. The investigator may take the approval of his protocol for obtaining a "valid" consent as a license for all his later decisions in an experimental protocol. The central issues are inescapably clear; the investigator is always in a fiduciary role. His superior competence and expertise force the ultimate responsibility for their ethical usage upon him, even in a regulated system. Each investigator must, therefore, develop a personal stance in the way he exercises his fiduciary role. The only absolute proviso is that he engage the issues consciously, put his values in order, and be prepared to alter them with experience. Not to do so limits his freedom as a man and as a physician. This is the first step in dehumanizing the investigator; the dehumanization of the patient-subject is sure to follow.

There are at least three levels of personal concern in the value matrix within which the investigator functions: the societal mandate
given him, the peculiar nature of the physician-subject interrelationship, and the crucial personal responsibilities that derive from them. It is the interplay of these value sets that the investigator must engage as a person.

I. The social mandate

The physician, the patient, and the experimental subject are part of a social collectivity that stands to benefit by responsibly conducted medical research. Every new treatment or operation ultimately must be tried for the first time in humans; every advance in knowledge of prevention and understanding of disease depends ultimately upon observations in man. Insulin, liver extract, penicillin, smallpox and polio immunizations—all had to be evaluated in human beings, even after extensive animal trial. Society will not willingly give up these benefits, and so it permits medical research in humans.

Francoeur even argues for a “technological imperative,” which would impel man to use his new technology in medicine, even if it is dangerous. Man, Francoeur says, must join God in “creating future generations” and should apply his knowledge, always seeking the via media between the dangers and the benefits of technology (4). While the perils of an overzealous pursuit of this view are obvious, the consensus of social opinion would seem to favor some modified version of the technological imperative.

While recognizing the de facto necessity and reality of human experimentation, there is no explicit sanction in law for the practice. Medical practice acts do not assign experimentation explicitly to the physician. The prevailing social and legal opinion is that he does experiment only at his own risk. The pertinent citations in Professor Jay Katz’s invaluable casebook on human experimentation refer only tangentially to “experimentation (6).” The courts use the term loosely—and certainly not explicitly—to cover clinical investigation as it is practiced all over the world. Society clearly recognizes the value of human experimentation for all its members, but just as clearly it avoids assigning the authority for its conduct. Paradoxically, regulatory mechanisms are being developed everywhere, often under governmental sponsorship. The investigator is always in the dubious limbo of being a hero at one moment and a villain the next.

While thus indirectly sanctioning investigators, society explicitly requires that certain values essential in a democratic society also be carefully preserved—the right to life, to privacy, and to dignity; the right to consent or to refuse to participate; the right to veracity and
competence on the part of the investigator; and the right of redress for any injury that results from an ill-advised or unethical experiment. It is the terrible violation of these rights by the Nazi physicians and their less horrendous abuse by some contemporary investigators that have necessitated the spate of new ethical codes and the legal and institutional regulatory mechanisms within which investigations must now be conducted.

Two important conclusions can be drawn from the inescapable conflict of values that society imposes on the investigator. Since society’s mandate is a heavily conditioned one, the privilege to pursue investigations is absolutely contingent upon the investigator’s willingness to accept the trust for the preservation of the integrity of the person of the subject. Society’s mandate in this respect is far stronger than its mandate to do research—and far more important to its own health as a human agency.

The second conclusion is that any experiment for therapeutic purposes or to further our understanding of disease mechanisms, by its nature, imperils the personal rights of the patient or the subject. Experimentation with humans cannot be conducted in a democratic society without some invasion of fundamental human rights. What we must seek is the degree to which society and the individual will permit these rights to be invaded, and under what conditions, in order that new knowledge may be obtained for the good of the subject or his neighbors (14).

We must take special note of the fact that the investigator does not enjoy, explicitly or implicitly, a social mandate to advance scientific knowledge as an end in itself. This is permissible in other scientific disciplines but not where another person must yield up some of his inalienable rights, even if he volunteers to do so and consents “freely.” In short, our contemporary social values sanction research involving humans if there is no alternative way, if there is reasonable expectation of good for the subject or for society, if the subject participates in the decision to be part of the experiment, if the subject genuinely participates in the decision to participate, if the study is worth doing, if it is carried out competently, and if the investigator assumes the fullness of his fiduciary role at every step. Only under these conditions will our social value system permit significant risks to well-being and to life—much as we do in space or undersea exploration, for example.

It is this highly qualified social mandate that the investigator must reflect upon and re-examine when his enthusiasm for the advance of science, his own career, or his intellectual delectation threaten to blur the sources of his privilege. The matter is uniquely important in the
university setting, since that ambiance places such high value on research that its pursuit too frequently appears casual. No matter how minimal his contribution may be, each physician must realize that his fiduciary responsibility begins at the moment of his personal involvement. He has a fundamental obligation to adhere to the limitations of the social mandate, not only in his own behavior but also in his responses to the behavior of others. The investigator is party to a social contract between himself, the subject, and society. The fundamental obligation that arises therefore cannot be displaced to others, to group decision, or to "higher authority."

II. The personal transaction between subject and investigator

Let us examine this fiduciary role more closely. Granting his recognition of the heavily conditioned sanction under which he operates, the first level of the investigator's personal concern must be a full appreciation of the unequal nature of the transaction between himself and his patient or subject. The inequality will vary in magnitude, depending upon the particular confluence of such factors as the subject's education and social level, emotional stability, physical debility, or special circumstances of his life as prisoner, student, mentally retarded person, child, or the altered state of his consciousness. Moreover, if the subject is a patient, his eagerness for a new cure or a new lease on life will alter his responses profoundly. The desire to be of service to others in the cases of volunteers in nontherapeutic experiments is an equally potent modulator of the delicate personal contract between investigator and subject.

Concealed forms of coercion are many: the overadulation of the unsophisticated for science and technology, the mystique that still surrounds the physician, the patient's desire to please, or the weight of group pressures to volunteer. Overriding these is the superior technical expertise of the physician-investigator. The patient or subject is totally dependent on him for information on the utility, probability of outcome, and risks involved in the proposed procedure. The veil of technical jargon, together with the subject's dependence upon the investigator's competence and goodwill at every stage of the procedure, markedly accentuate the inequalities between them.

On the investigator's side, there are subtle but powerful forces operating to erode his fiduciary role. The investigator has chosen research using human beings as his life's work. His advancement and prestige depend upon publication of significant results. He must complete his work on a tight schedule. To compete successfully, he must
be rigorous in his design, study a sufficient number of patients, and satisfy the canons of experimental elegance. The young investigator must break into the ranks of established investigators; the established investigator must maintain his hard-won prestigious position. Both are susceptible to that subtle shift of standards to which Professor S. E. Luria referred recently as "the ethics of competitive enterprise (8)."

These influences may be sublimated in apparently strenuous efforts to assist mankind. Self-deception is easy and readily rationalized. It is difficult to discern where legitimate dedication to high-quality humane research ends and the hubris peculiar to the physician-scientist begins. This intersection of personal human values with social and scientific goals is intense and crucial. No test of an investigator's humanism is more rigorous or revealing.

Yet, it is within the context of these personal pressures and the inescapable inequality of his relationship with the patient or subject that the investigator must exercise his fiduciary responsibility. Out of this nexus, valid consent must be elicited, for this is the very first and the ineluctable requirement for any degree of ethical authenticity or even of humaneness in the transaction. In a free society and even with a social mandate permitting experimentation, only the subject is free to yield some of his rights over his body and run the risks of injury or discomfort inherent in any procedures—experimental, therapeutic, or diagnostic. We must never forget that the patient and the subject do so in a situation in which they can never be wholly free or wholly informed in any absolute sense. Without the irreducible minimum of a valid consent, we would be indulging in the monumental pretension of selecting "martyrs for society," to use Pappworth's phrase.

Since consent cannot be totally free or totally informed, we are forced to speak of valid consent instead. A valid consent is one in which the subject, the investigator, and subsequent reviewers agree that the subject is a full partner in the decision to participate and under what conditions. Consent is neither free, informed, nor valid unless there is maximal possible opportunity for self-determination. This, in turn, requires full disclosure about the purposes of the experiment, the nature of the procedures, the dangers and discomforts they can produce, the benefits to be gained, the assurance that the subject may withdraw at any time, and information on whether the experiment is a substitute for standard treatment. When experimental design requires some concealment, the fact must be disclosed, together with the general nature of what is concealed.

The phenomenology of human consent is extraordinarily complex, even in the ordinary affairs of mankind. We cannot analyze it in de-
tail here. But it is essential to remember that, even in ordinary affairs, to consent is always to yield up one's will—at least in part—to another, and this act confers upon the elicitor of the consent the power to limit another person's freedom. When consent occurs in the medical and research relationship, its already complex dynamics are exponentially accentuated.

The necessity of valid consent is at the heart of any consideration of humanism in experimentation. It is the most crucial arena for the exercise of the physician's fiduciary role; it reveals most clearly the texture of his motivation, his veracity, and his humanism. The execution of a proper consent form, while necessary, is no substitute for the investigator's responsibility to assure quality of the consent. Like other regulatory measures, it guards against gross abuses of privilege, but its authenticity rests with the investigator. It is the quality of human consent, therefore, that must be the central concern of the humane investigator, and not the punctilious filling out of consent forms, however detailed or well-intentioned. Indeed, the length and detail in a consent form may be inversely related to the quality of the subject's comprehension and consent (3).

There are other special features of the investigator's personal relationship with the patient-subject, such as the rights to privacy, to dignified treatment, to confidentiality, to redress—all of which bear on the genuineness of the investigator's fiduciary role. But if the original consent to participate is invalid, there is no likelihood that these other human rights will be preserved with any assiduity. The spirit of the investigator's humane concerns, therefore, is best revealed in the quality of the consent he obtains.

III. Authenticity of the fiduciary role

Certain clear personal moral responsibilities derive from the two unique features of human experimentation just discussed—its limited social mandate and the inequality of the personal transactions it encompasses. There is no more stringent test of a physician's humanism than the way in which he exercises the fiduciary responsibilities thrust upon him in every detail of a humanely conducted experiment with humans. Despite external regulations, the fiduciary function must ultimately be monitored by the person of the investigator. This means that each physician willing to undertake this awesome duty must develop some catalogue of values against which he can judge the humanness of his acts.
This is an especially onerous task in the face of the current trend to moral relativism in which every effort is expended to expunge guilt from human affairs. Yet, without some conscious ordering of values, accompanied by a sense of personal culpability for the injustices which erroneous values may impose, the fiduciary role can never be authentic. No set of legal or institutional constraints can guard against the cumulative evil that subtly evolves from small indifferences. The investigator is compelled, therefore, to scrutinize his value choices and constantly refurbish them. This demands a conscious reflection on some of the most fundamental issues of human existence—an inimical exercise to a culture infatuated with means and unused to the contemplation of ends.

The investigator, therefore, is enjoined to deal with those questions that do not have a true/false answer, the "first order" questions, the stuff of philosophy (7). And it is precisely this mode of thinking for which his scientific training does not prepare him. It is these same questions that some philosophers, themselves overawed by science and technology, call "meaningless." Yet our philosophical propositions govern behavior and justify actions. They demand explicit cogitations, the lack of which depersonalizes the investigator and makes his actions automatic rather than human.

What are some of the dimensions of humane concern which the investigator must ponder? We can inquire here only into five of them—an incomplete list, unavoidably colored by the author's own values, but nonetheless exemplary of the kind of internal dialogue that must go on. The reader will have his own list and his own ordering of it. The only indispensable activity is that there be a list, that it be consciously examined, and that the investigator feel personally answerable for its probity and humaneness.

a) The realm of meta-ethics

The first and perhaps the most important and most difficult level of inquiry deals with the conceptual frame that underlies our ethical choices and values. This is the realm of meta-ethics, and it conditions each concrete decision. It is the source of the ethical norms against which we label our actions as right or wrong. Most of us move quickly to normative principles without any conscious reflection on their sources in our deepest convictions—those so identified with our conceptions of what we are, that only the more intellectually and emotionally mature can probe to these depths without profound anxiety.

Our meta-ethical axioms have profound consequences for our patients. They transcend the mere fact of "acting according to con-
science." On what, and how, is that conscience formed? There is a vast difference, for example, between the absolutist who makes his "principle" the final arbiter and the situational ethicist who uses the "situation" of the act and its consequences as his guide. In the first instance, right and wrong are antitheses, philosophical contradictories with little or no ground between them. This is the stance of much of classical ethics, and it can easily make "abstractions" of men. The situational ethicist, in contradistinction, may be the victim of an accommodating relativism that can be stretched to fit any subjective presupposition he chooses. Lying, in the absolutist view, is always wrong; in the situational view, it may be the moral thing to do.

But in most of the circumstances the investigator encounters, the conflict is between two or more values, both having merit (16). Rather than choosing between good and evil, we are forced to choose good versus good or better versus worse—for example, telling the truth as against the mandate not to harm the patient or cause him anxiety; or the relief of suffering against the mandate to preserve life; or putting one person in the presence of risk to obtain the good of many others.

We are not suggesting what conceptual mode to follow in making these decisions but only underscoring the necessity of understanding how we do make our decisions. To undertake this task in some reasonable fashion requires some understanding of the history of ethical theory—its origins in Aristotle and Plato, its infusion with Christian theology in Aquinas, its transformations and modulations in the thinking of Kant, Hegel, and the modern existentialists and pragmatists. The delineation of our meta-ethical assumptions is a complex and lifelong task. It involves an understanding of our entire "attitude in the fact of the human condition," as Maritain has phrased it in his critical study of the presuppositions of ethical theory (10).

These presuppositions are themselves finally rooted in our idea of man. Explicitly or implicitly, every human subscribes to a metaphysics of man—the sum total of the presuppositions he makes about the meaning and the value of human existence and the existence or nonexistence of a transcendental order beyond man. Manifestly, it matters a great deal whether one subscribes to the views of a Marxian humanist like Schaff, who sees man's end as a happy life on earth (17), or to those of a Christian humanist, who sees that life is fused by a spiritual element transcending man, or to those of a dozen other humanisms, each with its own spirit and values.

We must understand our own presuppositions as well as we can and then make an attempt to understand those of the patient—an even more difficult task. Yet, without some intimation of the patient's values,
we cannot guard against one of the more subtle forms of inhumane behavior—the imposition of our value sets on another person who is not free to resist or, worse still, is not afforded the opportunity to express his own values. Physicians are especially susceptible to the unthinking and condescending transfer of their authority in technical matters to the realm of human values.

Knowing the configuration, therefore, of his own value choices and those of his patients is an essential for the humanist investigator. This is exquisitely the case at every stage of the process of consent, where the intersection, conflict, and harmonization of values proceed simultaneously. It is impossible to obtain a valid consent, much less one whose “quality” is that of a humane decision, without sensitivity to the issues that arise out of the meta-ethical geography of the beliefs held by subject and investigator.

b) *The ethics of good science*

But, even before we approach the use of patients, we must examine the second dimension of the fiduciary role, and that is our authenticity as scientists. Science has its own ethical base. To put a person at risk for ill-conceived scientific reasons or with bad experimental design is a serious violation of trust. Is the research question trivial? Is the experiment a duplication? Will the methods provide the answer sought? Are we personally competent in the procedures involved, or will we be learning them in the study? Is the design rigorous, the control adequate, and the information worth having? Or, on the other side, are we being overly rigorous to satisfy our esthetic sense of what constitutes “elegant experimental design?”

Anyone reviewing experimental protocols or refereeing the papers that result from them must conclude that these questions are not asked often enough. This is particularly true in drug evaluation—a form of clinical investigation too lightly entered into but most difficult of all investigations to conduct competently. Is the drug worth pursuing for human use? How much preclinical testing is enough? On whom shall we try it first? Can we justify such research when an effective treatment already exists?

These questions must be asked repeatedly before we set out on any investigation. Otherwise, the momentum generated by the research ambiance will propel us into immoral exposure of humans to risk without sufficient reason, or even uselessly, if our design leads to erroneous or inconclusive results. The ethics of science may occasionally conflict with the ethics of good patient care once an investigation is initiated, but, if adverted to beforehand, the canons of good science are additional guarantees of the morality of the experiment.
c) The quality of consent

Having a clear idea of our own values and how we deal with them, and having determined that we have a scientifically valid experiment, we must examine the third dimension of our fiduciary role—the quality of the consent we obtain. Earlier in this essay we defined the requirements for a valid consent. These can be fulfilled to the letter, and still the consent can lack those qualities that make it the consent of a free person.

As we are obtaining consent and after we have obtained it, we must question ourselves closely. Did we gain consent more by suavity, eloquence, or subtle duress than by frank disclosure of the information the patient needs to make a decision? Did our zeal for the experiment override the patient's fear or reservation? Did we tell the patient enough about the discomfort and the risks? Did we excuse ourselves on the specious grounds that the patient would not understand or might be made overly anxious? In a therapeutic experiment, can we really offer the patient some probability of help for his condition? Or is he merely another case we need to fill out the protocol? Having once obtained consent, do we regard it as immutable and also as a cover for new and unanticipated procedures the experiments may later require? Are we sufficiently open to the patient's doubts after he has consented, and do we allow ample opportunity for a graceful withdrawal?

We cannot overstress the significance of the quality of human consent. It is the pivotal point in the fiduciary process, the crucible of our veracity, the place in which the psychological and intellectual integrity of the subject can be most subtly and unconsciously invaded.

d) The conduct of the experiment

The fourth dimension of humanism in the use of humans in experimentation is the actual conduct of the experiment. Have we taken the pains to make ourselves sufficiently skilled in the techniques involved? Do we insist on doing them out of motives of pride? Have we chosen the safer or the more spectacular and fashionable methodology? Do we know when to discontinue the experiment, either because of patient discomfort, or because we have enough data even if the protocol has not been carried out to the letter, or because another investigator has already made our work redundant? Or are we thinking more of the eventual report, our survival on the academic scene, the approbation of our colleagues?

We might put the ultimate test to ourselves more often—perhaps routinely, as Lawrence Altman has suggested (1): Are we prepared to submit to the experiment ourselves or even postpone seeking any subject's consent until we have performed the procedure on ourselves?

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The subject of auto-experimentation is a difficult one, which I believe will be discussed more frequently as we look more critically at our humanist responsibilities. It is difficult to ignore the example of Nobelist Werner Forssman, who first performed two of the most important cardiological techniques—catherization and angiocardiography—upon himself.

e) Corporate responsibility

The fifth dimension and the last, which illustrates the sort of self-examination the investigator must practice to keep the person of the patient or subject always in his consciousness, is his acceptance of corporate responsibility for the ethical behavior of the research group. The research team, which is a commonplace today, is made up of a wide variety of people—physicians, basic scientists, nurses, students, fellows—each sharing some aspects of the protocol. Responsibility, under these conditions, is easy to diffuse even when there is a leader who takes prime responsibility. For a morally respectable experiment, the fiduciary responsibility must be shared by all who participate. Each member of the team must feel responsible for violations of trust in any of the dimensions iterated above.

This may be an especially difficult duty for the student or the young physician, who is the junior member of the team. Yet, we cannot escape the conclusion that if others fail in their trust, he must speak up, object, drop out of the team, or take action to put an end to the injustice. If he does not, he easily becomes what Gabriel Marcel called the "auxiliary bureaucrat"—the assenting small man who takes orders in a vast system, excusing himself by virtue of his subordinate position. Of such were the Nazi physicians who committed their atrocities in the service of the ideologies of National Socialism and of a science divorced from value.

We have only examined a brief list of some of the questions each of us must answer as we enter the privileged and dangerous domain of human experimentation. They are derived from the personal responsibilities that flow from the social mandate that permits human experimentation and the unique characteristic of the physician's personal transaction with the patient as a subject. It is not too much to ask the investigator, at least periodically, to examine his conscience on points such as these. Each investigator conscientious about his fiduciary role will devise his own list.

The personal fiduciary role each investigator willingly assumes demands a conscious, critical, continual self-examination as the antidote to complacency and automatic behavior, which gradually lead
to making an abstraction of our neighbors and which are the greatest dangers of technology. This is not to impose either paralyzing scrupulosity or a neurotic and obsessive rumination on every past or future action. Rather, what is dictated is a mature, balanced self-examination, assisted by colleagues and the patient as well, which will enable the investigator to be both scientist and humanist.

IV. Educational implications

Perception of the growing tension between the technologic and the humane values of medicine has generated great interest in a richer humanistic education for the physician. Current patterns of pre- and post-degree medical education do not prepare the physician for the sort of cogitative self-examination suggested here. Indeed, most of his professional education is indifferent or even antithetical to these activities—particularly to philosophic reflection.

At present we rely on whatever exposure the student may have had in liberal or humanistic studies, during college to sensitize him to issues of human values. That this is insufficient has become apparent for a number of educators in and out of medicine. New programs to make the humanities an integral part of professional education are being developed widely (15).

Katz has suggested a method for the more specific education of medical students in the legal, moral, and social issues attending the physician’s role in human investigation (5). He describes a seminar for law and medical students based in the case study method. His approach has the advantage of concreteness and immediacy, two essential attributes of any program intended to engage the medical student’s interest.

Some of the levels of inquiry we have suggested will, however, require in addition a more formal exposure to the philosophical attitude of mind. Clouser has described the difficulties and the rewards of such a “mixed marriage” as might occur between medicine and philosophy (2). The American Philosophical Society has recently recognized the significance of its interface with medicine by establishing a committee to cultivate the exchange. Certainly, the most fundamental of the questions on which the physician-investigator must take a position are in the philosophical realm. While some students might be prepared to examine issues philosophically by virtue of their college training, the majority will need explication or reinforcement of this mode during and after their medical education. We have outlined the issues in humanistic education for health professionals elsewhere, as well as the particular points of interface with philosophy (12, 11).
Lewis Mumford has pointed out that value is integral to all human experience, and knowledge separated from value, or the idea from its embodiment in man, created the monstrosity of the atom bomb. The expanded potency and capability of medicine as applied biology and applied behavioral science in their own way can match the potency of the atom bomb. The atom bomb can annihilate man. But technology separated from value can produce something perhaps more terrifying—the denial of humanity to living men. Marcel was right to define the temptation to inhumanity as the greatest evil in our society.

REFERENCES


