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# **Role and Responsibility of a University in Military and Peace Research**

## **Abstract**

*The image of the university community blindly carrying out research for government agencies or industry is not an unfamiliar one. It is important for society to know whether or not the image reflects a reality or is a fabrication of those interested in undermining the universities. Gordon Maclachlan engages the issue by clearly stating the policies and structures that one university – McGill – has in place to meet the complex nature of the question. George Bell insists that the question be asked in a broader context than that of a university's image of itself and its sense of total academic freedom. The university is an integral part of the community that supports it, and has its role in helping to keep that community secure. E. Margaret Fulton calls for a significant shift in the policies generally held in universities away from any research that could be considered "tainted", and toward research in the interests of peace.*

**Gordon Maclachlan**  
*McGill University*

I'm pleased that at this conference you want to hear from University representatives, because I believe that many of our researchers are grappling with the problems that are before us all and, though we do not have glib answers for you, we do have a great deal of relevant information within our academic doors, which should be widely disseminated. I think that we should all have access to the best concrete and non-biased data that are available, before making up our political minds, and if the University cannot do it, who will?

I shall divide my remarks between two sets of experiences. I began as a student in Western Canada, then a post-doctoral Fellow, then a green young Assistant Professor at Alberta. Now I find myself partly in my lab and partly in my Dean's Office as Vice-Principal, in charge of research at McGill. I should like to explain how the issues before us look from these two perspectives.

### *Perspective I (Green)*

My first memory of becoming involved in issues relating to the military and peace, as a member of the University community, was thirty years ago when I was a post-doctoral Fellow in Enzymology at the Imperial College of Science and Technology in London. I was rooming nearby at the time with a Canadian friend from earlier university days who had a fascinating job as a nuclear physicist at Harwell, which is Britain's Atomic Energy Research Station. He thought nothing of commuting 60 miles to Harwell every day from London, for Harwell was a small place with nothing to do in the evenings, while central London, with a base in Montague Square, was exciting just to walk around. Baker Street was our shopping sector, two blocks away, and the ghost of Sherlock Holmes was ever present. The authorities in Harwell found this complexion very suspicious, and while my friend was at work, they came around on several occasions to ask me about him and his habits. When they started to grill me about my life, I got fed up and showed them the door. Nothing came of it all, but it suddenly made me aware of how close we were to the shadowy world of classified research and atomic secrets, espionage and international tensions. Even if the public still thinks of universities as ivy-covered centres of repose, the fact is that they do a great deal of strategically-relevant research in many disciplines.

At the Imperial College, my lab office looked out over the rather grand stone steps leading up to the Royal Albert Hall in Kensington. I couldn't help notice one day that hundreds and hundreds of people were sitting on the steps and eating their lunch. When I went down to see what was going on, I learned that this was the Aldermanston Peace March en route to Trafalgar Square, and Bertrand Russell himself was there calmly eating lunch with everyone else. I remember very well having discussions with some of the people and being urged to join them, but I felt very doubtful that they would have much effect on public opinion, much less on military thinking or the cold war. So I didn't join them on that occasion. The Harwell investigators were noticeably reassured.

But the next year, I did join the march; and the year after that, being then at the University of Alberta in Edmonton, I helped organize the first public "ban the bomb" march in that city. Along with a number of other university colleagues, we put on our most dignified shirts and ties and

jackets and marched with placards down Jasper Avenue. All sorts of people took pictures of us, including a contingency of Mounted Police. I suppose the Alberta RCMP still has me on their files as a dubious character. They did visit me once in my lab asking all sorts of questions about why I was using radioactivity in my experiments in biochemistry, and why I had associations with well-known radicals in the University. Some of my colleagues were indeed Americans who had been forced out of their jobs in the United States by McCarthyism. This was a great education for me. It is interesting how things evolve – one of those early American refugees, proud and open about it, is now my counterpart Vice-Principal for Research at the University of Alberta.

There was a long period in the 70s when these matters seemed to subside and public concern was muted. But in the 80s, there has been a very substantial revival of discussion and involvement at all universities, and a speaker on peace strategies, like Linus Pauling, will fill our largest theatre.

At McGill a Study Group for Peace and Disarmament was formed in 1981 with the purpose "to permeate the University with a sense of the importance of these issues, generating as much involvement by as many people as possible, and providing a service to the wider public by making information readily accessible." This the Group has done well, by sponsoring many lecture series on campus, by answering questions as responsibly as possible to any member of the public, by providing qualified speakers to outside events. It is some indication, I hope, that even the ivory tower moves in a direction that is alert to its public duty.

At this point, I must move over into the perspective of a Dean and Vice-Principal of the University, Perspective II, which I suppose is coloured grey. When in 1980, I asked the Faculty of Graduate Studies and Research at McGill if they wished to formally recognize the Study Group on Peace and Disarmament as an organization of Faculty, there was not one objection raised, and it is now a recognized spokes-group, which pleases me very much.

### *Perspective II (Grey)*

The University sponsors this Group but also all sorts of events which make use of our specialized expertise to analyse complex matters relating to peace and disarmament. Our Institute for Air and Space Law, for example, has held two major symposia attended by people from all over the world: one on "Arms Control and Disarmament in Outer Space" and another on "An Arms Race in Outer Space: Could Treaties Prevent It?" These have been published. Our Medical Faculty, the Physicians for Social Responsibility, and the Study Group at McGill sponsored a major symposium on "Medical Aspects of Nuclear War", also published and

available as a film. The Law Faculty Journal put out a "Special Issue on Disarmament", generated largely by the student body. A doctoral student in Communications, Teresa Nash, recently won an "Oscar" for her film about Helen Caldicott, *If You Love This Planet*, at the same time as she received her Ph.D. with Dean's Honours. When I announced this double award at convocation, Miss Nash received a well-deserved ovation, even though her film was banned in the United States . . . and so on it goes. This present extraordinary meeting, sponsored by McGill's Faculty of Education, is just one of a distinguished series of efforts by all sections of the University to study and analyse the most pressing issues of our time.

Of course, in addition to public events, the University offers all sorts of courses in many faculties that focus on issues relating to crises and international tensions, controls, political and economic pressures for the arms race, avoidance of conflict, and so on. It would be quite possible to design an entire degree composed of such courses at McGill.

Every day as Vice-Principal I have to respond to questions like those posed in the description of this section of the program. We are all involved in deciding on policy in face of the fact that universities are indeed asked to participate in projects related to national defence. It is a very small part – 1% of McGill's research budget. Examples are space arm, nausea under weightless conditions, travel on muskeg, software for the computerized tracking of satellites.

When you have an expert in medicine on the causes and cure of nausea and sea sickness and NASA asks him to investigate the problem for astronauts, do you say, "No"? When you have soils structure people in Geography and in Engineering, and the Defence Research Board asks them to try to design better truck tires so they won't leave permanent scars on the frozen earth in the north, do you say, "No way – the military is just trying to cover up its movements?"

Nevertheless, there are many groups on campus who feel strongly that University staff should not participate in "military research," a term that is seldom defined, but which usually means research that is sponsored by agencies responsible for military objectives. Our student newspaper at McGill, *The Daily*, had a vigorous campaign against "military research." But then, two years ago, the Student Society at McGill held another referendum with the following question posed: "Do you support McGill University becoming a military-free institution, that is the termination of all research conducted that is directly applicable to nuclear, biological, chemical, conventional and outer space warfare?" The students voted against this motion by a substantial majority.

The Executive Committee of Faculty, which consists of senior staff and students from all sectors, was petitioned recently to establish a

subcommittee to screen out research which might be used for military purposes. It was pointed out that we already have subcommittees to monitor and regulate the use of radioisotopes and animal care in research. Our petitioners wanted us to establish a committee to weed out military research. After several interviews and a long debate, the Executive voted unanimously not to do so.

Their reasons were that, first, almost any research result could be used by the military for their own purpose, including results that are extremely useful to civilian pursuits – to ban the one would paralyse the other. It doesn't help to look at the aims of the research – once published any new result could be picked up by a terrorist group and used for aggressive purposes, for example, the production of cellulose. Second, there are no agreed guidelines anywhere on what constitutes military research, as there are on the safe use of radioactivity or the proper procedures to use in animal care. There are legal decisions, national safety standards, and government guidelines to regulate the use of isotopes and animals in research, but there is no consensus whatever on military research. A committee to regulate it would never get general agreement on where to draw a line or when a transgression had taken place; they would break down in argument. In short, there are at least as many who feel strongly that professors have a duty as citizens to carry out a research project, if asked to do so by the Defence Research Board of Canada because of their special expertise, as there are people who feel that they should refuse. Our Executive decided that this is a political issue and not one on which the University should try to dictate a policy on behalf of society.

This is not to say that there are no areas of agreement that can help protect us from outrageous research being done at universities. The Senate and Board of Governors at McGill have passed stringent guidelines on research policy that state flatly: "The University does not allow its staff or students to be engaged in secret research, whether sponsored by civilian or military agencies." This means that there is no possibility of conducting classified work at McGill, unlike many American universities. I simply wouldn't sign such a grant or contract, and that settles that. It can't be done. This would prevent us, for example, from authorizing a grant or a contract here for most of the so-called "Star Wars" projects that are contemplated in the United States, because the secrecy clauses would be unacceptable to us, even if they don't bother many of our politicians.

The guidelines also prohibit any restriction on free publication of the results of research, which is perhaps our best guarantee that the work will be open to full public scrutiny. All staff and students are subject to the imperative to publish or lose their reputations, or even fail their degrees, and so this is a very powerful guarantee in the eyes of academe.

Finally, the guidelines contain the statement that "investigators are expected to assume direct responsibility for the intellectual and ethical quality of their work." This means that the University places the onus on the investigator to conduct research that is subject to public examination and questioning, in return for freedom to pursue interesting questions without interference. As a Dean and Vice-Principal, I could not accept undue restrictions on academic freedom or any expression of irresponsibility in aims by our researchers, should it occur.

That guideline means that no one at this University can take the attitude, for example, that "it is not my duty to worry about who might use my published work for mischievous purposes." In my mind, and in the University's view, it is their duty, and if they are challenged, they have an obligation to answer for themselves as to why they engage in such research. We would all point this out to them and bring pressure to bear if the answers are inadequate. The vast majority of my colleagues understand this very well, I believe. If there are any who do not, I think that they should be called to account by those who think otherwise, and I have no doubt that this will happen, as long as all of this remains open, as it is.

**George G. Bell, MBE, CD.**  
*York University*

At the outset I wish to say that I am concerned that the title of the panel discussions and the questions posed in the brochure appear to suggest that there is a dichotomy or two solitudes – military research on the one hand and peace research on the other. I suggest to you that such an approach is wrong since national and international security includes all the political, economic, and military activities essential to the security of the nation. Peace is a condition that has had to be gained and requires the combination of political, economic, and military forces to sustain and maintain it and to defend it against threats of all types. Research in national and international security matters requires the study of manpower, resources, finance, education, transportation, communications, physical and social sciences, including military art, science, and strategy. Security and strategic studies research involves research in arms control and disarmament, conflict resolution, confidence building measures, non-provocative strategies, peacekeeping, peacemaking, and negotiation.

The range and scope of research related to national and international security is very extensive and involves many disciplines. Casting a wide net, this could include just about any research in the physical and social sciences, including law, education, and medicine. In a modern, competitive

world environment, no nation can afford to restrict its pursuit of new knowledge. To exercise self-denial in many areas endangers the future of the country and its security, perhaps more than the threat from an external aggressor because, by using such a blinkered approach, our ability to compete in the evolving high technology world could be irrevocably impaired.

When considering this subject, we should recognize that the primary role of our universities is to act as custodians of knowledge and centres of learning and scholarship. They represent a priceless heritage of free enquiry upon which our western civilization has depended for hundreds of years. The methods by which universities are funded determines to what extent they can achieve this goal. If they are paid for out of general taxes that are administered through peer review systems that support activities on the basis of excellence in scholarly work, then it is clear that conditions will be met for reaching this objective. Because basic knowledge is continuously expanding and changing, we must invest in this primary activity or find ourselves relegated to a cultural and technological backwater.

Let me now speak to the questions posed in the conference brochure.

*What should be the response of a university and its faculty when provided with an opportunity to participate in projects related to national defence?*

Much of the academic research in the defence field can be divided into two categories: physical science and social science. In the case of physical science, I think there should be complete academic freedom to do research. The ends to which discoveries may be applied are beyond prediction, beyond the control of the laboratory scientist. More knowledge is always desirable, although the possibility always exists that someone will use it for unfortunate purposes. It would be cowardly, against all the objectives of higher education, to fear new knowledge in case it might be put to evil purposes. However, it might be unwise for a university to become directly involved in actual weaponization projects, as contrasted to the study of physical or biological effects.

With political subjects, the case is not as clear. Studies that are abstract, theoretical, historical, or those which concern the long term future are clearly suitable. But when the subject area deals with security problems, closely linked to the politics of the moment, there is often the problem of determining where research ends and moves from the objective to the subjective and where campaigning, lobbying, proselytizing, and advocacy begin.

Basically, I believe that university and faculty members should accept their responsibility as members of Canadian society by performing, where possible, research required to enhance national security (or, for that

matter, any other aspect of Canadian life). In enjoying the freedoms and protection of living and working in Canada, individuals have an obligation to contribute to the security of the nation. Participating in military or peace research is one way of fulfilling that obligation. If a university is not prepared to assist in the defence of its own society then it should not expect to share in the benefits.

In my view, much of university research should be self-initiated so that if a particular specialist at a university finds that his skills or her knowledge are relevant to a Department of National Defence (DND) project, then it should be a contact initiated from the university. Some research of a national security nature will be the result of initiatives of government departments using the contract method. In general, these researchers are found from those who have put their names on suppliers' lists and who have been identified by departments as both able and willing to carry out research on defence-related problems. In this respect, if a government department requests academic study of some particular subject, possibly of a controversial nature, a university should be able to undertake it. But this should not oblige the researchers to become advocates on public platforms, for or against any future related policies.

In keeping with the scholarship and teaching responsibilities of universities, long term basic research is most appropriate. In general, work in applied fields is less appropriate. If university faculty members want to work in applied fields they should take a "leave of absence" or "sabbatical leave" and do the applied research work in industrial or government laboratories. This "off-shore" involvement would broaden the university's perspective by providing faculty with first-hand experience outside the university and, in keeping with the views of many serious students of technical transfer, could be an effective way to inject new concepts from basic scientific laboratories in the university into government and industrial laboratories. This process will be facilitated in the future as federal and provincial governments, industries, and universities establish cooperative arrangements and divisions of responsibility.

In my view, there is need for a greatly increased level of research in Canadian universities on many topics of interest to national defence and to ministries involved in national preparedness planning. These include generic areas of basic science and engineering that are necessary to maintain a modern armed forces and the industrial capacity to support them. This research, however, should not be supported on a short term project-by-project basis, but by funding centres of excellence through strategic grants. Another critical area of study that government should fund is that of conflict analysis as it relates to issues of war and peace.

***What criteria have been established to help evaluate research projects?***

*General:* When one examines this question in the 1980s, it is important to recognize that much progress has been made in establishing bodies within universities and the professions to review research project protocols to ensure that procedures and practices are ethical. Experience with these working models has been positive.

Overall scientific or academic merit should be the primary criterion used to evaluate projects. The potential for socio-economic effects is a strong second criterion that valuable resources are not wasted.

The only criteria which universities are qualified to apply are the obvious ones of 1) no indignity, pain, torture, or death for subjects of the research, and 2) no danger to the physical well-being of the researchers or others on campus.

It should be noted that, in many circumstances, universities do not have the information upon which to base an assessment of the necessity of the work.

*Publishability:* If a university enters into an agreement to undertake unclassified research sponsored by the government, it should have the right to publish the results. There should, however, be certain conditions regarding this arrangement, such as an agreed period of delay, and the parallel rights of the government to underwrite or to disassociate itself completely from the conclusions and recommendations of the academic study.

Most, if not all, universities have established policies on the publishability of research. A typical example is:

a) That neither sponsors nor universities attempt to enter into agreements which will formally involve universities in conducting academic work which cannot be published. Any exception to this principle should be subject to the most formal review procedures between the university and the agency concerned.

b) That the sponsors be entitled to request, before the research is undertaken, and be granted, a reasonable delay in publication where such delay is in the interest of the sponsor and not inimical to the interests of the community at large.

c) That in instances where university researchers are to be given access to confidential data, the terms and conditions of their use be specified in advance.

***When should a university not participate?***

The only reason for not participating in a project should be that the work activities would violate national or international laws or regulations. One would expect these laws to cover such aspects as public health and safety.

***When does independent academic pursuit conflict with issues of social responsibility?***

Assuming that the proposed research activities are legal, there is always a potential for conflict over socio-economic benefits. This appears to occur frequently when the potential technical benefits are dismissed by some as being unnecessary or undesirable (i.e., society got along well enough without them in the past) and the perceived potential adverse effects are therefore avoidable by not doing the work. One might argue that a major socio-economic result of performing defence research is to contribute to national security to ensure that a Canadian society exists for its members to enjoy its benefits.

When some pose the question of social responsibility, one must ask: Whose view of social responsibility should one accept? Whose judgment should prevail? Who is to determine societies' interests in peace and in periods of international emergency? Surely, not unrepresentative groups!!

Basically, no one has the right to say "thou shalt not study this subject because it may have consequences which would offend my social ideals," since, when pinned down, these "ideals" are often found to consist of the dogma of a specific group or groups which may or may not be valid for the nation.

The question as to social responsibility and choice of research projects somehow implies in the context of defence research that there is something unsavory about defence research *per se*. To my mind this is easily dealt with as long as the university is not forced to undertake defence projects. The faculty member who engages in defence research does so out of choice in an area of his own choosing and therefore must defend it in the same manner as he would any other area of research and on the same bases, i.e., academic credibility and social responsibility.

***Who decides?***

I seriously doubt the value of any attempts to establish extensive legalistic pronouncements about what type of research should be allowed or

forbidden. Such efforts would be incompatible with the revered principle of academic freedom.

I think that it would be most unusual for a university to forbid work on any particular subject. Once the legality of the activities of a proposed project are decided, the decision should be left to the individual who would perform the work. Academic freedom must be respected, that is, the freedom for faculty to choose or not to choose the work must be unrestricted.

In examining such questions bearing upon our national security and international security, and research related to these areas, it is important that we remember that we live in a democracy and have put in place a government through a periodic free electoral process which has the responsibility to protect our national security, provide "peace, order and good government," and create the conditions and the economic support system which will ensure a sufficient measure of social justice as well as protect our individual rights and freedoms to the greatest degree possible. While we all have the right to make our views known to them, it is the responsibility of our elected representatives to provide national leadership, to develop national will, and to make such decisions – to be the "conscience of the nation" and to provide the regulations which guide our researchers in universities, in the professions, and in business, while providing the freedom to seek and find new knowledge.

**E. Margaret Fulton**  
*University of British Columbia*

At the outset, it must be clearly stated that the very subject of our discussion, "The Role and Responsibility of a University in Military and Peace Research", is totally misleading. The title suggests that some kind of equation, balance, or link already exists between military and peace research. It further implies that these two concepts – the military, a euphemism for war, and peace are inexorably twinned. All of the old assumptions and arguments about the need for military strength in order to ensure the goals of national defence and security and the longer range goals of world peace and freedom are implied. Universities that engage in any kind of scientific, engineering, or technological research, which leads to new and more lethal weapons of war, and which is funded by the Department of National Defence (DND) or by public or private agencies, institutions, or companies whose primary aim is the production of military equipment, become axiomatically part of that whole infra-structure of the industrial/military complex which has only to do with war and power. Peace, on the other hand, can only come by challenging and changing the perspectives, attitudes, systems, and

structures which perpetuate Canada and Canadian universities' compliance in a growing global nuclear and traditional weapons arms race.

The financial and intellectual resources and the overall human energy committed to research that feed the military interests far outweigh any similar resources engaged in peace research. Few universities can boast of courses in conflict resolution, or of research into alternative social systems and structures which would contribute to a new peaceful planetary society, let alone a full-fledged "Peace Studies" program. Such courses, if they exist at all, are relegated to the not so prestigious under-funded arts and social sciences divisions, or come under the even less reputable area of "Women's Studies," while the powerful established science and engineering departments garner in major government and other research grants. The universities use buzz-words like "academic freedom" and "objectivity" as their justification for research that feeds the nuclear power interests. The result is an incredible imbalance in what can be perceived as military research and what would be peace research.

Does the university have a responsibility to redress this imbalance? Should it in any way support research which contributes directly or indirectly to the arms industry and specifically to the nuclear arms industry? Does it have a role in determining an alternative for the human race other than race suicide resulting from nuclear warfare, or genetic, ecological, and environmental destruction? I know of no university prepared to redirect its financial resources, and to encourage its faculties to put the same kind of energy into peace research that it gives to military research.

The world is far gone in the development of its negative capability, as opposed to any positive capability for enhancing our humanity, and the universities must accept a substantial share of the responsibility for this dreary fact. After all, skilled, sophisticated, and disciplined armies equipped with what the Stockholm International Peace Research Institute called "inhumane and indiscriminate weapons" do not result from the work, efforts, and decisions of the high school or undergraduate drop-outs. The graduates of our institutions supported by the research coming from many of our faculties are running these systems – systems, I regret to add, which have come out of linear thinking and a totally male-dominated culture, and systems which have contributed, over the last three centuries since the beginnings of the industrial age, to societies conditioned to believe that science and engineering can solve all human problems. In brief, this belief began as a belief in progress, and progress has come to mean more sophisticated, larger and more powerful machines and weapons which supposedly, in time of war, will defend us, give us peace, and make us secure and free. Progress in modern warfare techniques, as demonstrated in any number of war zones around the world, shows that now civilians are the casualties, not the soldiers. Use of nuclear devices, however, would not even allow for this type of discrimination.

Advanced military technology has come largely from scientists and engineers graduating from our universities, and their knowledge has contributed to the creation of a modern world where violence against nature and against people is the norm rather than the exception. Research done in university laboratories or done in private or government laboratories manned by university graduates which, willy-nilly, contributes to the production of more lethal weaponry for use by the military only ultimately contributes to the spread of violence around the world. Violence used in an effort to stop violence will only breed worse forms of violence. Violence is actually embedded in much of the technology used in all the mega-projects of an industrial society, and, as Dr. Ursula Franklin has stated, the ultimate mega-project is war. While the research done in many university labs contributes to a more violent society, little or nothing is done at these same universities about researching aspects of non-violence.

Is the university culpable? Only the blatantly dishonest would try to deny the responsibility of the academic community in contributing to the build-up of a military society. Those of us within the community will be totally lacking in courage if we try to ignore, now, our role in shifting the balance in order to create an alternative society committed to being socially peaceful, not militarily powerful.

My two fellow panelists, General George Bell (York University) and Dean Gordon A. Maclachlan (McGill University), have given no indication that they are looking for different roles for their institutions in terms of these issues of social responsibility. Both seem satisfied to maintain the status quo, and to defend the "objectivity" of any research paid for by the Department of National Defence. The fact that the Faculty of Education of McGill has initiated and sponsored this Conference, however, is a sign of growing concern within some faculties that the universities may be contributing to an unacceptable militarization of society as a whole. I congratulate, particularly, the McGill Employees for Nuclear Disarmament (MEND) who have focused attention on the moral dilemma and the current crisis facing universities over research projects supported by national defence monies and contributing to the spread of nuclear weapons.

What should be the response of universities and their faculties when invited to participate in national defence projects? It seems to me that to become involved in specific projects is to deny the time-honoured role of the university to educate people to think critically and to become citizens with some vision of the future, rather than merely to train them to accommodate themselves to current social structures and systems and to maintain the status quo. In order to perform its role as a genuine educational institution, the university must have a clear understanding of this role. Two of the best statements of the role of the university remain those found in Cardinal Newman's *The Idea of a University*, and in the many volumes of Karl Jasper's writings.

Newman wrote at a time when religious institutions were among the dominant powers of the time. He was determined to rescue the university from merely serving and perpetuating the interests, aims, and goals of the church. Students did not attend university merely to be vocationally trained as priests, or to conform as Catholics. The task of the university was to develop students who were critically minded as well as whole in body and spirit, and who would be stimulated intellectually to seek a "truth" which went beyond the limitations of accepted dogma and doctrine. Jaspers, writing at a later time, recognized that the university's role went far beyond the limitations of either church or state control. For Jaspers, the university was a "universe" in itself— that is an organic, not a static institution – one that was ever changing as opposed merely to expanding in conformity with other institutions and the dictates of the state. While Newman placed his emphasis on the "training of the intellect," Jaspers believed it was also important to develop the spirit. For Jaspers, spirit was the totality of intelligible thoughts, action, and feeling. The understanding of spirit and the requirements of spirit involve the process of fusing and of re-structuring all totality in a present which is never finished, yet always fulfilled. The real role and responsibility of the university, then, is to fuse all learning, but specifically the arts and sciences so as to bring both into coherence and clarity through ever more complex connections.

The modern university has drifted a very long way from any acknowledgment of any ideal aimed at seeking "truth" with integrity, coherence, and wholeness. Rather, most institutions espouse a secular philosophy of objectivity. The primary aim seems to be the stockpiling of specialized research in fragmented areas of knowledge. And the university assumes no responsibility for the application of this research.

Jacques Barzun, in *The House of Intellect*, warned against the "one-eyed specialists" in the 1950s. Today, many such specialists in the sciences profess themselves non-judgmental about the value or use made of their so-called basic research, even when it is directly funded by DND. My profound concern is aroused, not merely by the secular scientists' apparent indifference to the applications of their work, particularly when those applications feed the military machine, but also by the lack of interest within academe in maintaining any core of shared intellectual experience in overcoming the fragmented nature of research in the sciences, as well as in the humanities.

Universities, to a very great extent, have sold their souls to the State for funding. Wrapped in their "ivory-tower mythologies", they refuse to acknowledge that they have become a branch of the State. The integrity and the autonomy of the institution is compromised when research monies come directly from the military budget, regardless of the arms-length rationalizations of both professors and administrators. If the way to the research lab is paved with Department of Defence money, the application of

the fundings will be under military control and even classified research may be no exception.

The ways and means argument remains valid. If the ways and means to achieve the goals are corrupted, the aims and goals will be similarly corrupted. Aldous Huxley, like Newman and Jaspers before him, also had much to say about the role and responsibility of university educators. In his anti-utopian novel, *Brave New World*, written in the 1930s, he clearly illustrated where science and technology could lead us if once under the control of political leaders motivated by desires for power. Thirty years later, Huxley wrote *Brave New World Revisited*, a treatise on modern education. The only hope humanity has of escaping the horrors of a scientific-technological totalitarian state is to provide the kind of education which will make graduates critical of the status quo. What is needed now is a willingness on the part of university administrators and faculty to redefine the mission of the university, and to restructure the programs in such a way that a new generation of graduates could help create a new and different environment for the planet, worthy of *homo sapiens*. If we remain committed, however, to serving only the established interests, we will only succeed, to use Jonathan Schell's term, in making the planet "a republic of insects and grass."

Clearly, some judgments will have to be made about what is, and what is not acceptable research for a university. If some funding must be rejected – so be it. These judgments should be made by the professors and administrators themselves. But academics can no longer take cover in materiality or in haphazard acts. "Academic freedom" has for too long been a smoke-screen for irresponsibility. University leaders must become persons of vision who can make informed judgments; persons who understand the role of the university, as Jaspers described it, and who recognize the need to aim for the "totality of human experience." The ultimate question to be asked of science is: Will this research enhance or diminish the quality of human or animal life on this planet? Research that is linked in any way to the nuclear arms race cannot be permitted, no matter how large the research grant may be, because the evidence already exists which demonstrates how totally devastating are the results of using nuclear bombs. It is possible for scientists and others within the university to change their "ways of thinking." A commitment to such change should begin with putting the intellectual and financial resources of the university as much at the service of the peace interests as it now is of the military.