
Remarks of Dr. Sherwood L. Fawcett,
President of Battelle Memorial Institute,
at Winter Quarter Commencement,
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Members of the Board of Trustees of The Ohio State University, Mr. President, Faculty, Graduates, Families, and Friends:

I am highly honored to be with you today and to make a few remarks upon this very important occasion. For you graduates, this is the day you launch your respective careers and enter into your most creative and productive years.

We are here today, of course, primarily to recognize you who are graduating. You have successfully pursued your college education, and collectively your accomplishments are significant. The accomplishments of your *parents also* are significant. We normally think of parents as providers of the economic means for you as students to achieve your educational goals. However, they have provided also some important intangibles that you may only now be beginning to perceive. To recognize parents, then, I propose that we engage in an exercise that I would identify as an inverse transmission of nobility. You are familiar, of course, with the European custom of passing along honors or the rank of nobility to future generations. I would propose—for this occasion at least—that we temporarily adopt the Chinese custom. As Ortega y Gasse points out, the Chinese “*invert* the order of transmission—it is not the father who ennobles the son, but the son, who by acquiring noble rank, communicates it to his ancestors.” This inverse transmission of nobility tends to symbolize the idea that a great man is great, in part, because he happened to have lived at a point in history where things popped, but that it

Our increasingly affluent society also is marked by an increase in pollution:

Each year, each of us generates, directly or indirectly, 1200 pounds of toxic wastes which are dumped into our atmosphere.

Similarly, about 20 percent of our fresh water supply is now used to carry the wastes from our homes and industries to our rivers. Because of the population growth and our expanding affluence, at the present rate of increase, the next 40 years might see this fraction grow to the point where the dispersal of our wastes would require 85 percent of the country's entire fresh water supply.

In addition to its use as a waste carrier, water is also used for industrial cooling purposes. By the time you in this class retire, if the present trend continues, the waste heat from electric power generation alone would be enough to raise the average temperature of our daily water supply by 18 degrees.

I could go on and continue to quote statistics which would show that things are in a terrible state. In fact, if you would be willing to agree that the end of civilization would be at hand when all of the dryland surface of the earth is just as crowded as Manhattan Island is today, I could tell you that if the present trend continues, this will occur by 2347 A.D.—only 378 years away. This may seem like a long time away, but it is equivalent in time past to when the first American settlers were born (1591).

These projections are frightening, to say the least. *But you may take comfort in the knowledge that they are all wrong—completely wrong.*

And why? Because civilization and its components do not change at a constant rate. Fortunately, the human race is capable of technological innovation—social, economic, cultural, and scientific—and these innovations exert forces that affect the rate, the direction, and the nature of change. The challenge for you—and for each of us—is to create the necessary innovations and to pro-

vide the leadership so that these innovations are introduced into our society in the proper way and at the proper time. This is the course by which we can save ourselves from disaster and improve the quality of life, not only for ourselves but for future generations as well.

Thus, the awful future world I just pictured through the projection of some statistics will not take place because we are in a continuous changing process. These changes are brought about by creative innovations throughout the many facets of human endeavor. For example, innovations in the form of medical discoveries, such as the development of new drugs and new surgical techniques, have significantly affected the growth of population in the past. They will certainly affect its quality and control in the future.

Innovations in social understanding and education and their application to government can and will be found to control our crime rate. Similarly, the science and engineering which created so much of our age of affluence can and will turn its creativity to reducing man's insults to his environment.

It must be emphasized that these innovations take time and must be introduced into our society in a constructive manner if the resultant change is forward gain.

There is a very human tendency to want things to happen fast—to want to resolve a problem quickly and decisively.

As John W. Gardner, former Secretary of the Department of Health, Education, and Welfare, states in his book *No Easy Victories*, we must find ways to "preserve our aspirations . . . and at the same time develop the toughness of mind and spirit to meet the grave crises ahead."

He goes on to say, "How can we make people understand that if they expect all good things instantly, they will destroy everything? How do we tell them that they must keep unrelenting pressure on their social institutions to accomplish beneficial

change but must not, in a fit of rage, destroy those institutions?"

He points out that, ". . . Elements of dynamism must have their stabilizing counterparts. One is a tough-minded recognition that the fight for a better world is a long one. . . . The other is an unswerving commitment to keep the public peace."

It is true that the human race and the systems it uses to educate and govern itself are imperfect. But it is equally true that mankind and its educational and governmental systems have come a long, long way, and have made great forward strides in recent years. In fact, there are some who raise the thoughtful question that our rapid and multitudinous successes themselves may have contributed to a feeling of frustration and failure.

Lee A. DuBridg, former president of the California Institute of Technology and now President Nixon's science advisor, wrote recently:

"A few hundred years ago no one understood anything about the nature of the universe—and everyone was apparently happy. Today we are overwhelmed with knowledge—and we scream with pain because we don't know everything . . . Success has . . . led . . . to rising expectations and to mounting accusations of failure. Or so it seems . . . American higher education is in fact zooming ahead to new heights of achievement . . . Imperfections are there. It is hard to keep pace with a rapidly changing world. These imperfections are going to be cured—not by wrecking but by improving the structure which carries the torch of learning, the torch of civilization, on to future generations."

Thus, while it is important and vital that there be innovations and changes in our society, it is equally important and vital that they be introduced in a constructive manner.

At this point you probably would like to know what changes will be made during the next 40 years. So would I. I don't know, of course, and I don't pretend to know all of the wonderful things that are going to happen. However, if we were doing some master long-range planning in order to assign priorities to our effort to produce necessary change, I think we might categorize technological innovations and the changes they bring into three kinds.

First, some changes *will be made*, and present trends will be altered, because they *have to be* in order for civilization to survive. These innovations will deal with pollution, with living conditions, with crime, with population control, with education, and with the real equality of opportunity for *all*. You graduates will be dealing with these problems as priority items because, as I have said, you simply *have to* in order to survive.

Second, there also will be those changes that add to the quality of life. These are innovations that make life easier, healthier, more enjoyable and worthwhile. In the recent past, these innovations were typified by the development of computers, transistors, medical drugs, new food and convenience products, and new materials of all kinds.

Third, there will be innovation and areas of probing and searching that will be undertaken because man was made in the image of God and seems to be continually searching in many ways to express himself, to communicate with his Creator. Thus, there will be innovations created in new knowledge about the universe, in searches of discovery to the moon and the planets, in more insight into the inner structure of matter, in the formation of the life process, and new experiences and expressions in the arts.

We know, therefore, that we can look forward to change in all these ways, and that the changes will come faster than ever before. We should accept this inevitability without trepidation. The ability to create and utilize innovations is the vital element that

distinguishes us from other animals. As a matter of fact, innovation is part of our national heritage. Our country has been dedicated to innovation from its very beginning. Our system of government was a complete innovation from the past. Our enduringly viable capitalistic system is designed to meet and make the most of change; it is designed to help encourage improvement through competition, and to reward its citizens on the basis of their contributions. At times, as we are now witnessing, innovation and change tug and strain at the fabric of our society. The challenge, then—yours and mine—is to incorporate innovation and change into our society in an orderly and beneficial manner.

With these thoughts in mind, I say to you graduates of this class of 1969: Welcome! Welcome, if you will, to "The Establishment"—if that is what you want to call the system we have evolved for the orderly conduct of life on this planet. Welcome to the exciting—and to the tough and agonizing—problems that lie waiting for your energy, for your creativity, and for your leadership to solve. *You* have the chance to do everything right—if you can just determine what right is. The problems you will face, I insist, *are* solvable. The American Dream of a good life for everyone *is* achievable. Man *can* live in harmony with himself and with his environment.

I have presented some of the problems you will face and I have suggested that solutions are to be found in innovation and orderly change. These are the Keys to Tomorrow.

Your quest is to find those innovations that will lead to desirable changes. In your quest, may you be guided by your ideals; may you have courage and know how to use it; may you have positive perception to overcome the threat of failure, and—above all—may you have a sense of humor.

Congratulations and good luck!