

Universidad Nacional de Cordoba

Academic Responsibility in Our Time

Estimados señoras y señores míos.

Muchas gracias por el honorificio grande!

*Hay un delectacion excepcional di estar asociado
con el Universidad renombrado de Cordoba.*

Cordoba has had a long and glamorous history. And indeed, el Universidad Nacional de Cordoba is well known as the oldest one in the country with a glorious past. However, we scientists at universities often dislike historicity and consider it more important to prepare the future of our scientific discipline, of the country, and of the global society. We prefer to look forward. But without a well founded historic background we can not build a stable new edifice. Knowledge of the past is indispensable in this regards. Our future depends on the past.

Each country has had its bright times and also its darker periods, Argentina as well. The bright times give us confidence that we are on the proper track; the darker periods allow us to learn from our own mistakes and from those of our ancestors. - One often says that history repeats itself, and that knowledge of the past can be a safe guide for the future. - I am not so sure about the repetition. I think it is more important to recognize the particularities of the present that differentiates it from the past. Only in this way we can appreciate our own, very special responsibilities of today.

Who would dare to claim that mankind has ever been in a similar situation as we are today! - But what is so special about our time? – Sometimes, it is claimed that mankind never had so many possibilities, good ones as well as evil ones. I am convinced that our world abounds more in limits than in opportunities, that we have opened indeed Pandora's box. Nevertheless, we still believe in unlimited growth opportunities in a materialistic sense, earning more and becoming wealthier. And we still believe that wealth leads to more happiness. But when we are truly honest, we recognize that limits dominate our life. Of course, limits present also opportunities, perhaps even more so than discovering an unexpectedly rich gold mine.

We all know where our limits are. The famous book “The Limits of Growth”, written by the Club of Rome, has opened our eyes 34 years ago. Not all predictions have been happening, fortunately. But the feeling of living in a world of limits has constantly grown since then. Let me just mention a few of the most threatening limits:

1. The emerging and threatening environmental catastrophe. Let me recall randomly a few examples from Argentina's recent past:

(i) Glaciers in Patagonia have receded by an average of almost a mile (1.5 km) over the last 13 years. There has been an increase in maximum, minimum, and average daily temperatures of more than 1.8⁰F over the past century in southern Patagonia, east of the Andes.

(ii) Buenos Aires had the heaviest rains in 100 years in May 2000. 13.5 inches (34.2 cm) of rain, more than 4 times the average monthly rainfall, fell in just 5 days. Northeastern Argentina is exhibiting a long-term trend of increasing precipitation.

(iii) 3.7 million acres (1.5 million hectares) burned in La Pampa province, sustained by record temperatures and persistent drought.

(iv) The worst flooding on record, happened August to October 2001 in the Pampas region. Nearly 8 million acres (3.2 million hectares) of land in the Pampas region were flooded after 3 months of high rainfall. Mean annual precipitation in the humid Pampa increased by 35% in the last half of the 20th century.

2. The shortage of energy resources. The energy consumption has gone up by more than a factor 2 in the past 30 years in Argentina and 95% of the energy is of fossil nature. However, fossil fuels will cease to flow in the course of the next 30 – 50 years.

3. The growing population numbers (in Argentina a factor 2 since 1954, a factor 4 since 1922, a factor 8 since 1901, a factor 16 since 1879, and a factor 32 since 1855, initially a doubling in 20 years with some slow-down today) and the shortage of food and clean water world-wide.

In Argentina, for example, the rates of poverty and extreme poverty rose from 22.6% and 4.5% in 1992 to 54% and 27.7% in 2002, at the height of the economic crisis, according to figures from the National Statistics and Census Institute. This situation led the government of President Néstor Kirchner to adopt a number of social programs that

include the distribution of food aid and the provision of a monthly subsidy of 150 pesos (52 dollars) to unemployed heads of households. Modest economic recovery has now reduced the number of people relying on these programs from 2.2 million to 1.5 million.

4. The growing egoism and the loss of ethical values worldwide are facts that are difficult to measure in numbers.

5. The widening gap between the haves and the have-nots happens within and between countries all over the globe.

6. The political imbalance on the globe with one single major player is a major threat for global stability. The follies of a small group of egomaniac and short-sighted politicians can damage the world for a long time to come. You certainly remember such events from the past only too well.

7. The growing power of international companies that became more powerful than the State governments render a controlled development of the world economy almost impossible.

8. The progress of globalization in the face of a glaring absence of strong international organizations and laws tends in the same direction.

9. Many of us would claim: **Terrorism** is the major problem of today! Let us eradicate the evil ones! And then, we can live again peacefully, nearly in paradise! – I have to admit, I hate the word terrorist more than any other recently created term. I hate it because it implicitly leads to incorrect accusations and actually to a reverse of causes and consequences. Many terrorists, in particular suicide bombers, are

people who have lost all hope and all means for shaping a better future for themselves and for their children. Ultimately, they have nothing else to sacrifice than their own life. That is truly an indication of ultimate desperation. May be, some of them are instrumentalized and manipulated, but still their deeds are an expression of desperation in that particular society.

All of the above mentioned limits might lead to the appearance of terrorism. For me, terrorism is just a symptom, and fighting symptoms often makes the situation even worse in the longer run. This is the reason why I hate the term terrorism in its present connotation.

I do not have the time or the detailed knowledge to discuss all of the mentioned limits in depth. Many of them are strongly interrelated. For example the emerging environmental catastrophe has much to do with the growing energy calamity; and both are connected with the growth of population numbers and with their growing demands for a decent life.

Several of the emerging problems have also to do with our most precious good for which generations before us have been fighting and sometimes lost their lives: **freedom!** Freedom we consider as the most valuable human value, and indeed, it forms a central part of the human rights, as declared by the UN on December 10, 1948. The articles most relevant in our context are cited below. ^(a)

No question, the human rights declaration is as important as the Ten Commandments of Christianity, Judaism, and Islam, or the Four Noble Truths and the Eightfold Path of Buddhism. Nevertheless, the term "freedom" is often misused and re-interpreted in order to justify unlimited egoism and selfishness. The misinterpretation originates often from the most right-wing parties, for example in Switzerland and in the US; I do not know the situation in Argentina well enough to make a judgment.

The practical misuse happens widely in numerous competitive situations in economy where making profits justifies virtually all means and deeds, as long as they are not strictly illegal. Free market concepts are governing the business world worldwide. Often claim are publicised for a reduction of the State power and a reduction of taxes to lend more financial freedom to individuals in order to better enjoy life, often by spending money in a senseless way which leads to a plundering of resources and to misleading industry for producing virtually useless goods, just for increasing sales and profits.

Even worse is the situation regarding the interaction between Nations. The international laws are so weak and not ratified by some of the most influential countries that few of the stronger countries care much about law, and do what is to their own advantage. Here, it becomes quite obvious that freedom applies at very first to those who can misuse it to their personal profits. The weak ones have to take what remains. Their freedom is indeed minimal.

In more than one sense, South America is an area of common interests, of common past, of similar languages, and hopefully of a common beneficial future. But to implement the latter one, much collaboration will be needed. Why not envision, in analogy to the successful European Union, a South American Union that could lead to stability, to prosperity, and to a common South American spirit! Indeed it seems to be a must to strengthen South America, knowing from past experience how disastrous the effects of external influences from North America can be.

Globalization has become a fact with its pros and cons. On the first sight, it seems to increase the freedom and possibilities of markets, of travel, of cultural exchange. But after all, the increase of global responsibility is even larger and more relevant than the increase in global freedom. Suddenly, we became responsible for nearly all events on earth. We can no longer claim, we did not know, or we do not have to be concerned, or to help. Globalization has removed all the barriers and all excuses of not getting involved, at least mentally. Globalization has created a very urgent necessity of creating gripping international laws and institutions that can implement and enforce the laws with all necessary means.

But responsibility also has its limits. Responsibility does not necessarily mean to have to interact and to enforce one's own ideology. Iraq is a tragic example demonstrating the possible consequences. Even if responsibility was, in this case, only a superficial excuse for gaining commercial influence, the example

demonstrates that responsibility requires at first to develop comprehension and long term vision without immediate action. Responsibility can never imply to restrict the freedom, the liberty of action of others. Often, responsible action might even imply to do nothing.

Why do I mention all these concerns at the peaceful Universidad Nacional de Cordoba? My motivation is my observation that many academics consider research and teaching (in this order of importance) as our only relevant obligations. These two tasks are, in deed, clearly specified in our employment contracts as professors, or lecturers, or researchers.

For me, teaching is of more immediate importance than research. Sometimes, one might even claim that research is our passion and teaching our duty! Indeed, research is by far the best means for learning. Learning by doing is of highest efficiency. I often say that we do not need “teachers”, we need “motivators” who inspire the students who then learn by themselves, and most efficiently again by doing experiments in the laboratory or even better by a stage in real life in industry, in a hospital, or any other public institution.

The future is our students! They will become the politicians, the industrialists, and the leaders of tomorrow. They need the proper inspiration and proper incentives for their future career. Working for years on an exotic effect in physics, on a difficult chemical synthesis,

or on a complex biological pathway may be fascinating and also important, but it is not sufficient.

The leaders of tomorrow need more than an excellent specialized education! They have to learn to reflect on the most relevant problems of our world, and they need to develop foresight concerning the possible consequences in their own life, in the one of their children and grandchildren. Modelling of the future for detecting novel avenues that might be more beneficial for mankind shall be a primary academic activity.

And as always, the best educator acts by his own example. When a professor shows openly his disinterest in public affairs, the students will neglect them as well. This implies that the universities must become radiating centres of societal and cultural concern.

Obviously, it is insufficient to keep all the precious wisdom inside of the ivory tower. The mentioned radiation must pass through the university's walls and inspire also the general public, particularly its leaders. This means that the university's faculty has also a teaching or inspiring obligation outside of the university. Public teaching is highly important. But obviously, if we want to teach to the public, we have to have to say something of relevance to the public and not just try to bore the audience with the details of our research work. It also requires learning to speak a language that the public can understand.

Last year, I helped organizing a public event that turned out to be a great success. ETH Zürich celebrated its 150 Years Jubilee. On this occasion, we decided to send 150 professors onto the streets of Zürich for public teaching and interaction. We constructed circular pavilions for about 80 people and placed them on a few important and well frequented places of down-town Zürich. In these “temples of science”, within three weeks, 430 lectures were given by the 150 professors who offered their services. Even more important than the lectures in the usually overfilled pavilions were the discussions with the public. They generated a lot of valuable feedback and a lot of goodwill in the public. The professors liked these events, and we hope to be able to repeat them soon.

In addition, we erected just near the main railway station a scientific experience park with displays and with the possibility of hands-on experience. Here life-long-learning became a reality. Again, this park turned out to be a great success with 220'000 visitors in three weeks.

Life-long-learning is indeed a responsibility of universities that is often neglected. It has two aspects, first to offer possibilities for the general public, as the ones mentioned above. But secondly, also the continuous training of academics and engineers in the professional life is of great relevance. To offer appropriate courses to them for their renewal of their knowledge and skills is highly demanding. It requires from the teachers that they also have at least the same level of practical knowledge as the practitioners in industry. This requires regular stages of the professors in industry. Their ivory tower

knowledge is in no way appropriate for life-long-learning activities. Such stages in industry could also be beneficial for rendering the student's teaching more relevant.

I hope that I have made it clear that academic responsibilities at universities are not restricted to scientific research and to specialized teaching but that the spectrum of responsibilities is much wider. These responsibilities serve just one single purpose, namely to help preparing a global future beneficial to many generations to come on a global scale. This requires a lot of foresight. It also requires the convincing power to influence politicians, entrepreneurs, and the general public to exert wisdom and restraint when dealing with aspects of life that may have long-term effects.

Let us keep in mind that we can not deny responsibility by blaming other for their mistakes and their selfishness. I would like to end my brief lecture with a quote of the famous philosopher Karl Popper who said the highly relevant words: *"Optimism is our duty, because we all are co-responsible for what will come. It is our duty, instead of making doomsday predictions, to engage for all those measures that can make the future better."*

To the University I would like to express my infinite gratitude for the great honour presented to me. I know that the students and academics of Cordoba have significantly influenced national politics in the past. I hope that they will contribute beneficially and foresightful also in the future.

Thank you all for your attention. Muchas gracias por prestar atención!

- (a) **Article 1.** All human beings are born free and equal in dignity and rights. They are endowed with reason and conscience and should act towards one another in a spirit of brotherhood.
- Article 2.** Everyone is entitled to all the rights and freedoms set forth in this Declaration, without distinction of any kind, such as race, color, sex, language, religion, political or other opinion, national or social origin, property, birth or other status. Furthermore, no distinction shall be made on the basis of the political, jurisdictional or international status of the country or territory to which a person belongs, whether it be independent, trust, non-self-governing or under any other limitation of sovereignty.
- Article 3.** Everyone has the right to life, liberty and security of person.
- Article 4.** No one shall be held in slavery or servitude; slavery and the slave trade shall be prohibited in all their forms.
- Article 7.** All are equal before the law and are entitled without any discrimination to equal protection of the law. All are entitled to equal protection against any discrimination in violation of this Declaration and against any incitement to such discrimination.
- Article 8.** Everyone has the right to an effective remedy by the competent national tribunals for acts violating the fundamental rights granted him by the constitution or by law.
- Article 12.** No one shall be subjected to arbitrary interference with his privacy, family, home or correspondence, nor to attacks upon his honor and reputation. Everyone has the right to the protection of the law against such interference or attacks.
- Article 13.** (1) Everyone has the right to freedom of movement and residence within the borders of each state. (2) Everyone has the right to leave any country, including his own, and to return to his country.
- Article 17.** (1) Everyone has the right to own property alone as well as in association with others. (2) No one shall be arbitrarily deprived of his property.
- Article 18.** Everyone has the right to freedom of thought, conscience and religion; this right includes freedom to change his religion or belief, and freedom, either alone or in community with others and in public or private, to manifest his religion or belief in teaching, practice, worship and observance.
- Article 19.** Everyone has the right to freedom of opinion and expression; this right includes freedom to hold opinions without interference and to seek, receive and impart information and ideas through any media and regardless of frontiers.
- Article 20.** (1) Everyone has the right to freedom of peaceful assembly and association. (2) No one may be compelled to belong to an association.
- Article 22.** Everyone, as a member of society, has the right to social security and is entitled to realization, through national effort and international co-operation and in accordance with the organization and resources of each State, of the economic, social and cultural rights indispensable for his dignity and the free development of his personality.
- Article 23.** (1) Everyone has the right to work, to free choice of employment, to just and favorable conditions of work and to protection against unemployment.
- Article 26.** (1) Everyone has the right to education. Education shall be free, at least in the elementary and fundamental stages. Elementary education shall be compulsory. Technical and professional education shall be made generally available and higher education shall be equally accessible to all on the basis of merit. (2) Education shall be directed to the full development of the human personality and to the strengthening of respect for human rights and fundamental freedoms. It shall promote understanding, tolerance and friendship among all nations, racial or religious groups, and shall further the activities of the United Nations for the maintenance of peace. (3) Parents have a prior right to choose the kind of education that shall be given to their children.
- Article 28.** Everyone is entitled to a social and international order in which the rights and freedoms set forth in this Declaration can be fully realized.
- Article 29.** (1) Everyone has duties to the community in which alone the free and full development of his personality is possible. (2) In the exercise of his rights and freedoms, everyone shall be subject only to such limitations as are determined by law solely for the purpose of securing due recognition and respect for the rights and freedoms of others and of meeting the just requirements of morality, public order and the general welfare in a democratic society. (3) These rights and freedoms may in no case be exercised contrary to the purposes and principles of the United Nations.