

## *Chapter 3*

### *Universities as dynamic systems of contradictory functions*

Manuel Castells

Universities are institutions that in all societies, throughout history, have performed basic functions that are implicit in the role that is assigned to them by society through political power or economic influence. These functions, and their combination, result from the specific history of education, science, culture and ideology in each country. However, we can distinguish four major functions at the theoretical level whose specific weight in each historical epoch defines the predominate role of a given university system and the specific task of each university within the overall university system.

Firstly, universities have historically played a major role as ideological apparatuses, rooted in the European tradition of Church-based universities, either in the statist version of the French, Italian or Spanish universities (closely linked to the religious orders, to the Roman Catholic Church and to the national or local states) or in the more liberal tradition of theological schools of Anglo-Saxon variety, ancestors of the liberal arts colleges. The formation and diffusion of ideology has been, and still is, a fundamental role of universities, in spite of the ideology of their ideology-free role.

However, we must consider this role in the plurality of ideological manifestations. Ideological apparatuses are not purely reproductive machines, as seen in the functionalist theory exemplified by Pierre Bourdieu (1970). They are submitted,

as Alain Touraine has shown (1972), to the conflicts and contradictions of society, and therefore they will tend to express – and even amplify – the ideological struggles present in all societies. Thus, both conservative and radical ideologies find their expression in the universities, although the more the ideological hegemony of dominant elites is established in society at large, the more conservative ideologies tend to be predominant in the university, with the expression of radicalism being confined to a minority of the student body as well as to some ‘official radicals’ among the faculty members, tolerated on behalf of the necessary flexibility of the system. On the other hand, the more the socio-political rule of society relies on coercion rather than on consensus, the more universities become the amplifiers of the challenge to domination in society at large, as is often the case, for instance, in Latin America (Nassif et al. 1984). In such cases, universities are still predominately ideological apparatuses, although they work for social change rather than for social conservatism.

Secondly, universities have always been mechanisms of selection of dominant elites. Included in such mechanisms, beyond selection in the strict sense, are the socialisation process of these elites, the formation of the networks for their cohesion, and the establishment of codes of distinction between these elites and the rest of the society. The classic liberal arts college in the Anglo-Saxon tradition, including the Oxbridge version of theological schools, or the state-based European universities, played a fundamental role in the formation of the new elites of the proto-industrial and industrial societies, as family heritage was eroded in its legitimacy as the sole source of social power. Without substitution for the ideological role of universities (and actually frequently overlapping with it), elite selection and the formation of social networks became the backbone of the leading institutions of the university system, actually constructing the internal hierarchy of such systems on the basis of a scale of proximity to the values and standards generated in such institutions. The English system, built around the undisputed dominance of Oxford and Cambridge, is probably

the quintessence of this elitist role of the university, an extremely important function in any society. But the role played by Ivy League universities in the United States, by the University of Louvain, based on the influence of the Catholic Church in Belgium, or by the University of Moscow in the Soviet Union, is in fact very similar, and reproduces the process of elite selection and formation, while adapting it to the historical and cultural characteristics of each society.

The elite selection function should not be associated necessarily with private universities oriented toward the aristocratic or bourgeois elites. For instance, in France, where the service of the state was traditionally the noblest function, carrying with it the highest power and prestige, the elite university is fully institutionalised in the system of the *grandes écoles*, loosely connected to the university system, but largely independent from it. As is well known, the *grandes écoles* prepare exclusively for civil service, with the graduates committing themselves to at least ten years of service to the state. At the top of the technical *grandes écoles*, the École Polytechnique is technically linked to the French Army, and although the great majority of its graduates have probably never touched a gun, they keep climbing in the hierarchy of army officers, since their 'active duty' generally takes place in the technocracy of the French state.

As a sign of the dominance of the state over private firms in France, the elite of industrialists (but also of leading managers) is often recruited among former graduates of the *grandes écoles*, after they have accomplished their 'tour of duty' in government. Thus, elite-oriented universities are linked to the specific history and composition of elite formation in each country.

The science-oriented university came, in fact, very late in history, in spite of the practice of science in universities in all times, including the achievement of fundamental scientific discoveries in universities that were by and large ideological apparatuses. The first universities focusing on science and research as a fundamental task were the leading German universities in the second half of the 19th century, although there were a few early transfers of the

science university model to the United States, particularly the Johns Hopkins University, built around the Medical School.

What seems today to be the third and most obvious function of the university, that is, the generation of new knowledge is, in fact, the exception throughout the world. In many countries it had not yet been fully recognised as a fundamental task by the political institutions and private firms until the coming of the current technological revolution, when the examples of the decisive influence of American science-oriented universities in the new processes of economic growth (the 'Silicon Valley syndrome') won the reputation of being 'useful and productive' for the universities of the Information Age. However, this shift in the conception of the university's role should not overlook the fact that in most of Europe, research has been institutionally separated from higher education and confined into scheduled 'National Scientific Research Centres' of the French, Spanish or Italian type, while the German model (still operating on the principle of separation between teaching and research) has been somewhat more flexible in the interaction between the two functions. Many European governments have assumed the functions of scientific research in specialised institutions – not trusting the universities, which are considered too vulnerable to student pressures. In other areas of the world, particularly Japan, private firms have also distrusted universities as research-oriented organisations, and many have their own in-house research laboratories supported by government funds, directly linked to these firms' needs and orientations.

The popularity of the research-oriented university came from the success of such models in the American university system. Both private universities, modelled after pioneering engineering schools such as the Massachusetts Institute of Technology (MIT), Stanford or Caltech, and public universities endowed by Land Grant policies, particularly in the Midwest and California, played a fundamental role in generating new knowledge and in using it to usher in a new era of industrialisation on the basis of new technologies (Veysey 1965). But, while this model is now vastly

imitated throughout the world, it is very specific to America (although, as mentioned, it originated in the German university experience), and remains the statistical exception among universities, even in the United States where only about 200 of the 3500 universities and colleges can be considered as knowledge producers at various levels.

The science university in the United States received a major boost from the military needs of government, during both World War II and the Cold War, since new technologies became critical to assess the American military hegemony in the second half of the 20th century. However, the interesting fact is that the science university model became fully developed in America only as an expansion of the role of another model of university, centred on a different function: the professional university.

The professional university is the university focused on a fourth function, perhaps the largest and most important nowadays: the training of the bureaucracy. This has always been a basic function of the university, since its days as a Church school when it specialised in the formation of the Church bureaucrats. And it was certainly the focus of the Napoleonic model of university that inspired most European universities, or of the traditional Chinese university system, structured around the preparation of the Imperial system of examinations as a form of access to the state bureaucracy, and a model that certainly inspired the Japanese and Korean systems. The training of the bureaucracy, be it the Imperial service or the plethora of lawyers that populated the Italian or Spanish administrations, was (and is) a fundamental function of the university in most countries.

Thus, much of the university system is rooted in a statist tradition. However, when the process of industrialisation required the training of a mass of engineers, accountants, economists, social workers and other professions, and when the expansion of the health and education systems demanded millions of teaching staff and medical personnel, universities were called upon to provide both general and specialised training for this massive, skilled labour force. At the same time, they had to equip themselves

to accomplish this function, thus becoming large consumers of their own production. The professional university, focusing on the training of the labour forces, was particularly successful in those countries where it was close enough to the industrial world to be useful for the economy, but not so close that it would lose its specific role vis-à-vis the short-term interests of particular segments of the industry.

Thus, the Land Grant universities in the United States created by state governments to fulfil the development tasks of the regional economy were the exemplary experience that opened the path for future professional universities. The agricultural schools of California and Wisconsin or the engineering schools of Michigan and Illinois, generated a culture of close interaction between the university and the business world, providing the ground for the expansion of the role of these universities in the whole realm of science, technology and the humanities, but always closely linked to their original developmental tasks. The American university experience is better represented by the professional model epitomised by MIT or Wisconsin than by elite universities such as Yale or Stanford, regional varieties or reproduction of social elites. The science-oriented university came later, and developed both on the basis of the elite university and of the professional university, until forming a more complex structure in which several functions interact with each other.

However, for the purpose of the analysis presented here, the important fact is that it was the professional university that gave birth to the science university as the needs of the economy made research increasingly important as a strategic tool to enhance productivity and competitiveness.

The ability of universities to generate research while disseminating it into the industrial world was critical for the university to keep its training function together with its scientific function (Wolfe 1972). On the other hand, those universities, as in the socialist countries, that became completely submitted to the needs of the labour market in the context of a planned economy were, in fact, unable to perform their training function, even less their

research function (Peper 1984). This was because in a world where technology is rapidly changing, the critical training for engineers and technicians is the one that enables them to constantly adapt to new technologies. Engineering training that was obsolete as soon as the young engineer would quit the school, actually making him or her entirely dependent on his or her training on the job – that is exactly the contrary function that the university is supposed to perform, although practical experience is always critical in adapting and applying general knowledge. These four functions (generation and transmission of ideology, selection and formation of the dominant elites, production and application of knowledge, training the skilled labour force) represent the main tasks performed by universities, with different emphases on one or another according to countries, historical periods and specific institutions.

But universities as organisations are also submitted to the pressures of society, beyond the explicit roles they have been asked to assume, and the overall process results in a complex and contradictory reality. In many societies, and certainly in the West, the demand for higher education has reached the status of a social need, regardless of the actual functional requirements of the economy or of the institutions.

This social need, as expression of the aspiration of all societies to upgrade their education, has led to the so-called ‘massification of the university system’, as the institutions respond to excess demand by downgrading some elements of the system and transforming them into reservoirs of idle labour, a particularly useful function if we consider that this idle labour is in fact formed by potentially restive youth. Thus, an implicit function of modern university systems is that of surplus labour absorption, particularly for those lower-middle class sectors who think their children are entitled to social mobility through the university system. But the more a university system is able to separate this ‘warehouse function’ from the rest, the more it is both successful and unjust. The more a university system is politically or socially forced to make coexist the implicitly excluded segments with its productive functions, the less effective it is, actually disintegrating

into various organisational systems that try to recreate social segregation outside the formal institutional system. Indeed, the critical element in the structure and dynamics of the university system is their ability to combine and make compatible seemingly contradictory functions which have all constituted the system historically and are all probably being required at any given moment by the social interests underlying higher education policies. This is probably the most complex analytical element to convey to policy-makers: namely, that because universities are social systems and historically produced institutions, all their functions take place simultaneously within the same structure, although with different emphases. It is not possible to have a pure, or quasi-pure, model of the university.

Indeed, once the developmental potential of universities has been generally acknowledged, many countries try to build 'technology institutes', 'research universities' and 'university-industry partnerships'. Thus, after centuries of using universities mainly as ideological apparatuses and/ or elite selecting devices, there is a rush of policy-makers and private firms toward the university as a productive force in the informational economy. But universities will always be, at the same time, conflictual organisations, open to the debates of society, and thus to the generation and confrontation of ideologies. The technocratic version of a 'clean', 'purely scientific' or 'purely professional' university is just an historical vision sentenced to be constantly betrayed by historical reality, as the experience of the rather good quality Korean universities, never tamed by the government in spite of its political control, clearly shows. The real issue is not so much to shift universities from the public arena to secluded laboratories or to capitalist board meetings, as to create institutions solid enough and dynamic enough to withstand the tensions that will necessarily trigger the simultaneous performance of somewhat contradictory functions. The ability to manage such contradictions, while emphasising the role of universities in the generation of knowledge and the training of labour in the context of the new requirements of the development

process, will condition to a large extent the capacity of new countries and regions to become part of the dynamic system of the new world economy.

To assess the role and tasks of Third World universities in the development process we must first consider their specificity against the background of the analytical framework presented in this paper. It is certainly simplistic to consider altogether the diversity of institutions and cultures that are included in the ambiguous term of the 'Third World university'. Yet, with the important exceptions of China and Thailand, the specificity of the university system in the Third World is that it is historically rooted in its colonial past. Such specificity maximises the role of universities as ideological apparatuses in their origins, as well as their reaction against cultural colonialism, but emphasises their ideological dimension in the first stage of their post-independence period.

Indeed, in the case of the British colonies, the report of the Asquith Commission (1945) set up the conditions for the organisation of universities in these colonies around the model of the British civic university. In the case of the French colonies in Africa, a meeting in 1944, held in Brazzaville by the French provisional government, saw the universities as an extension of the French university system, and organised them as preparing the best students to follow their training in the metropolis (Sherman 1990). An even clearer expression of direct cultural imposition is the case of Zaire, where the Louvanium University Centre in Congo was an extension of the Catholic University of Louvain.

Even modern universities today, such as the University of Hong Kong, appear to the visiting faculty members, including this author, as pure British exports, keeping all the imperial flavour of Kipling's writings. As for Latin America, the much earlier independence date makes the origins of universities appear less directly relevant to their current role. However, the statist-religious character of the colonial foundations of the university system still permeates the structure and ideology of contemporary colleges, emphasising ideology and social status over the economic and labour functions of most Latin American universities (Solari 1988).

The recruitment of social elites, first for the colonial administration, later on for the new political elites created with independence, became the fundamental function of universities in the Third World. Because the political regimes were unstable for a long time, universities – in Latin America for two centuries and in Asia and Africa in the second half of the 19th century – became the social matrix of conflicting political elites, conservative, reformist or revolutionary, all competing to lead and shape the nationalist ideology of cultural self-determination and political autonomy. Thus, in many countries, for a long time, the political function of the university (what is called the ‘militant university’ in Latin America) – merging the ideological function and the formation of new social elites – has been predominant, to the detriment of the educational and economic tasks that the university could have performed. As several university leaders have proclaimed, the ‘political preconditions’ had first to be set up for universities to be able to proceed with the accomplishment of their specific role. The intellectual and personal drama of some of the best college professors in the Third World is that in order to pursue their academic endeavour, it had to be closely linked to the university system in the dominant countries, thus denying to some extent their cultural identity and taking the risk of being rejected by their own societies and considered alien to their problems and struggles. The contradictions between academic freedom and political militancy, as well as between the drive for modernisation and the preservation of cultural identity, have been a fundamental cause for the loss of the best academic talent in most Third World countries.

Nevertheless, when countries had to face the development tasks in a modern, increasingly integrated world economy in the last 30 years, the need to train skilled labour gave a new impetus to universities as educational institutions. Furthermore, the extension of the traditionally important middle class in Latin America, and the formation of a new professional class in Asia and Africa, both giving priority to the education of their children at the highest possible level, led to a massive expansion of university

enrolment. In fact, the new nationalist governments used the creation of universities and the increase in the number of students as a substantial measure of their development efforts. The number of university students has dramatically increased in recent years in most countries.

However, much of this increase has taken place in traditional areas of education (law, humanities and social sciences) since the first task of the university system continued to be to recruit and train the administrative and managerial classes on which the political system continued to rely. Along with it, in the most socially oriented regimes, this took place in the expansion of careers destined for social services, particularly education and health. Indeed, educational workers (mainly school teachers) have become one of the most important occupational groups in the lower-middle-classes of developing countries.

There have also been substantial attempts in a number of countries to increase the level of training in the scientific and technical professions, particularly in engineering and in agriculture-related degrees. Yet, such efforts have faced three major obstacles:

- The lack of trained faculty in sufficient numbers who are able to instruct the students in the most recent technology;
- The lack of an adequate level of funding to train students in experimental sciences and professional schools, leading to a teaching programme dominated by verbal communication and excessive numbers of students in the classroom, undermining the quality of the technical training;
- The well-known vicious circle: there are few highly skilled jobs for engineers and scientists in developing countries, because few firms can operate in these countries at a high technological level, because of the lack of skilled manpower.

The net result is that much of the increase in university recruitment goes to careers without direct impact on the development process because they are less expensive, and the failures in the training

are less visible. In addition, the quality of technical training is generally very low, not enabling countries to take their place in the world at large. There is of course the possibility of breaking the vicious circle by a deliberate policy of investment in technical higher education. In fact, countries that have engaged in such a policy have received substantial pay-offs. This is the case of South Korea, of China, Taiwan, and to a lesser extent, of Singapore and of Malaysia. The policy involves the recruitment of foreign faculty and/or the recruitment of highly trained nationals attracted to their home country from their positions in more advanced university systems. There is a definite trend in the last decade towards the creation of new 'technology institutes' in a number of countries to emphasise the need to train skilled engineers, scientists and technicians. However, only some of these institutes live up to the expectations generated by their flashy names and their brand new buildings: those investing enough resources in good faculty and modern equipment to update the quality of their training. Thus, only relatively rich countries are able to provide the necessary resources to upgrade their labour force, creating a new gap within the Third World.

While the training function of Third World universities is slowly making progress, at least in some areas, the science function is increasingly lagging in relationship to the acceleration of scientific research in the advanced countries, particularly in research and development in the critical areas of new technologies. This is both for structural reasons and for institutional causes linked to the specificity of Third World universities.

Structural reasons have to do with the cumulative character of the process of uneven scientific development. Centres of excellence that take the lead attract the best researchers who obtain the best equipment and material conditions, being able to attract the best students who end up forming a closely connected network. Thus, most of the best Third World scientists migrating to the United States or Europe (or staying in these countries after completing their doctorates) do so because it is the only way for them to continue to do research in the cutting edge of their speciality.

In fact, salary and working conditions appear to be secondary factors in relation to the basic condition: to belong to an advanced scientific milieu. This is partly linked to the amount of resources devoted to research and development by advanced countries. But there are also important institutional conditions, linked to the specificity of Third World universities, that make difficult their performance as centres of generation of knowledge. The need to preserve cultural identity, and the tensions created by the extreme politicisation of universities in overcrowded conditions, make it extremely difficult to manage the co-existence of the ideological and political functions with the scientific activity of the university. The necessary distance and independence of academic research vis-à-vis the immediate pressures of political conflicts become literally impossible when students, and some faculty, are engaged in changing the world or in affirming themselves as their main goal. In addition, the existence of large segments of the university population that are simply treated as surplus labour makes it rather difficult to maintain the respect for scientific activity (whose pay-offs are necessarily in the long term) on the part of students and faculty who are relatively marginal to the society or from university administrators whose main concern is to keep order and maintain the system operating in formal terms, regardless of its actual output in the generation and transmission of knowledge.

The inability to manage contradictory functions within the same system has led a number of countries to concentrate their efforts in a few technical universities (many of them of new creation), while leaving much of the existing university system to its own decomposition. This can be a short-term solution for the training of some technical personnel in certain specialities, but it will hardly respond to the needs of the scientific university. One of the key elements in the development of the universities as centres of discovery and innovation is precisely the cross-fertilisation between different disciplines (including the humanities), together with their detachment vis-à-vis the immediate needs of the economy. Without the self-determination of the scientific community in the pursuit of the goals of scientific research, there

will be no discovery. There is certainly a major need for the linkage between science, technology and industrial applications. But it is only possible to apply the science that exists. And there will only be scientific discovery, and connection with the world centres of scientific discovery, if universities are complete systems, bringing together technical training, scientific research and humanistic education, since the human spirit cannot be piecemealed to obtain only the precise technical skills required for enhancing the quality of regional crops. Thus, the refuge of the productive functions of the university system in a few, secluded technical schools can only be a temporary measure to rebuild a complete higher education system on the basis of additional resources, better management and adequate connections with the world's scientific centres, in respect of the identity of each culture.

Universities in the Third World are making dramatic progress in quantitative terms but are still unable by and large to perform their developmental function. Even university systems with great scientific excellence, such as the Indian or Chinese university systems, are falling behind those systems that have been able to manage the interaction between science, technology, economy and society. The ideological and political origins of most Third World universities cannot be ignored but should not be permitted to suffocate the necessary evolution of the university toward its central role in modernisation and development. If Third World countries are also to enter the Information Age and reject an increasingly marginal role in the world system, development policies must include the impulse and transformation of higher education systems as a key element of the new historical project.

If the substantial enhancement of university systems is critical for the development process in the new world economy, and if most countries are unable to mobilise the necessary resources to that end, it follows that the new frontier of international aid passes through the territory of higher education. However, the effectiveness of such aid will be conditioned by the ability to design policies that take into account the specificity of universities as institutions, and are able at the same time to link the science

and training functions closely with the needs and goals of the economy and society.

It would seem that in most countries, university systems overwhelmed by numbers and handicapped by lack of resources and excessive ideologisation cannot be restructured in their totality in the short term. Thus, this imposes the notion of selective aid, either concentrating resources in the best of the existing academic centres and/or creating new universities supported by national governments, private firms and international institutions. Yet, in both cases it is crucial that universities are conceived as complete academic centres of learning and research, with all levels of training (undergraduate and graduate, including doctorate) and with as many areas of study as possible, certainly mixing science, technology, humanities, social sciences and professional schools. The cross-fertilisation between different areas of specialisation, with flexible programmes that emphasise the capacity of students to think, find the necessary information, and be able to reprogramme themselves in the future seems to be the most effective pedagogic formula according to most experts of education who are open to the new characteristics of technology and management in the advanced economy. At the same time, the co-existence of different levels of training (graduate and undergraduate) makes possible the interaction between advanced students dedicating themselves to research and teaching, and professionally oriented students, future skilled workers, who will receive some of their training from innovation-oriented teachers, able to open up their horizons beyond the current state of specialised knowledge.

The new Third World universities must also emphasise research, both basic and applied, since this will become the necessary ground for the upgrading of the country's productive system. Research must be connected both to the world's scientific networks and to the specific needs and productive structure of the country. This probably requires the existence of specialised organisations that must be part of the university system, organising both connections toward the world and toward the economic structure of the country (information centres, international exchange programmes,

bureaus of technology transfer, bureaus of industrial or agricultural extension, university-enterprise networks, etc.).

Institutional reforms of universities, or the creation of new universities, should be undertaken under co-operative agreements between international institutions (such as the United Nations or the World Bank) and national governments of the host country, with the support and participation of private firms interested in the upgrading of the technological basis of countries or world regions. They should simultaneously foster institutional innovation (the setting up of new institutions or the reform of the existing ones to make them able to manage the contradictory requirements of various university functions), and provide the necessary resources for the upgrading of the system. Foremost among the needed resources is the human capital represented by faculty and researchers of top quality, fully integrated in the world's scientific and technological networks. While in the long term the new Third World universities should be able to compete for resources in the open world market, as well as generating their own high-quality academic personnel, in the coming years the sudden improvement in the quality of the universities will probably have to come from a combination of several policies:

- The training or retraining of young faculty and doctoral students in centres of excellence of advanced countries, after taking the necessary measures to provide them with the scientific and professional conditions to receive them in their home countries after their training period.
- The recruitment of nationals of Third World countries established in the universities of advanced societies, offering them equal or better conditions of work than the ones they enjoy in the universities where they are employed. Aid programmes should target specific individuals and provide the necessary support for endowed chairs and research centres in areas of priority.
- The temporary use of visiting foreign faculty in strategic fields of research under strictly planned conditions, conducive to the

formation of a research group in the Third World university, and to the continuation of the linkage between the newly established group and the visiting faculty once they return to the centre of excellence from where they were recruited. In other words, the critical matter here is to use visiting faculty as priming devices for the setting up of linkages between less developed and more developed university centres.

- The use of talent existing in the private firms and public sector of Third World countries, as adjunct professors able to provide their experience and knowledge to a university world that had been generally ignored because of the low social and economic status of the university system.
- The establishment of joint research centres and training programmes between technologically advanced private firms (either national or multinational) and national universities supported by international organisations. These mutually beneficial agreements, of which there are already numerous examples, should be integrated in a broader programme of institution building, instead of being kept, as is generally the case, under the close control of the participant corporation.

Once the two basic elements of a good university are established, that is, a proper institutional setting and high quality faculty, material resources in terms of equipment and physical plant can be provided without being wasted. Only after such infrastructure exists, can recruitment of students begin and the necessary funds for fellowships and tuition be facilitated.

It is obvious that such programmes of multilateral investment in higher education are expensive and will only yield substantial results in the medium term, at the earliest in a ten-year period. It is also true that such is the case for most development programmes investing in infrastructure. The key issue is to understand that the most important infrastructure in the economy of our age is the human brain and the collective capacity of a given society to link up all its brains with the brains of the world.

Still, it is an expensive programme that, given the permanent

limit of scarce resources, will have to concentrate in some centres of higher education that operate, at the same time, as models for other systems, and as the providers of informational inputs for entire regions of the world. Some countries are large enough to receive aid directly to their existing national institutions, from which large numbers of people will benefit and major natural and industrial resources will be generated (China, India, Indonesia, Nigeria, Brazil and Mexico).

In other instances, it will probably be advisable to build regional international universities (such as the University of Central America, the South East Asian Institute of Technology, the West African International University) that will concentrate financial, technological and human resources in a few centres of excellence, able to generate world-class research and training in a few years. However, the experience of several international university centres (in some of which this author has been a faculty member) shows the absolute need to anchor international universities in the national universities of the region, instead of bypassing them. It is the essential condition to be truly useful to the economies and institutions of each country, instead of creating a pool of graduates that generally dissolve themselves in the international networks or become marginal in their own countries upon their return. A possible solution to the problems I have mentioned could be the absorption of high-quality faculty members back into the national universities of their own countries, after they have spent a limited time (five years for instance) in joint centres, or regional universities, formed by association between the universities of the countries in the region. Thus, the joint centre could become an element of integration and cross-fertilisation between the various national universities, selecting the best students, and being formed by faculty of the national universities on a rotating basis.

In any case, specific organisational forms can be found if the basic principle is assumed: it is necessary to concentrate international and national resources in a few centres (either in large countries or in regional groupings of countries) that will operate

in direct connection with the development needs of their societies and economies. International aid (both public and private) should be channelled through these institutions, with strict control over the proper use of the funds in respect of the national sovereignty and cultural identity of the countries involved.

While it is relatively easy to agree on the importance of improving higher education for the development of the Third World, the question arises of who could be interested in supporting such a major undertaking and why countries or firms would be ready to assume the substantial economic cost and political effort required for such a new form of development policy.

At the turn of the millennium, humankind could envisage a bright future after the end of the Cold War and the demise of the Communist threat, counting on the development process that is well engaged in most of Asia, and expecting the current technological revolution to yield its promises, as yet unfulfilled, of a dramatic enhancement in economic productivity. We seem indeed to be on the edge of not the end, but of the beginning of history, if by history we understand the opportunity for the human species to fully develop its biological and cultural capacities.

Yet, at the same time there are substantial pitfalls in our social organisation, if we consider the extent of economic inequality and political oppression at the world level and the lack of harmony between economic growth and ecological conservation. Since most of these evils take root in the context of poverty and underdevelopment prevailing in large areas of what is still called the Third World, it would seem that the construction of a more stable, more promising international order in the aftermath of the Cold War requires the multilateral tackling of the development process on a planetary basis. Advanced countries, and their private firms, cannot thrive in a shrunken planet, concentrating their technology and their resources on a diminishing segment of humankind. And this is for several fundamental reasons:

- Morally, our model of society will be judged by our children

by its capacity to look beyond the immediate self-interest of each one of its individual members.

- Functionally, the growing deterioration of natural resources and collective public health, directly linked to poverty and mass desperation, will affect the whole of humankind: the Peruvian cholera epidemic is only the beginning of what could be a return to the medieval plagues if living conditions are not improved in the sprawling shanty towns of the Third World.
- Politically, widespread misery and functional marginality for countries and regions in the midst of a world marked by economic affluence and technological miracles, transmitted by the electronic media, will feed ideological fundamentalism, fanaticism and terrorism, as forms of negation by the excluded against the exclusionary practices of the dominant countries.
- Economically, the potential gap between the fast rate of technological innovation and the slower growth of markets can only be solved in the long term by including new markets in the world economy – new people with new needs to be satisfied. Both the former Second World and the Third World have to be brought into a unified, dynamic world economy, in which today's aid is in fact the investment for tomorrow, in a process similar to the mutual benefits brought to the United States and Western European economies by the Marshall Plan after World War II. A much broader Marshall Plan, multilaterally financed and controlled on a planetary scale, is necessary to integrate the whole of humankind in the development process, thus ensuring material progress and social stability for decades to come. The development of the Third World is in the economic self-interest of the Organisation for Economic Co-operation and Development (OECD) countries and their corporations. Now, if we take seriously the analyses pointing toward the formation of a new economy, in which the ability to generate and process information is a key to productivity, it will not be possible to integrate Third World countries in a dynamic world economy without creating the necessary infrastructure

in higher education. Because research and education policies take time to bear their splendid fruits, such policies must be placed at the forefront of international aid at the present time, when the seeds of a new world order are being sown.

*Notes*

This paper formed part of a larger report ‘The University System: Engine of development in the new world economy’, presented at a World Bank Seminar on Higher Education and Development held in Kuala Lumpur, Malaysia, in 1991 (Castells 1991). The paper as it appears in this volume, was first published in 2001 as ‘Universities as Dynamic Systems of Contradictory Functions’ in the book *Challenges of Globalisation: South African debates with Manuel Castells* (Muller et al. 2001).