SOCIAL AND CULTURAL ASPECTS OF HIGHER EDUCATION

INSTITUTIONALIZATION OF SCIENCE AND THE SOCIAL FUNCTIONS OF THE UNIVERSITY — DIFFICULTIES AND OPPORTUNITIES

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ABSTRACT

It is evident that, especially in the recent decades, the scientific institutions have strongly evolved and modified their structures in order to be adapted to the changing socio-cultural environment as well as to be more aware of the need to generate new knowledge in order to support the economic growth. Social sciences tried to interpret the process of institutionalization of science in the academic world in various ways, analyzing the social components of the process of creating the knowledge. The approach in social sciences is primarily characterized by the study of the level of institutionalization that enables the study of the features that, in turn, define science as a social institution. This approach is useful in the study of higher education systems because the institutionalized principles make the structure of an organization and primarily provide the information about what regulates the formation of a university and not only about what regulates the behavior of an individual. The organization of the university is a clear example to understand the changes that are taking place in social institutions based on scientific and technological knowledge. In fact, in recent decades, universities have changed the way they organize their activities. The new requirements favor the reorganization of the knowledge creation process which has significant consequences for changes in the internal structure of a science institution.

This article focuses on the analysis of the process of institutionalization of science. This approach to science is primarily characterized by the analysis of the features that define science as a social institution. In this context, the most important challenges and difficulties related to these processes in a globalized world are presented.

***Keywords**: institutionalization, social sciences, university, social institutions.*

INTRODUCTION

It is evident that, especially in the recent decades, the scientific institutions have strongly evolved and modified their structures in order to be adapted to the changing socio-cultural environment as well as to be more aware of the need to generate new knowledge in order to support the economic growth. Social sciences try to interpret the process of institutionalization of science in the academic world in various ways, analyzing the social components of science, that is, examining the way in which the scientific community is organized into *production* and dissemination of knowledge (Znaniecki, 1994). The approach in social sciences is primarily characterized by the study of the level of institutionalization that enables the study of the features that, in turn, define science as a social institution (Merton, 1949). This approach is useful in the study of higher education systems because the institutionalized principles make the structure of an organization and primarily provide the information about what regulates the formation of a university and not only about what regulates the behavior of an individual (Meyer, 1977).

As part of the analysis of the process the institutionalization of science, the main trends that characterize it were described. First, reference was made to the classical view, an important representative of which was Robert K. Merton, who promoted the normative structure of science. Then, various interpretations made about the social function of science are presented which show the evolution of the way of configuring the scientific activity carried out by John Ziman and among others. The concept of institutionalization of science developed by Richard Scott was also recalled. The analyzed research perspectives and the presented theories of the institutionalization of science will serve a more complete presentation of the diversity of changes in the context of globalization.

NEW LEARNING FEATURES

Throughout history, opposing opinions about the usefulness and value of scientific activity have emerged. The English philosopher Francis Bacon positively considered the science because it allowed him to know the world and also to rule over it (Bacon, 1605). The adherents of this tradition saw

science as a way to expose the deliberate distortions of knowledge by economic and political interest groups. This was also what they saw as a chance for social development.

The opposite position, which may be broadly described as a pessimistic view of science, appeared almost in parallel. It was characterized by the fact that it undermined faith in the relationship between science and social development. Representatives of this position regarded science as a *discovery* of selfless researchers who tried to discover the truth for its own sake. The notion that *the greater the knowledge, the greater the progress of mankind* has been rejected. In this interpretation, the value of science was primarily theoretical and moral. Science was important for the development of ideas that contributed to understanding the world and not because of their application (Kozyr-Kowalski, 2005).

With the twentieth century, the belief that science itself was not enough to create a harmonious society began to prevail (Elias, 1991). Robert K. Merton was a major exponent and defender of the *normative* vision of science. He defined science as a social institution referring to the values and rules that organized its operation (Merton, 1942). Merton described the ideal conditions under which scientists should develop their activities, as well as the values that determined the work of a scientist (Merton, 1942). He focused on a set of values and cultural traditions governing scientific activity. He defined the set of these values and norms as the ethos of science, which expressed the imperatives and recommendations legitimizing the activities of institutions and shaping scientific awareness[1].

The classic vision of science as a social institution promoted by Merton began to be heavily questioned at the end of the 20th century when criticism of the normative dimension of his theory emerged. The main opponents believed that the thesis about the normative values of science was merely a legitimizing tool, applied in accordance with the interests of a specific situation and did not correspond to the actual behavior of scientists (Mulkay, 1969). For this reason, they advocated breaking the relationship between the norm and scientific action. From this perspective, not only scientific institutions were normative but also other cultural and social systems had a normative significance (Barnes, 1977). With the development of this concept, its supporters postulated that

[1] These were four sets of imperatives that can be briefly described as: 1) «universalism», that is, the search for truth subject to predetermined impersonal criteria, based on previously confirmed objective evidence and arguments; 2) «community», that is, common ownership of goods, assumed that the discoveries of science are the product of social cooperation, and therefore constitute part of the community; 3) «disinterestedness», ie the principle according to which a scientist should not pursue through work to a greater benefit than that provided by personal satisfaction with the work performed and the recognition and prestige that work in the interest of the community gives; 4) «structured skepticism» implied that the scientific researcher had to study each type of phenomenon with the available scientific research tools in such a way as to answer questions that could be objectively analyzed. (Merton, 1942). In the course of further work on the concept, Marton added two more elements to this structure: 5) «originality» as knowledge developed through innovative input; and 6) «humility», used to limit abuse that might be committed by scientists (Merton, 1949).

the only standards that guided scientific activity were those of a technical nature that derived from theoretical and methodological assumptions. According to them, the normative values are the result of particular assumptions adopted by scientists in accordance with their concept of science (Mulkay, 1969).

In this context, Ian Mitroff (1974) postulated the superior role of the researcher's individual motivation in scientific activities. Thus, he pointed the existence of *counter-norms* due to the incompatibility of universal principles, postulated, inter alia, in by Merton. All of them played a positive role in popularizing science but according to Mitroff they do not adequately describe the process of creating knowledge and changes taking place in scientific institutions. According to him, the process of constructing science is determined primarily by elements of the cultural aspects of society and the individual characteristics of scientists. The study of these aspects is connected, on the one hand, with the analysis of the evolution of a scientific organization, and, on the other hand, with the change of behavioral patterns that influence the normative systems in scientific institutions (Mitroff, 1974).

It is worth recalling that one of the first theoretical approaches to interpreting social change in science is *the linear model of innovation*. This model assumes that innovation begins with basic research, continues through applied research, and ends with the production and subsequent dissemination of the invention (Gilbert, 1989). This is an interpretation that has had a great impact on the organizational structure of universities. According to this model, knowledge is produced individually, in a discipline environment, in order to deepen information about reality and results from academic interests. This means that knowledge has little relation to social needs, only at the end of the process the results are transferred to the public sector (Kirk, 2016).

Along with the deepening of social sciences' reflection on the process of constructing knowledge, the way of describing this process has changed. The relationships between basic research, applied research and technological development have been compared to those typical of an ecosystem where each element requires and uses the properties of the others. In this case, knowledge is developed not only at the university, but also outside it, in cooperation with other institutions and taking into account social needs (Aronson, Aronson, 2018). Since the 1980s, the vision of science as a dynamic system that depends not only on the internal factors of university organization, but also on external conditions, begins to become increasingly subordinated to political determinants. Science is beginning to be seen as an economic potential that generates economic and social benefits. This way of understanding science makes it more and more dependent on the socio-economic context and therefore generates less autonomy in the selection of research priorities (Campbell, 2004).

In this context, the concept of John Ziman is significant, in which he presents the definitions of *post-academic science*. In his opinion, it is produced by local experts and falls under the authority of managers and is organized as the social

context and economic determinants of development. Ziman's work is unique in characterizing the notion of *post-academic science*. He describes it as a radical, irreversible and global transformation of the way science is organized and implemented. The described model emphasizes profit and profitability. Science loses objectivity because it is not based on the free thought of a scientist but is subject to group interests and external pressures to the research itself. The main mechanism conducive to change is the progressive increase in the competitiveness of research institutions (Ziman, 2000). This pressure defiles the academic science with the rules of the industrial game, placing more emphasis on usability and providing it with more bureaucracy.

The described processes have led to the fact that the discourse on science has evolved towards the analysis of interactions between three main areas: 1) scientific communities; 2) the economic sector; 3) institutions of political power. As part of these relationships, in the last decade of the 20th century, a model called the triple helix appeared (Leydesdorff and Etzkowitz, 1997). The starting point is not an autonomous unit of analysis, but the subsystems that form the three *propeller* blades: university, industry and government (Connell, 2007). The relationship between these *blades* is the engine of innovation. In each spiral, they take on new role that previously belonged to the others and create new hybrid institutions in social spaces (Leydesdorff, Etzkowitz, 1997). This model takes into account the institutional changes related to the emergence of a globalized knowledge-based society. In this approach, the role of the university is fundamental because it performs new functions. In addition to two traditional missions (teaching and research), it contributes to economic and social development through innovation that is based on knowledge (Knight, 2008). Universities with this new function have greater flexibility to respond to the changing needs of society.

The analyzed elements have an impact on the internal organization of scientific institutions, their relation to other fields, including economic, political and business. Scientific organizations are expected to make profound changes to adapt their structure to new ways of generating knowledge. In fact, the various approaches analyzed demonstrate the ability of science institutions to adapt to a changing social environment. Thus, we can conclude that scientific institutions are constantly evolving to meet the demand for new forms of knowledge creation in a globalized world (Meyer, Rowan, 2006).

It is worth emphasizing that current knowledge society, which is developing as a result of globalization processes, has the following features: the importance of information and communication technologies in social processes; knowledge as a source of economic growth; knowledge-based and service-based production; rapid knowledge production and the importance of educational processes throughout life (Heilbron, 2013). In this global context, knowledge production processes are increasingly adapted to the requirements of the economic market and policy guidelines. In this way, the research activities were oriented towards functional practices based on technological models.

In the contemporary globalized world, knowledge is a principle that structures changes in the economic system, labor markets and culture (Collins, 2011). This means that the term *knowledge society* does not only refer to the development of certain sectors, such as science or technology, but is a phenomenon that permeates all spheres of social life (Moody, Light, 2006). It is should be emphasized that current scientific institutions, primarily universities, are increasingly focusing on transferring the areas of academic activity to business and industrial production. In this way, knowledge must demonstrate its social significance and economic efficiency. This promotes competitiveness and the centrality of knowledge as the producer of wealth and power, and is therefore sometimes considered a commodity (Miller, 2013).

In the social and cultural sphere at the global level, the process of creating knowledge fosters the development of pluralism (Keim, 2011). However, it must be emphasized that globalization also causes the emergence of tendencies that contradict pluralism that, in turn, confirms that current society is a consumer society that classifies its members primarily on the basis of their ability to purchase goods and services (Bauman, Bordoni, 2014). Therefore, one should not think that the knowledge society implies the emergence of a harmonious world society in which there is an increasing integration of cultures (Longino, 2002).

INSTITUTIONALIZATION OF SCIENCE

Due to the processes described above, it is reasonable to say that the evolution of universities should be analyzed in the context of changes in social institutions. Therefore, there should be the recalling the concept of Richard Scot, who presents an interesting definition of the concept of institution. He describes it as a multi-faceted structure that is socially stable and has material resources; it is relatively resistant to change and is passed down from generation to generation to achieve its reproduction (Scott, 2001).

The outline of the analytical elements that contribute to the creation of an institution is defined by Scott as pillars that work together, have aspects that differentiate them. The first of the pillars, the regulatory one, corresponds completely to the conscious stage of the institution's development. It assumes that the institution presents regulatory aspects that are binding and define the behavior of individuals through the norms, rules and laws established for the operation of the institution. The main instrument of control is coercion, so monitoring compliance with these standards is one of the main mechanisms describing this pillar. Therefore, the regulatory pillar follows the instrumental logic that helps institutional members to recognize performance guidelines (Scott, 2001).

The second pillar, normative, also plays an important role in shaping institutions, according to Scott. In this case, it is a semi-conscious stage because the emphasis is on normative rules that cover the evaluative and obligatory scope of the functioning of the institution. They take into account the values that are

desired or preferred in the institution. In this way, the members of the institution act on the basis of imposed norms, but also have the opportunity to correct their actions based on personal and moral criteria. Certification and accreditation are mechanisms to legitimize the autonomy of members of an institution (Scott, 2001).

Finally, the third pillar, in Scott's view, focuses on the cultural-cognitive elements of institutions. The cognitive dimension is treated as a "mediator" between external stimuli and individual reactions of institution members. Its meaning is primarily symbolic representations of the outside world. Routine is the basic mechanism used in this pillar to justify specific actions of individuals. Internalized patterns of behavior outweigh obligations. Therefore, the social structure of the world plays an important role in the behavior of individuals.

The concept presented by Scott (2001) is useful in the analysis of the functioning of contemporary scientific organizations. There are regulatory, normative and also cognitive elements in science. The first one corresponds to the formal rules that legitimize the behavior and activities of scientists, establishing reward and punishment systems. On the one hand, these are the laws over the institution that regulate the so-called scientific systems of the country, and on the other hand, they are regulations that are established at the institutional level, guiding the rules of this institution. The second element, normative, is based on social obligations, patterns of behavior which, although not legally regulated, are considered obligatory and legitimize the actions of individuals. The third element, cultural and cognitive, concerns behaviors that are assimilated and taken for granted and are realized unconsciously as natural and spontaneous (Rifkin, 2000).

SOCIAL RESPONSIBILITY OF THE UNIVERSITY

In most societies, higher education is one of the engines of social development and the main instrument for transferring knowledge, experience and culture (Mayer, Salovey, 1993). The changing reality at both national and global levels has made higher education one of the fundamental social issues. In social development, knowledge and technology should be treated as elements of culture serving the development of human skills and relationships. In university education, in the face of the large amount of information characteristic of current society, the importance of cognitive abilities to distinguish information from knowledge should be emphasized. Therefore, it can be argued that an important function of the university in the 21st century will be to promote comprehensive education focused on shaping critical thinking and not accumulating knowledge (Melosik, 2002). This is related to the need to shape the attitude of lifelong learning due to the rapid production of knowledge.

In this context, many researchers postulate that universities facilitate the development of skills that will help in the proper processing and use of knowledge. The researchers' proposals can be presented generally in four basic

areas. Firstly, the ability to abstract which implies the ability to: simplify reality that discover patterns and organize different aspects of reality; interpreting a multitude of information; creating models, analogies and metaphors. Secondly, the ability to think in systems that includes understanding social processes in the context of broader change trends. Thirdly, it contains the ability to experiment, that is, to understand the causes and consequences of various social processes and to predict their next stages. Fourthly, there should be the ability to team working, the ability to communicate the information, and the ability to accept constructive criticism (Goldman, 2002). There also can be found another list that describes the intended principles related to university education, such as: equality of differences, solidarity, creating meaning, dialogue and cultural intelligence (Knight, 2008). In this sense, the university education should be based on the development of communication skills to enable individuals to participate more actively and critically in society. Therefore, the university education should be a form of social practice that arises from specific historical conditions, social contexts and cultural relations. Moreover, it should also offer knowledge that helps to build conscious and responsible participation in public life.

In this context, it is necessary to emphasize the new role of science, not only in bringing science institutions closer to society, but also in terms of communication between them. Breaking the isolation of science, it requires a broader commitment to researching the problems posed by society. Science, i.e. universities should be more open to the technical and economic principles as well as to the cognitive and moral utility. It is expected that science will be widely disseminated and this will generate new social processes. There are also positions that are against this function of science. In this sense, Vavakova (1998) believes that governments promote the development of science as a strategy to avoid exclusion from the technology race. It is not, therefore, about promoting knowledge to increase its scope, but supporting the development of society. Pritchard (1998) believes that there is a loss of autonomy and academic freedom with this vision of science. The expansion of scientific organizations leads to the submission of the traditional concept of science to the arguments of responsibility through which national governments gain the right to define science policy.

Consequently, it can be concluded that the relationship between the institutions that generate new knowledge and society is increasingly complex, governed by ambivalence and uncertainty. However, despite its increasing complexity, the university is the main place where the institutionalization of science is most visible. Universities are considered as fundamental pillars for the development and maintenance of science as they play an important role in creating and transferring knowledge as well as establishing links with non-academic areas through the transfer of university potential along with the commercialization of scientific resources (Meyer, Rowan, 2006). Each university opens up to this process in a specific way, according to its own strategy, which can lead to an increase in the heterogeneity of university systems and a greater ability to respond to the emerging challenges of the knowledge society.

CONCLUSIONS

The conducted analyzes show how scientific institutions have gradually evolved and modified their structures to adapt in accordance with the changing environment. It was the result of the increased responsibility of the scientific community for economic growth and the need for more conscious creation of new knowledge.

Scientific institutions internalized new requirements posed by the socio-economic context in the recent years. In fact, the main result of the institutionalization of science was the exponential increase in the flow of knowledge through its production and wider distribution in the social sphere. Thus, it was recognized that the progress of knowledge, i.e. the activity carried out by universities, was and is one of the main sources of wealth in modern economies.

In this context, the organization of the university is a clear example to understand the changes that are taking place in social institutions based on scientific and technological knowledge. In fact, in recent decades, universities have changed the way they organize their activities. Gradually, research institutions must find the right balance between their traditional functions and the new expectations that are placed on them. The new requirements favor the reorganization of the knowledge creation process which has significant consequences for changes in the internal structure of a science institution. The advent of the knowledge society has created a new socio-cultural context, marked by the process of *knowledge production* which social sciences are trying to explain in order to better use for future development. This allows us to describe the knowledge creation process as more than just a message. It also allows the assumption that in this process, as in any social situation, there are unrecognized conditions and unforeseen consequences. This confirms the view that nowadays science institutions, and above all universities, should provide conceptual tools more than ever so that as many citizens as possible can coexist in an uncertain and complex knowledge society, where critical thinking and joint action can be the key to solving the most important problems, and thus same to improve the quality of life.

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ІНСТИТУЦІОНАЛІЗАЦІЯ НАУКИ. СОЦІАЛЬНІ ФУНКЦІЇ УНІВЕРСИТЕТУ: ТРУДНОЩІ ТА МОЖЛИВОСТІ

Чарчула Ярослав, доктор філософії у галузі педагогіки, заступник директора Інституту наук про виховання, Педагогічний факультет, Єзуїтський університет Ігнація в Кракові, вул. Коперніка, 26, 31-501 Краків, Польща, jaroslaw.charchula@ignatianum.edu.pl

Впродовж останніх десятиліть наукові заклади розвивають та покращують свої структури з метою адаптації до нелінійного соціально-культурного середовища, а також забезпечують впровадження нових знань з метою підтримки економічного зростання. В процесі аналізу соціальних компонентів суспільні науки по-різному тлумачили процес інституціоналізації науки. Насамперед, такий підхід у соціальних науках характеризується вивченням рівня інституціоналізації — це дає змогу вивчати особливості, які, в свою чергу, визначають науку як соціальний інститут. Принципи інституціоналізації складають структуру закладу та надають інформацію не лише щодо регулювання поведінки особистості, а й про те, що регулює формування університету. На основі на-

уково-технічних знань, організація університету найкраще відображає розуміння змін, що відбуваються в соціальних закладах. Останнім часом, університети змінили спосіб організації своєї діяльності. Нові вимоги сприяють реорганізації процесу створення нових знань, що значно впливають на зміни у внутрішній структурі наукового закладу.

У статті проаналізовано процес інституціоналізації науки, оскільки цей підхід характеризується аналізом особливостей, що визначають науку як соціальний інститут. Стаття також представляє найважливіші виклики та труднощі, пов'язані з цими процесами в глобалізованому світі.

Ключові слова: *інституціоналізація, соціальні науки, університет, соціальні інститути.*

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