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**TRIPLE HELIX MODEL  
IN THE CZECH TERTIARY EDUCATION**

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*The article is devoted to the issue of triple helix model and its application in the Czech tertiary education. Introduction describes the crucial provisions of the White Paper on Tertiary Education. Then the triple helix model is described based on the foreign literature search. Particular attention is focused on the importance of the triple helix model in the White Paper on Tertiary Education. Finally, possible subjects of the cooperation between university, industry and government are indicated.*

**Introduction**

The Czech tertiary education is being reformed at present. Some parts of reform (especially those essential) are already approved and others will follow. This reform of tertiary education is based on the concept outlined in the White Paper on Tertiary Education. This book, among other things, outlines the future need for universities to work more closely with industry (application practice) under the auspices of the government. Scientific literature refers to the cooperation

(interconnection) of universities, government (public administration) and industry (enterprises) as to the “triple helix” which is considered an evolutionary model of innovations [1,2]. The merit of this three-entity cooperation model, which top opposing vertices, is relatively simple, nevertheless efficient. The role of universities rests in provision of scientific, expert and partly also technical and material capital. This model counts on industry to be a main guarantor of financial capital and, in a way, imaginary university customer. The government then facilitates necessary conditions (particularly legislative) for this kind of cooperation (or eliminates obstacles in cooperation between universities and companies).

### White Paper on Tertiary Education

The White Paper on Tertiary Education is a conceptual and strategic document setting the direction of the tertiary education in the Czech Republic for the horizon of 15-20 years. This White Paper, however, is not a technical manual for execution of the changes leading towards the set aim [3]. It serves merely as a concept for the reform of the tertiary education in the Czech Republic. The reform spirit should be in compliance with the philosophy of human resources being one of the main pillars of competitiveness in the current development of the Czech society. The main aim of the reform will rest in change of management and funding principles of the tertiary education system. Figure 1 describes fundamental principles of the tertiary education reform.

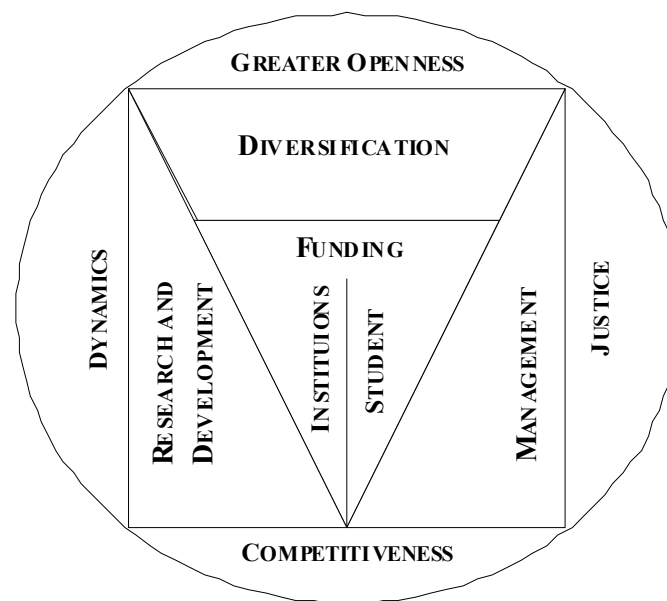


Fig. 1 Fundamental principles of the tertiary education [4]

According to the White Paper the universities are supposed (especially) to engage stakeholders in their own activities and management, and thus should ensure a more effective feedback and support elements of management control. Meeting this target means the enhancement of accountability and efficiency exercised towards external environment. Stakeholders of the university are either those who contribute to the university operation or demand the university outcome. The university operation is indirectly supported by every taxpayer, i.e. the public. Other stakeholders are the companies, first, from the position of employers demanding university graduates, second, from the position of research and development clients. Last but not least, the stakeholders include students demanding education as the essential university outcome. In the case of a particular university stakeholders involve also representatives of regional governments and enterprisers. This group, however, may be extended with representatives of research and cultural institutions, non-profit sector and, naturally, alumni. The White Paper on Tertiary Education sets the partial target in terms of creating more favourable conditions for cooperation with these stakeholders by deeper engagement of both sides in particular.

The White Paper suggests the engagement of stakeholders into strategic decision-making of universities should be reached by extending the operation of the board of trustees. The White Paper authors' intention was to make the universities more open to their external environment from both the institutional and strategic points of view. The stakeholders' engagement into university operation and management should not be limited to the decision-making power but they should also bring private funding into the sector which is traditionally financed from public money. Meeting this aim will mean enhancement of multiple-source funding university operations. The core idea rests in the concept where the power to express oneself freely in terms of university problem issues is only fair if it is counterbalanced by their financial involvement in tertiary education.

### **Triple Helix Model**

In the triple helix development model, government devolves decision making to collaborations with regional and local authorities and other actors. Industry engages in endogenous innovation as well as transfer. Universities play an innovative role in society, active in translational research, entrepreneurial training and community development, as well as, traditional tasks. These nascent transformations have fundamentally changed the development landscape, making triple helix actors the central development partners [5].

The triple helix is based on the premise that the university plays an enhanced role in development in concert with government and industry, the two

traditional leading institutional spheres. Higher education institutions are virtually everywhere and their flexible nature opens them to fill a variety of roles, well beyond traditional missions. Traditional missions of teaching and research embed a knowledge transfer capability in any society. In the training of human capital for all sectors of society, the university, through its alumni, provides the basis for enhanced interaction. The prominent role of the university in the triple helix has made this model especially relevant to developing countries where universities are present and industry is either making strides, relatively weak or largely lacking [5]. Critics have argued that the university systems in most developing countries are academically oriented and industries are either non-existent or too weak and governments too bureaucratic to play respective roles envisaged by the triple helix model. However, the problem as noted by Konde [6] does not lie with the model, but the fact that, in many countries, the triple helix entities seem to be weak because their elements tend to work in isolation [5].

The triple helix model comprises three basic elements [7]:

1. a more prominent role for the university in innovation, on a par with industry and government in a knowledge-based society;
2. a movement towards collaborative relationships among the three major institutional spheres in which innovation policy is increasingly an outcome of interaction rather than a prescription from government;
3. in addition to fulfilling their traditional functions, each institutional sphere “takes the role of the other” in some regards (institutional spheres overlap and collaborate and cooperate with each other, as you can see in Fig. 2 [8]). This may take the form of a university taking government’s role of initiating development projects or industry’s role of firm formation. Universities, traditional providers of human resources and knowledge, are now critical socio-economic development actors. The institutional spheres still perform their traditional functions but increasingly assume the task of advancing innovation and development.

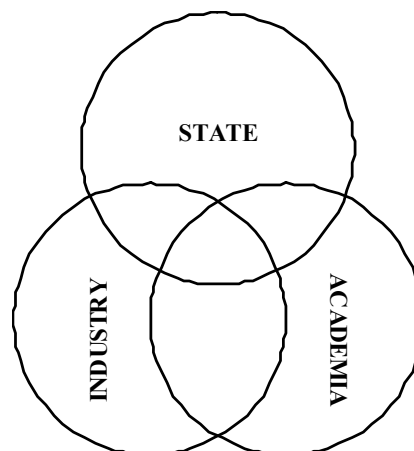


Fig. 2 The triple helix model [8]

Many universities have expanded their organizational capabilities to engage in knowledge transfer and development. In addition, universities are also extending their teaching capabilities from educating individuals to shaping organizations by using the incubators. The incubator was essentially a means to train a group of individuals to operate as an organization. The incubator model was extended from an earlier emphasis on forming high-tech firms to creating low-tech firms as well as cooperatives that make it possible for excluded populations to collectively enter the labour market as service providers contracting with public and private sector organizations for cleaning and other tasks [9].

A triple helix development model is based on the following trends [5]:

1. The transition from an industrial society to a knowledge-based society in which knowledge producing institutions, like universities, potentially play a greater role in innovation and development.
2. The supersession of large scale physical technologies that mandate bureaucratic forms of organisation to increasingly flexible smaller scale high technologies that can be utilized by smaller scale organizations.
3. The emergence of polyvalent knowledge, in such areas as biotechnology, computer science and nanotechnology, that is at one and the same time theoretical and practical; capitalizable and publishable.
4. The rise of new university formats that incorporate a classic ivory tower focus on discipline development with a culture of entrepreneurship, innovation and technology transfer.

A triple helix development model contrasts with others that place greater emphasis on “state-led, market-led or community-led development” [10]. Although this is laudable, it omits a critical agent of knowledge-based development – a university that is capable of undertaking socio-economic development initiatives in cooperation with teaching and research. The triple helix development model focuses on creating intermediary mechanisms that play a broader role than in developed environments. They not only fill the gaps between industry and university and between discovery and application but also in some instances they substitute for weak or missing actors. Moreover, in the triple helix development mode there is strong emphasis on interactions, linkages and collaborations [5].

This new way of development thinking, revolving around the crucial knowledge actors, strengthens diversity and represents a radical departure from the conventional development models that have separated the three institutional spheres, most often placing universities in a peripheral role in development strategies and policies. Thus, the triple helix refocuses the development field making it possible for technology transfer to play a residual role in support of the development of indigenous technological capability [11].

## Triple Helix Model in the White Paper on Tertiary Education

All three participants of the triple helix model are defined in the White Paper on Tertiary Education. In this document, their cooperation is seen as crucial for a positive outlook on the future of tertiary education system in the Czechia and whole Czech economy as a knowledge-based society. Industry and government (whether at regional or national level) are in the White Paper described as stakeholders of the university, with which in the future should forge stronger relationships than ever before. Proposal to tertiary education reform encourages the use of the triple helix model to improve the quality of tertiary education system and the human capital that is crucial for economic development.

Tertiary education reform tries in the field of cooperation university, industry and government to resolve the current situation outlined in Fig. 3. The original image of triple helix model represents an ideal situation where the contact surfaces (i.e. notional amount of cooperation) between particular elements are the same size and occupy a large enough area for effective cooperation. Nevertheless, in the following picture the sphere of industry is shifted to level, where its cooperation with the university as well as with the government represents a much smaller area. The reason of this situation is unattractive offers on cooperation from state and universities. In many cases it is only a request for funding that is not balanced with opportunity to engage in creative activities and decision-making. White Paper tries to change this unpleasant fact through the tertiary education reform. It tries to involve industry to decision-making in the board of trustees of university and to the funding of research, development and also education. For this cooperation it is necessary to create a favorable environment in whole economy and this must the government ensure.

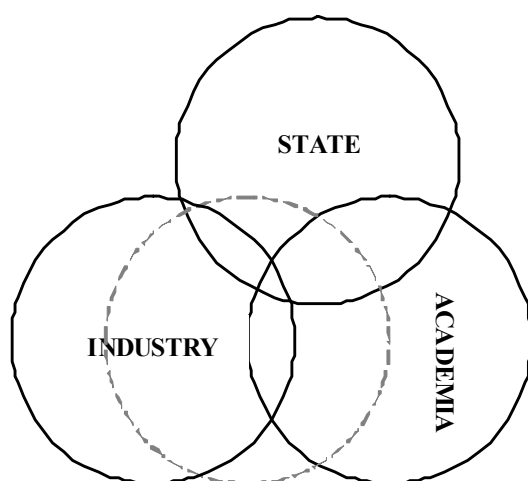


Fig. 3 The triple helix model in the Czech Republic

The role of individual elements of the triple helix model will depend on the specific subject of their cooperation. However, the government will have to secure (irrespective of subject cooperation) not only a favorable environment, but especially right direction of joint action of the university-industry-government cooperation. The subject of cooperation between university and industry may relate either education or research and development.

In the area of education the university should cooperate with industrial enterprises when preparing curriculum. Not only the list of study subjects within the study field but also the contents of these subjects should reflect the requirements of practice. Students can gain the awareness of practice requirements during their working practice, or as the case may be, during their study visit organised by the partner industrial entity in its facilities. Students may also learn at field trips in the company. Based on their experience acquired in the environment of an industrial company students may produce their theses. The results contained in the theses may serve as grounds for further research at the university or be used directly by the partner industrial entity for its own benefit. The industrial company may also organise both for the students and university staff training sessions in various areas, where indeed, also the company staff attend. On the other hand the university may also train the company staff or create individual study plans for their staff if they are interested in studying an accredited subject field. Both the partners may hold conferences where both a scientific (theoretical) and application (practical) points of view are presented. They might also utilize their infrastructures, e.g. lecture halls, accommodation, catering, leisure time facilities, special laboratories or computers. The main benefit of the university and industrial company interconnection would, indeed, rest in creating job opportunities for university graduates in the industrial company.

In research and development the university and industrial entity interconnection might mean, e.g., joint projects. The results of projects could be then theoretically modelled in academic environment and consequently tested in practice of the industrial company. The university could also provide various studies, reviews or expertise reports. The last but not least comes the university expert consulting provided to the company.

## **Conclusion**

The general idea — the university would in future have to work more closely with industry (application practice) under the auspices of the government — is logical at first glance. Its implementation, however, is not so simple. It depends on way, how it creates the connection and on what principles will be basing its operation. Triple helix model is recognized by the scientific community an innovative concept, through which can be achieved the development of not only the education

system, but also a society which has undergone a transformation to a knowledge-based economy. If reform of tertiary education is really done in the spirit of triple helix model, the concept could become for the Czech Republic the way from the global economic crisis (some economists contend that the crisis is only the epiphenomenon ongoing transformation of the economy).

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