■ James Dzisah, Henry Etzkowitz (Eds.), *The Age of Knowledge: The Dynamic of Universities, Knowledge and Society*, Boston: Brill, 2012, 342s.

Değerlendiren: Muhammed Erkan Karabekmez*, Meryem Karabekmez**

This work was published as a part of the series, *Studies in Critical Social Sciences*. *The Age of Knowledge* was edited by Henry Etzkowitz, professor at Stanford University, and his colleague James Dzisah, senior lecturer at University of Ghana. Although the frame of the book is Etzkowitz's theory of the triple helix, there are also numerous different articles dedicated to the enlightenment, reach, and magnitude of knowledge in contemporary society. The editors grouped the chapters into three parts. The first part focuses on the transformation of the knowledge, and the subsequent parts respectively examine its relations with politics and economy.

The chapters in the first part are mostly interested in the emerging economic salience of science and monetary value of knowledge while some consider more specific issues like Islamization of knowledge or the role of gender in the university system.

The first chapter by Etzkowitz defines the emergence of knowledge leading to the birth of the 'Triple Helix', a set of relations between the university, industry, and government, as a normative change rather than a deviance from Merton's rules of communism and disinterestedness. Subsequent chapters explain the institutional reconfiguration of universities and the role of innovation in scientific research or alternative knowledge production. They provide details about contemporarily emerged knowledge's driven role in postsecondary education. The number of patents rewarded and perspectives of scientists are used to promote the transformation of universities as an influential actor that now has a prominent role within economic and governmental relations. Although the authors are efficient in capturing and conceptualizing the current state of knowledge and universities there is an obvious bias towards justifying the transformation from 'communist knowledge' to 'capitalist knowledge'. As knowledge has come to greater prominence, industry, and thereby society, push scientists to focus on innovation. This led to splitting scientific research into theoretical and applied sciences. The latter produces innovation and converts knowledge into a monetary value and that's why it takes more attention. Normative change notion is naïve by praising both of the Merton's principles and current state of knowledge that sits just against them. While editors label postmodernism as relentlessly deconstructive at the beginning of the book this relativistic approach seems to be more postmodern rather than modern, which can be expected to be more deterministic.

In the chapter related to Islamization of knowledge, Chai defines Malaysian success in science as a knowledge innovation. He states that "scientific knowledge is not entirely based on the external material world but also the cultural interpretation of the material world" (s.102). In Malaysia, acceptance of the epistemological basis of modern science and rejection of its ontological tenet provide a re-enchantment of modern science. His article is

* Doctoral Student, Bogazici University, Department of Chemical Engineering.
** Doctoral Student, Istanbul University, Department of History.
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partly post-modern in its perceptional evaluation of science. The scope can be extended by questioning ontological base of the science with a more relativistic approach.

With a Marxist modern view the transformation could only be explained by economy, whereas the authors suggest that the new era is a consequence of mutual interaction between not only the economy and postsecondary education, but also politics, which is discussed in the second part of the work.

The second part begins with a chapter describing the triple helix written by the editors. Earlier roles of universities were limited to preserving and transmitting knowledge, whereas now they have become a locus of knowledge production via experimentation, application and innovation. They first transformed to provide human capital as engineers to industry and then even more reconfigured to create faculty-formed firms that play a direct role in the knowledge-based economy. The editors claim that the capitalization of knowledge was inevitable even though some suggest isolation of universities by de-emphasizing practical concerns. They seem to be pleased with this new state for the university asserting their non-passive role against politics and economy. Following chapters support this optimistic perception by detailing knowledge transfer boundaries and controlling powers. Phillips suggests a fuzzy answer to the question 'who is controlling the change' by highlighting complex intra knowledge society interactions in the ninth chapter.

Kpessa discusses non-traditional, knowledge-based policy actors like think-tanks, NGOs, intellectuals, institutions or supranational organizations (like International Monetary Fund – IMF) and their influence in policy learning in the tenth chapter. He details mechanisms of policy learning by elaborating issue framing. His contribution draws a complete picture of the emerged role of the epistemic community by also considering ambiguity about the limits of the knowledge-based public policy actors. This chapter is found to be one of the least related sections to the 'triple helix' story.

The last chapter of the second part is a case examination of knowledge management strategy. The cloud of interactions between non-traditional public policy makers discussed in the previous chapter and traditional public policy actors like civil servants and politicians leads to relative and divergent policies. Thus regional policy makers should produce local policies accounting tacit knowledge. The chapter sets forth a strong theoretical framework but weaker practical outputs about the regionalized health care system in Canada.

The last part is a mixture of issues like intermediating organizations, knowledge capitalization and case studies on language technology and fuel cell technology. Economic aspect of the triple helix is more focused in the case study examples of Singapore, Malaysia and Finland.

The primary chapter of the last part, written by Metcalfe, mentions the role of intermediating organizations and transferring of knowledge within the three areas; university, industry, government. Intermediating organizations - foundations, associations, independent research centers or church - are localized themselves between the state, industry and postsecondary education to accomplish their objectives and to acquire income, power and authority. There is a flow of actors among these organizations, the flow of resources and the flow of commerce, which connect the three main actors to the intermediating

organizations. This chapter is mostly related to the eighth chapter of the second part about boundaries. Beside that Metcalfe's article resides disintegrated with the remaining chapters of the part, the article is like a subsection of triple helix chapter.

The thirteenth chapter examines the ideals and contradictions in knowledge capitalization and discusses the debate about whether or not the deleterious effects of industrial funds for the university research projects and by making interviews with the receipt and the non-receipt of research funds from industry. It emerges that the researchers, who received industrial funds, are relatively more positive about university-industry relations than the non-receipt academic scientists. According to Dzisah, it is an unquestionable fact that industrial foundation impacts the higher education but the intellectual autonomy does not subordinate to the industrial partners. He provides a good summary of the basic idea of the book, but his justifications about the transformation are still naïve and at times the chapter repeats ideas and thoughts from the first and seventh chapters.

To sum it up, the work elaborates on the notion of 'triple helix' by considering various aspects of the issue and exemplifies the claims by case studies from different countries. The triple helix notion basically suggests that emerging 'the age of knowledge' causes a helix of university, economy and politics. They suggest that capitalization of knowledge does not make universities vulnerable against industry and governments but it does improve its position to a more significant place which effects both economy and politics. Their thesis evokes Anglo-Saxon protestant ethics by featuring monetary value of knowledge. The debate around intellectual property rights, patents against principle of disinterestedness of science will go on surely. Industrial research which can be started with Thomas Edison and his invention and implementation of light bulbs, can be considered inevitable. Whatever the motive - money or war-power as in the case of scientific progress in Germany during World War II - without ethical limitations, the helix can be abusive. There will always be a contradiction between monetary value of a cure of a disease, for instance, and its moral value. We need a quadruple helix then; including moral or ethical limitations concerning environmental or humanitarian needs.