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The translations and the organizing of scientific practices in R&D biotechnology

As translações no organizar das práticas científicas em P & D biotecnológica

Organización de prácticas científicas de Investigación y Desarrollo en biotecnología

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Abstract

Considering the scientific practices related to R&D in biotechnology and, based on the assumptions of Actor Network Theory (ANT), this study aimed to describe the main translations that influenced the composition of an actor-networks, reflecting on the organizing practices in a scientific laboratory R&D of Northeast Biotechnology Network (Brazil). The methodological procedures were based on the historical approach of biotechnology under study from an ethnographic posture. The composition of the corpus was organized in the form of reports, observing the historical passages. The history of biotechnology has been reported between the plots of design, patenting and commercialization practices, highlighting the creation of heterogeneous actors' networks. Finally, he emphasized the influence of laboratory scientist's leadership in the way of organizing of scientific practices.

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Keywords: Translation; Scientific practices; Actor-Network Theory; Biotechnology

Resumo

Considerando as práticas científicas relacionadas a P&D em biotecnologia e, com base nos pressupostos da Actor Network Theory (ANT), esta pesquisa teve por objetivo descrever as principais translações que influíram na composição de uma rede-de-atores, refletindo sobre o organizar das práticas científicas em um laboratório de P & D da Rede Nordeste de Biotecnologia (Brasil). Os procedimentos metodológicos se basearam na abordagem histórica da biotecnologia sob estudo a partir de uma postura etnográfica. A composição do *corpus* foi organizada na forma de relatos, observando as passagens históricas. A história da biotecnologia foi relatada entre os enredos das práticas de concepção, patenteamento e comercialização, evidenciando a constituição de redes de atores heterogêneas. Por fim, enfatizou-se a influência da liderança da cientista do laboratório no modo de organizar das práticas científicas.

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Palavras-chave: Translação; Práticas científicas; Teoria Ator-Rede; Biotecnologia

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Resumen

Teniendo en cuenta las prácticas científicas relacionadas con I+D en biotecnología y con base en los supuestos de la Teoría del Actor-Red (*Actor-Network Theory* - ANT), en este estudio se pretende describir los principales movimientos que han influido en la composición de una red de actores, así como evaluar la organización de las prácticas científicas en un laboratorio de I+D de la *Rede Nordeste de Biotecnologia* (Brasil). Los procedimientos metodológicos se basan en el enfoque histórico de la biotecnología en cuestión desde un punto de vista etnográfico. La composición del *corpus* se ha organizado en forma de relatos o descripciones, con la observación de pasajes históricos. La historia de la biotecnología ha sido relatada en el contexto de las prácticas de creación, patentes y comercialización, lo que pone en evidencia la creación de redes de actores heterogéneas. Por fin, se observa la influencia del liderazgo de la científica coordinadora del laboratorio en la forma de organizar las prácticas científicas.

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Palabras clave: Movimientos; Prácticas científicas; Teoría del Actor-Red; Biotecnología

Introduction

During the last decades, Rabinow's work (1999) has been based on the assumption that the term "life" has been undergoing a modernization process which is parallel to that occurred to the word "society" in the last century. When discussing the "modernization of life", the author emphasizes that we live in a time when new practices on what being *anthropos* means are in production and circulation. The author converses with the social studies of science, developed by, among others, Thomas Kuhn, Bruno Latour and Donna Haraway, a dialogue which predominantly reflects the everyday practices in scientific laboratories and focuses on how the major abstractions of "science" are also products of these local practices (Biehl, 1999, p. 14).

Rabinow (1999, p. 9) proposes that contemporary anthropology create new ways of engaging in research procedures of scientific culture and "analyze the *logoi*, science and understandings that are emerging around the constitutive material of life." With its ethnography of science, the author points out that this is also culture, real and constructive, which does not exist outside of relations of knowledge and power. The author based his questions on scientific reason when taking the contemporary reason as his anthropological object and suggests viewing anthropology as nominalism: "The reason, in spite of whatever it may be, is a social relation historically locatable, an action in the world – a set of practices" (Rabinow, 1999, p. 16). For Rabinow (1999), once such understandings have been incorporated, the field is ready for re-evaluations and taking new directions, and ethnography is a key step in this process. Thus, the author suggests approaching the "scientific places" where new forms/events emerge, and investigating how these forms/events catalyze actors, things, temporalities/spatiality into a new assembly of the social, thereby producing new skills (Rabinow, 1999, p. 14).

A similar discussion is articulated by Latour (2001), as he construes the social as a temporary/momentary organization, built by associations of elements materially and discursively heterogeneous, human and non-human, such as objects, machines, humans, animals, texts, ideas, organizations, among others (Law, 1992, 2007). To Latour (2001), the only way to understand the reality of scientific studies is to follow what they do best, that is, to pay attention to details of scientific practice. In Latour's view

(1997), the studies focusing on practices have an empirical character as they focus on the moment at which researchers exercise their activities. Knorr Cetina (1999) agree to discuss the scientific studies focus on practices from their organizing (practice as its organizing). And in that sense, Latour (1997) believes that the scientific laboratories are excellent places, where it is possible to understand the production of certainty. Following this theoretical line, a growing concern of organizations in countries with late industrialization has emphasized issues related to the ability to recognize and manage the resources and skills necessary for the research and development process (R&D).

On the other hand, much of the academic literature pertaining to this debate on the issues of technological innovation addresses issues related to the analysis of policies that facilitate or hinder its spread in the markets and the organization of R&D activities on which they are based. These discussions relate to the debate on the complex interweaving of Science and Technology (S&T) that characterizes the modern world (Nelson, 2006). In these terms, the links between C&T which began to take place a century ago led to the emergence of R&D laboratories as one of the main places where efforts towards innovation occur. These entities, dedicated to technological advancements and constituted by scientists and engineers, established a close link to certain production companies and sectors of companies whose R&D often rely on external sources such as universities and government laboratories (Nelson, 2006).

Nelson (2006) discusses the role of knowledge in the efficiency of R&D, emphasizing that most of the studies that focus on the issue of invention and innovation have shown a satisfactory grasp of why and how the capacity of an inventor for appropriating the return of his own invention affects the susceptibility of inventive effort and the efforts in R&D to the demand side factors. However, it has been a great deal harder to reach a solid understanding of the factors that influence the supply of inventions or technological advancement. The proposition that the author raises is that inventions advance more quickly and more effectively in areas where technological knowledge is solid than in areas where it is weak. Knowledge enables to the attainment of broader advance from certain efforts in R&D. Alternatively, solid knowledge reduces the expected costs of any R&D results, while increasing the efficiency both by empowering R&D to work with a better set of potential projects and for

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