
Cancer as a complex disease and a transdisciplinary challenge: ontological, epistemological and sociological implications

Edgar Valadez Blanco*^{1,2}

¹Professor – Av. Universidad 3000, Circuito Exterior S/N Delegación Coyoacán, C.P. 04510, Mexico

²PhD Student – Mexico

Abstract

The genetic paradigm of cancer have been proven to be inadequate due to its reductionism. This model does not consider the various levels of biological organization, the environmental factors and the complex social impact involved in cancer. In this context, cancer has been redefined as a complex disease that require models and theories which incorporate such factors. In this paper, I analyze the main discourses and practices as regards the complexity of cancer through a framework of metascientific and sociological categories (models, paradigms, research styles and inter-and transdisciplinary fields). Such strategy allows to classify and relate the diversity of the epistemological, ontological and sociological aspects involved in cancer research. With this framework it is possible to distinguish at least three paradigms related to the complexity of cancer: the first one defines and explains cancer as a disruption or modification of complex systems through mathematical and computational models; the second defines cancer as a complex disease and uses statistical models and epidemiological data to elucidate the social and environmental causes of cancer; the third consist of the practices and theories that focus on cancer patients, where intervention lie in the uniqueness of the person who suffers the disease. The relationships between these paradigms can be sociologically understood as the emergence of an inter- and transdisciplinary field. In this field, each discipline possess its own style of research, paradigm and model; and at the same time, the different disciplines are closely intertwined, thus consolidating a new and promising cancer research field.

*Speaker