## Resumen

El término *neomecanicismo* se emplea aquí para identificar un movimiento o corriente reciente dentro de la ciencia y de la filosofía de la ciencia que se interesa por investigar mecanismos. Ese interés no es novedoso: la búsqueda y su empleo con fines explicativos es común en biología y química, y en algunas explicaciones de autores clásicos de las ciencias sociales pueden encontrarse mecanismos subyacentes. Lo novedoso u original de la propuesta neomecanicista radica en poner los mecanismos, en lugar de las leyes, en el centro de atención de la práctica científica: explicitar y analizar sistemáticamente el papel que juegan los mecanismos en la labor científica; tanto en los aspectos metodológicos de la investigación como teóricos. El atractivo de la propuesta radica en que aportan a la investigación científica, por ejemplo, explicaciones satisfactorias, guías para la investigación empírica, vías explícitas para la investigación interdisciplinaria y herramientas para la intervención, la predicción y el control. Para la filosofía, la propuesta plantea distintos problemas, como: ¿qué es un mecanismo? ¿Cuándo un modelo es mecanicista? ¿Cómo explican las explicaciones mecanicistas? ¿Cómo contribuyen los mecanismos al análisis causal?

Hay muchos comentarios, ejemplos y discusiones en torno a esta nueva propuesta mecanicista (especialmente sobre la explicación mecanicista) pero los trabajos están claramente divididos en dos áreas: por un lado están los de las ciencias sociales (y de la filosofía de las distintas ciencias sociales), y por otro, los de las ciencias de la vida (y de la filosofía de las ciencias de la vida). Cada grupo tiene sus propios problemas e intereses específicos. También la literatura parece estar dividida: los autores de un grupo rara vez citan trabajos del otro. Falta un análisis más general, que incluya ambos grupos. El objetivo de la tesis es proveer tal análisis, unir estos dos ámbitos neomecanicistas para mostrar los problemas e intereses que, más allá de las diferencias, tienen en común. La clarificación de ciertos conceptos y supuestos será necesaria para generar un consenso que permita la consolidación del programa neomecanicista en ciencia y filosofía de la ciencia.

El *status questionis* es presentado mediante diversos ejemplos (mecanismos tomados de diferentes disciplinas), una selección amplia de intentos de definir o caracterizar *mecanismo* y algunas clasificaciones de esas caracterizaciones, varias tipologías de mecanismos, los beneficios de la propuesta (entre otras: explicación y comprensión, interdisciplinariedad, causalidad y guía para la investigación empírica) y las objeciones que se le han hecho.

Los aportes originales del trabajo incluyen: una clasificación de las caracterizaciones de *mecanismo* (que permite conciliar algunas contradicciones *prima facie*), una nueva caracterización de *mecanismo* (que resalta la diferencia entre mecanismo, modelo mecanicista y explicación mecanicista), una nueva tipología de mecanismos (basada en distintos criterios), un ejemplo de cómo la teoría de juegos evolutivos puede permitir modelar cierta clase de mecanismos y colaborar a la interdisciplinariedad y, por último, respuestas a las objeciones hechas al neomecanicismo. En suma, se trata de buscar elementos que permitan unificar y así consolidar el neomecanicismo.

## Abstract

The term *neomecanicismo* is used here to identify a recent movement in science and philosophy of science focused on investigation of mechanisms. Researchers are usually interested in mechanisms: it is common that biologists and chemists, for example, look for mechanisms and use them for explanatory purposes, and classical authors in social sciences also propose underlying mechanisms to explain social phenomena. The originality of this movement lies in focusing the attention on mechanisms rather than on laws when analyzing scientific practices, in analyze systematically the role of mechanisms in science, both methodological and theoretical. The appeal of the approach for science is that mechanisms provide final explanations, practical guides for empirical research, and explicit ways to articulate interdisciplinary research. It also provides tools for intervention, prediction, and control. However, the approach also brings some philosophical problems such as: What is a mechanism? When a model is a mechanistic one? How do mechanistic explanations work? How do mechanisms help to analyze causal relationships?

There are plenty of proposals, comments, examples and discussions on this novel mechanistic approach (especially on mechanistic explanation), but the works are clearly divided two large areas, namely, the works of social scientists (and philosophy of social sciences), and the works of researchers of life sciences (and philosophy of life sciences). Each group seems to have their own specific set of problems and interests. Furthermore, the literature reflects this division: authors of one group rarely mention the works of the other group. A more general analysis covering these two groups is missing. The aim of the thesis is to provide such an analysis in order to unify these two mechanistic fields and to show common problems and interests. To clarify some concepts and assumptions is a necessary step to generate consensus, which could be the first step towards a consolidation of *neomechanistic* program in science and philosophy of science.

*Status questionis* is presented through several examples (mechanisms taken from different disciplines), a wide selection of attempts to define *mechanism*, and some classifications of characterizations. This thesis also presents several typologies of mechanisms, the advantages of the approach (explanation and comprehension, interdisciplinarity, causality, guide for empirical research, etc.), and the objections that have been made to the mechanistic approach.

Original contributions of this work includes a classification of characterizations of *mechanism* that conciliate some *prima facie* contradictions, a new characterization of *mechanism* (with emphasize the differences between mechanism, mechanistic model, and mechanistic explanation), and a new typology of mechanisms (based on different criteria). I also provide an example of how evolving game theory allows modeling some kind of mechanisms, also showing how this theory can promote interdisciplinary research. Finally, I offer some responses to objections to the mechanistic approach. In short, I try to find some elements towards unification and consolidation of *neomechanistic* approach.

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