



# Democratizing the scientific space: The constellation of new epistemic strategies around the emerging metaphor of socially embedded autonomy



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## ABSTRACT

The question of the democratization of the scientific space is a complex topic which goes beyond instrumental, normative and substantive arguments justifying civic participation, to include feminist, epistemological and sociological critical theory on the construction of knowledge, ignorance and agency. An exploration across different disciplines and contexts suggests that these different fields share a culture which increasingly employs the metaphor of socially embedded autonomy. Democratization emerges as multi-directional and multi-functional, whether in the reflection by the scientific community on the social conventions of the scientific space to strengthen their objective autonomy and withstand the manufacture of ignorance around invested interests; or in research design where interdisciplinary approaches around transdisciplinary themes such as gender and climate change incorporate citizen participation in the research process, benefitting from local knowledge about particular contexts.

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## 1. Introduction: science, technology and society

The purpose of this paper is to review the arguments for the democratization of the scientific space in contemporary context of an increasingly techno scientific world and to review contemporary perspectives in epistemology and sociology which develop a metaphor of knowledge and agency which is socially embedded; and, finally, to consider the extent to which these contemporary critical perspectives and metaphors are already having an impact in the emergence of new epistemic strategies.

### 1.1. Arguments for the democratization of the scientific space

A 2 year research project in the South-east of Mexico<sup>1</sup>  
“The Social Appropriation of Science, Technology and

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<sup>1</sup> The project was financed in 2010 by the Mexican National Council for Science and Technology (CONACYT) through its Institutional Regional Development Fund (FORDECYT) to develop research, propose solutions and implement strategies for the social appropriation of R&D to redress the low levels of development in the south-east region of México.

Innovation in the South” included amongst the six sub-projects *The Permanent Regional Seminar on The Social Appropriation of Science, Technology and Innovation*, the aim of which was to explore different aspects of the concept and its diverse forms of application in the region.

The project initiator, the biologist Miguel Chávez Lomelí, proposed in the first of six inter-sector and interdisciplinary sessions, that the contours for this exploration take as its point of departure 3 basic concepts of ASCyT outlined in Columbia by Marcela Lozano-Borda's and Tania Pérez Bustos [1]:

- I. The social appropriation of science through its various forms of divulgation
- II. Science and technology as the motor of development requiring strategies of management and transferal
- III. Citizen participation in the construction of science as a public good

By including the practices which each model gives rise to, Chávez thus invited the participants of the seminar not

only to think beyond the linear model of science communication, but also to consider the ends of the process. The traditional model is of science as an autonomous space which requires divulgation strategies to inform the general public. If the aim is to use science and technology as a motor of development then strategies of management and transferal should be analysed; if the goal is the construction of science a public good then citizen participation should be considered.

Marcela Lozano-Borda and Tania Pérez Bustos argue that in Latin America the concept of the social appropriation of science and technology (ASCyT) has been confused with this notion of the divulgation of science, hence reflections on the relation of science to society have not hinged around the notion of the democratization of science but rather popularization of science. This confusion can partly be explained by the predominance of the understanding of knowledge construction as vertical and top-down [2,3]. They argue that, what's more, the dominance of this concept of science communication has led to the development of linear public policy strategies focused on improving the public understanding of science.

This instrumentalisation of the ASCyT has led to more emphasis in positioning activities before understanding the relations which form between the different actors that participate in the construction of knowledge. This has resulted, in many cases, in the development of linear strategies, which in their turn, have legitimized a vertical conception of the construction of knowledge, generating a breach between “producers” and “users” of scientific technological knowledge and giving priority positions to certain actors which are called to mediate this relation.

In the 3rd seminar in this series, participants Emmanuel Munguía and Mirna Villanueva, from the Autonomous University of Tabasco, reminded the seminar participants of the importance of the role of science in current controversies such as climate change; genetic modification of the food chain, cloning; abortion amongst others; yet scientific argument relating to these issues is too often viewed with mistrust by a significant amount of public opinion. They argued that the divulgation or the “cognitive deficit” model for the social appropriation of science, far from bridging the breach in consolidated democracies is on the contrary enhancing a climate of mistrust between the “public” and the “experts”, indeed it is, they claim, fuelling the demand for a more participative space of discussion and argued in favour participative models of research [4]. They went on to cite Daniel Fiorino's instrumental, normative and substantive arguments to justify civic participation: (i) participation is the best guarantee for avoiding social mistrust and resistance; (ii) technocracy is incompatible with democratic values; (iii) the judgements of non-experts are as reasonable as those of experts [5].

The justification for increased citizen participation in the scientific space is multidimensional: it is pragmatic and egalitarian for citizens if they acquire a basic knowledge of science will have increased opportunities to flourish in a techno-scientific society; as well as democratic and ethical considering that all citizens need to be involved in the important public issues arising from

developments in science and technology; but more importantly it also involves the issue of social cohesion as the democratization of science is a strategy for building trust and consensus about developments which have multidimensional implications for human society and the ecology of the natural environment.

Despite the congruence of the arguments regarding the urgency of the need to develop a diversity of paths to bridge the divide between science and society, it nevertheless became apparent during the seminar series that the hegemonic position held by model of the popularization of science continued to maintain alternative models at the margins of the debate. This paper proposes to contribute to the debate by analysing some notions which sustain the divide, particularly the notion of the autonomy of the scientific space and the prestige of the expert voice. The following section considers the theoretical and epistemological challenges to the notion of the autonomy of the knower and the autonomy of knowledge.

## 2. Redefining the autonomy of the knower and the known

The paradigm of scientific autonomy which underlies the science-society divide has its roots in Western epistemology based on the Kantian rational autonomous knower and the moral obligation to seek knowledge which transcends the contingency of historical context. Emmanuel Kant is considered to have established in the 18th century the limits of the epistemic space of modern Western thought. Although since the beginning of the 20th century it has been rigorously questioned through schools of thought initiated by Husserl in the continental tradition and Wittgenstein from within the analytic school of thought, Kantian epistemology continues to be drawn upon to sustain the naïve scientific realism which informs current scientific practice and its role in contemporary society.

I shall briefly outline the basis of the Kantian argument regarding the conditions for universal knowledge and the possibility of objective truth based on individual autonomous knowledge, then review contemporary epistemological and sociological theory which analyses the social basis for the construction of knowledge.

### 2.1. *Kant's autonomous rational knower*

#### 2.1.1. *Kant's Copernican revolution*

The revolution in the academic field of philosophy in the 18th century that continues to sustain a naïve scientific realism in the 21st century was ambiguous from its conception as the revolutionary step which Kant took which involved posthumous attempts to retrieve some of the rationalist ground lost and has thus bequeathed a legacy which is open to quite different interpretive perspectives. Kant's initial motivation was to answer the dispute between the continental rationalists and the British empiricists which had rumbled on for almost a century.

Descartes's rationalist claims that certain knowledge of objects can only be acquired by inference from indubitable principles, displacing Plato's argument for innate ideas for the deductive argument of “*Cogito ergo sum*”,

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