



Darzi, Gh. (2019). History of ideas of interdisciplinarity: Transition from an idealistic, integrative approach to a pragmatic, problem-solving one. *Interdisciplinary Studies in the Humanities*, 11(4), 1-32. doi: 10.22035/isih.2020.3626.3809

Doi: <http://dx.doi.org/10.22035/isih.2020.3626.3809> URL: http://www.isih.ir/article_322.html

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History of Ideas of Interdisciplinarity: Transition from an Idealistic, Integrative Approach to a Pragmatic, Problem-solving One

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Received: Jul. 15, 2019; Accepted: Sep. 16, 2019

Extended Abstract

Interdisciplinarity is one of the most significant phenomena of our time, but it is not an easy task to come up with a coherent and precise definition. Evidently, the reason is the wide variety of opinion among the experts in this field. A historical approach toward the most practical definitions of interdisciplinarity and its different types can be very advantageous in this regard. The present research has aimed to show that that, in its early stage, interdisciplinarity was merely an idealistic concept which was related to the development of 'unified science'. However, the more we move to the present time, the more tangible problems from the world outside we can deal with. Three main insights into the concept of interdisciplinarity are based on "Epistemic breaches", "degree of integration", and "the purpose of interdisciplinary research" and illustrate the afore-said conceptual transition. In the latter type, interdisciplinary researches are observed on the basis of their applicability. In the first two types, however, epistemological and knowledge-related issues are at stake. The most recent concept of "Transdisciplinarity" is also entirely based on the degree of applicability and locality of the issues in question. In the first type, we will face "crossing the boundaries of knowledge" and in the second one, we will "cross the field of knowledge". Among these terms, "multidisciplinary" has been far less controversial and there is a relatively good agreement on it. In this way, the co-operation of the disciplines is minimal.

Keywords: history of ideas, interdisciplinarity, integration, problem solving, transdisciplinarity, unified science

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INTRODUCTION

Interdisciplinary studies can be traced back to pre-modern times. In this regard, philosophers, such as Plato and Aristotle viewed Theory of 'Unified Science' as an important theory. Despite many differences, this theory has similarities with the 'encyclopedic approach', which interdisciplinarians have called multidisciplinary. The abstract and idealistic view based on "unified science" was the most important characteristic of the encyclopedic view of knowledge in the pre-modern period. A detailed approach toward the definitions of interdisciplinary in the modern period shows that the same approach can be seen in the twentieth century. However, the closer we are to the 21st century and the more modern, practical, yet, problematic approach to interdisciplinary priority takes precedence. A historical look at the most focal definition offered by theorists in this field can well illustrate this transition.

Klein wrote one of the most important works on the concept of interdisciplinarity and its typology (see: Klein, 2017). In Iran, several works have been written by localizing this typology in different fields (See: Tofighi and Javadani, 2009; KhorsandiTaskooh, 2009; Darzi, Gharamaleki, and Pahlavan, 2013). These works do not focus on historical developments. Bahrani (2013) Concentrating on different aspects of problem solving in the contemporary era, Bahrani (2013) has assumed a good horizon for interdisciplinary cooperation. Mo'tamedi and et al (1397) have tried to have a typological as well as a historical view of the classifications related to the middle class. The main purpose of the present research study is to compare different classifications and express their differences and similarities. Although the authors of this article believe that interdisciplinarity in the contemporary period is much more pragmatic than it was in the past, their main goal is not to show the details of this hypothesis. On the other hand, what we are looking for is to examine the most important theories in this field and with a distinct approach from what has happened before, to show this conceptual transition in definitions and approaches related to interdisciplinarity.

PURPOSE

This study seeks to determine that the interdisciplinarity has been a fluid and ever-changing concept. Although it was initially a more abstract and epistemological concept, it has recently become quite problem-oriented, seeking to solve tangible problems of the real world. Therefore, in terms of the history of the idea, we are facing a semantic narrowing.

METHODOLOGY

In the present study, the focal method is the historical method which puts emphasis on the history of the idea of interdisciplinarity. Accordingly, from the very beginning of the field to this day, the most important definitions of interdisciplinary have been extracted and collected, and then they have been classified based on the historical order as well as similar and distinct components. In the proposed classification, Klein's triple classification has been used: interdisciplinary, multidisciplinary, and transcendental.

RESULT

The real tangible problems and the need to solve them have made interdisciplinarity more and more distant from abstract and purely epistemological theories.

DISCUSSION

A study on the history of developments of interdisciplinarity shows that the encyclopedic view of knowledge has a great semantic affinity with multidisciplinary. In this type, various disciplines are merely juxtaposed, sequenced and coordinated without any significant communication and interaction. Thus, multidisciplinary is the first and foremost type in terms of this idea. Interdisciplinarity (in its own sense), which is based on the dynamic interaction and integration of disciplines, has been conceptualized after multidisciplinary, but transdisciplinarity, which is often based on solving tangible and human problems, includes the most recent applications for this idea.

A historical study on the idea of interdisciplinarity (in its specific sense) shows three different approaches based on: 1- The degree of integration; 2- The purpose and end of interdisciplinary research; and 3- research questions and issues. In the second type, by dividing the interdisciplinary into theoretical and instrumental branches, a middle approach is seen. However, the third type, based on problem solving and research questions, has taken a concrete and very concrete approach.

Also a historical study on the idea of transdisciplinarity (in its specific sense) shows the two approaches: 1- Defining transdisciplinarity by transcending the boundaries of disciplines; 2- Defining this term by transgressing through the fields of knowledge. The first approach, which historically outdoes the second one, involves an idealistic view of knowledge and attainment of perfect science. But the second approach, which is more recent than the first one, is focused on solving human problems. And to achieve this, it goes beyond the realm of knowledge and uses the expertise of technicians and other stakeholders. Thus, the transition from an idealistic view to a realistic one can clearly be seen in the term transcendence.



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CONCLUSION

Conceptual transition in interdisciplinarity has taken place in two general and specific forms. The general transition is in the triple spectrum and the transition from multidisciplinary to transdisciplinarity. In this spectrum, the transition from the abstract form to the concrete one is quite visible. This is because of the fact that the multidisciplinary approach, which is also consistent with the encyclopedic approach, is associated with a view based on achieving a "unified science" in which there was a purely abstract and idealistic view. But the closer we get to the transdisciplinary, the more realistic and tangible the realistic approach to problem solving becomes.

However, the conceptual transition, in particular, relates to the historical view of one of these three terms, i.e. "interdisciplinary," and the observation of historical developments that took place in it from the mid-twentieth to the 21st century. A historical approach to the developments of this period also shows us three different stages: These three stages are initially based on integration, and an abstract approach prevails, but as we move forward, a concrete and problem-oriented view will prevail.

NOVELTY

- 1- Attempting to demonstrate the most important evolutions in history of ideas of interdisciplinarity.
- 2- Discovering the conceptual transition in interdisciplinary definitions in the last two centuries. Accordingly, it has been shown that interdisciplinary definitions have evolved from an abstract state based on the integration of knowledge to a concrete and problem-solving state.
- 3- Historical classification of definitions related to interdisciplinarity and showing three different approaches: Interdisciplinary conceptualization based on: 1- The degree of integration; 2- The purpose and end of interdisciplinary research; and 3- research questions and issues. The first approach is based on an abstract view of the integration and synthesis of disciplines. In the second type, by dividing the interdisciplinary into theoretical and instrumental branches, a middle approach is seen. But the third type, based on problem solving and research questions, has taken a concrete and very concrete approach.

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