Chapter 4

A Scientific Field in Formation:
Contributing to Define Data Science as a New Context of Scientific Research

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ABSTRACT

A question is present nowadays in academic and research arenas: as we manage data, adopting several different processes and methods, as this management relates to other fields, so different and identifiable, can data science be considered as a scientific field? The chapter develops a study around this question, observing how, potentially, this field was formed and continues to evolve, gaining new definitions and practical views, pressured by the massive adoption of technological resources to manage data and a progressive level of demand of products and services which are obtained from data, as those regarded as information or knowledge outcome. The study was conducted to appreciate the possible characteristic of multi-, inter-, and trans-disciplinary aspects for this scientific field, aiming to understand this perspective as a mature characteristic of a scientific field. These arguments were checked, which form the data science context, determining a final level of perception for this study, that considered data science as a new, innovative, in formation scientific field.

INTRODUCTION

Is it possible to announce a new scientific field without an extensive exam by the Academia and associated partners and scientific community discussion? Some time

ago, this question could seem absolutely inappropriate, resulting in one definitive negation. No, and there is no other condition! But, if attention is paid, a new phenomenon is present in our lives nowadays: The Data Science field affirmation.

Data Science has been under scrutiny and discussion over the years, along with the undeniable strong market evidence of aspects and characteristics of a new context in formation (Davenport and Patil, 2012; Benistant, 2016; Patil, 2019). "Big Tech" players, futurologists, communication enterprises, modern services (as those from shared economy, audio and video streaming, fintechs, among many others), research institutions - yes, it is true! - and, above all, a huge number of professionals use the expression "Data Science" fruitfully everyday. As a matter of guidance, it is important to recall the citation issued by one of the most remarkable scientists of the Twentieth Century, Carl Sagan, when he stated:

"Science is a way of thinking much more than it is a body of knowledge" (Carl Sagan)

A citation which is, for sure, one of the most adopted and referenced - as it occurs in here - by practitioners when referring to applied Science views and studies in all time.

Doubts such as presented in the beginning of this text, were discussed and assessed by authors such as Pierre Bordieu (2004) and Bruno Latour (1988) when observing exactly the dilemma on the formal delimitations and characteristics for a scientific field. As these and several other authors researched, practical, applicable and social use evidence are strong signals to produce a different view for phenomena and also assist in the forthcoming studies around research objects and analysis.

This chapter approaches this case, of a potential scientific field emergence "in front of our eyes", without the reverence of a formal examination by peers and years of exercise, before an official recognition by the scientific community, which invaded and occupied our daily routines, implemented in smartphones, televisions, domestic utilities, services from the most simple to the most urgent, for our information, leisure and learning: Data Science is everywhere (Fallachay, 2020).

Formally, this field can be considered "in formation" - as it was stated in the chapter title, but this does not solve the issue: it is possible to continue, to the advance of Science, that any scientific field has not been essentially "closed" yet. But Data Science offers also a new conundrum to add to this question: This is an exercise of coherent bases of knowledge, such as Mathematics, Statistics, Communication, Computing Science, Information Science and Management, just to cite some of the main contributors, which is being developed at the same time it offers results which are implemented for decision-making, from the personal to organizational level, in a no-return context for mankind. This way, the question can be, initially, be proposed in a bit different way: "Can we disregard Data Science as a scientific field". As a

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