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Volume 56

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- A short synopsis of the work or the introduction chapter
- The proposed Table of Contents
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Tommaso Bertolotti
Editor

Cognition in 3E: Emergent, Embodied, Extended

Multidisciplinary Perspectives

 Springer

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Preface

There are more things between heaven and earth, dear reader, than dreamt of in your philosophy. This is the warning that William Shakespeare inscribed onto the lips of Hamlet, the prince of Denmark. Hamlet was rebuking Horatio and his incredulity before the ghost of the dead king.

In the Renaissance, “philosophy” designated a wider array of matters than the word does today: it encompassed natural philosophy. Galileo and the Bard of Avon were presumably born the same year (1564): Science in its contemporary understanding was still to be born, and philosophy was the main repository of true knowledge about the world. For the sake of this argument, it should be noted that Science and Philosophy share a very similar etymology: the former is the love of knowledge, while the second means nothing but Knowledge—in Latin, *Scientia* from the verb *Scire* which simply means “to know”.

What is then Hamlet telling Horatio? That there are more things between heaven and earth than in his knowledge. Is this a but flourished way to say, “There are things that you don’t know”? Yes and no. That famous sentence does include the essence of Shakespeare’s theatre.

Knowledge and ignorance are the main characters in all of Shakespeare’s plays. The plot unraveling across the acts is indeed a function of knowledge. A character ignores the true identity of another, or is perchance even oblivious of her own nature, or is mistaken in assuming the reaction of a third character to an event, and so on and so forth. Shakespeare made it clear that stories are not shaped by what character *do*, but by what they *know*. What characters know triggers actions intended at helping them pursue their goals. As they pursue their goals they travel, and as they travel they gather new knowledge, which prompts different courses of action. The resolution of a play does not signify that everything that was to be done was done indeed, but that everything that was to be known was eventually known and subsequent actions are, from that point of view, immaterial.

In Shakespeare’s plays, narrative resolutions are first of all cognitive resolutions. Cognition can be defined as the capacity to display adaptive behaviors, that is to say to react in a smart, non-automatic way to changes in one’s environment. Cognitive resolutions obtain when characters know everything they need to know in order to

behave in a smart way in their environment—which is also composed of other characters. Death, a common fate for tragic characters, is also a cognitive resolution, that is the end of the cognizant. Once dead, there is no more behaving, so the quest for knowledge ends.

The death of the tragic characters is usually accompanied by a reveal for the spectator: the spectator, or the reader, is like a daemon who gathers all of the relevant knowledge from all parties at stake, and would know what portion to assign each to each of them so they can each (or almost) triumph in their plan. Had Romeo known, upon arriving at the Capulets' monument, that Juliet was asleep and not dead, in all likelihood he would have opted for a more adaptive choice than ending his own life. No one told him to take a step back from the situation that was unfolding before his eyes. No one suggested that there could be more things between heaven and earth than dreamt of in his philosophy: for instance, a plot involving sleeping drugs devised by a friend in order to crown their dream of love.

How, then, can we understand the famous warning that Shakespeare spoke through Hamlet's royal lips? Again, it's not so much about the things that you know or do not know. It's rather about how what matters is not necessarily only in your mind. It's an invitation to search for the parts and processes leading to your cognitive resolution "between heaven and earth", where most things are, and not just "in your philosophy".

To limit the exercise of one's cognitive abilities to what's within our current knowledge, without plugging into the world (to use Andy Clark's expression), is hardly ever a rewarding choice; if only because, according to the recent views of embodied and extended cognition advocated for in this volume, there is so much more cognition than what goes on in our mind. Provided it makes sense to think that what goes on in our mind can be isolated from all the rest that is "between heaven and earth".

Hamlet is often portrayed addressing a skull as he asks the famous question whether "to be or not to be". This book could have been conceived out of a similar iconography, each author asking the skull, "where do you plug into?"

Even accepting the broad definition of cognition as the *capability to display adaptive behavior*, much remains to explore and wonder about, namely, where are the roots of this capability. These are the three E addressed in the volume: Emergent, Embodied, and Extended. Focusing on cognition as an emergent property means to investigate how the processes at stake can be drawn back to simpler levels and deep relationships that go beyond (and beneath) what we usually understand as "being cognitive". To study the embodiment means to focus on how much cognitive properties depend on the kind of bodies they are nested into. The extended paradigm is a conceptually natural development of embodied theories, as it explores cognition as it happens in the interactivity (and interpassivity) between the different cognitive subjects and cognitive objects/supports spanning across space and time.

This book was born from a workshop I organized at the University of Pavia, Italy, in May 2018. In turn, that workshop was born by chance out of another extension and mingling of different cognitions around a conference in London, in

November 2017. We don't really go to conferences for talks, but to talk between talks. The conversations we had in December with Tomie Hahn, Chris Mays, and J. Scott Jordan deserved and reclaimed a proper occasion, the perfect stage as far as emergence, embodiment, and extension are concerned. The moveable feast was convened in Pavia six months after our first encounter, in a setting that could afford extensive presentation and the thoughtful exchange they sparked. Tomie, Curtis, Chris, and Scott were matched by my local partners in research: Lorenzo Magnani, Selene Arfini, and Marco Viola—whose research interests perfectly suited this lineup.

The results of our conversations, twice distilled, are in this volume: just abstracts, not papers, were required before the workshop to let each mind be exposed to each other's research and let the final words reflect our mutual exposure to different, yet compatible perspectives.

The workshop was funded through the Blue Sky Research Project (2017–2019) I was awarded by the University of Pavia. I want to express my gratitude to the Department of Humanities—Philosophy Section for supporting me in the organization. This workshop could not have been possible without the teachings of Lorenzo Magnani and the support of Selene Arfini. I am deeply indebted toward the Department of Economics for letting us take advantage of their beautiful conference hall: I address a special thanks to the director, Prof. Maiocchi, and to Lorenza Magnani for facilitating the connection. Special kudos to the admins of the Department of Humanities for handling and solving the complexities that international invitations still caused in 2018. I was moved by and grateful for the involvement of my students (from the class of cognitive philosophy) into the workshop, especially the banding session organized by Tomie Hahn. We had an amazing ride, which I daresay is further proved by the quality of the contributions to this volume. Without further ado, let us turn to what the participants had to say about Cognition in three E's: emergent, embodied, and extended.

Los Angeles, USA
December 2019

Tommaso Bertolotti

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