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The Intellectual Character of Interdisciplinary Researchers

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Abstract. The study and understanding of fundamental questions cannot be addressed by a single discipline. A plurality of insights needs to be integrated or coordinated to allow for mutual enrichment in interdisciplinary research. The intellectual character describes the set of dispositions that both configure and motivate intellectual behavior. In this paper, we explore the intellectual virtues that constitute the ideal character of an interdisciplinary researcher. We look at dimensions of several intellectual virtues –intellectual curiosity, open-mindedness, intellectual humility, and intellectual honesty– relevant to interdisciplinarity, we discuss the significance of other character traits –intellectual creativity and intellectual trust– for integrating a plurality of insights, and we argue for the need of a social cognition approach, emphasizing the relevance of interpersonal intellectual virtues in interdisciplinary inquiry. All these virtues are key constituents of the intellectual character of interdisciplinary researchers.

Keywords: intellectual virtues, intellectual character, virtue epistemology, interdisciplinary research, fundamental questions.

Introduction

The study and understanding of fundamental questions cannot be addressed by a single discipline. In particular, research in science and the Big Questions requires both a philosophy committed to science and a science open to philosophical and theological questions. Nevertheless, since each field works under a specific theoretical framework with its own methods and procedures, interdisciplinary research is possible but not easy. A plurality of insights needs to be integrated or coordinated in order to allow for mutual enrichment in collaborative work. The challenge is significant since interdisciplinary research requires not only learning new content from a different discipline but also leading an epistemic plurality through a collaborative process involving social cognition (Vanney and Aguinalde 2021).

Since 2010, we have uninterruptedly carried out several interdisciplinary research projects involving physicists, biologists, psychologists, neuroscientists, philosophers, and theologians at the Philosophy Institute of Universidad Austral (Argentina). In all these projects, we were particularly interested in fostering interdisciplinary work that brought together different epistemological emphases and levels of analysis, thus bridging the "two languages" of the humanities (especially philosophy and theology) and the sciences.

In these endeavors, it was necessary to face challenges related to the interaction between specialists and to overcome problems such as the communication between them and the reciprocal evaluation of their various points of view. While the researchers' willingness made it possible to conclude the investigations successfully in most cases, many of the investigators later stated that the experience involved a much greater effort than initially anticipated. Undoubtedly, their courage, humility, and capacity to be motivated by new ideas were vital to their success.

Some of these traits of character, which play such an important role in interdisciplinary research, were the subject of an insightful and heartfelt speech by Professor Eleonore Stump on the occasion of her incorporation to Universidad Austral community as Honorary Professor by

bestowing upon her the degree of Doctor *Honoris Causa* on October 21, 2021. This honorific title was conferred to her based on her solid academic career, commitment to the pursuit of truth, international recognition, and inspiring Christian faith and values. During the ceremony of her incorporation, she delivered an Acceptance Speech that reflected deeply on Thomas Aquinas's account of humility, courage, and magnanimity. We are pleased to open this special issue with the words she prepared for that occasion, which deal with a set of virtues that are so relevant to everyday university life and to the character formation of its students and professors.

According to Ron Ritchhart (2002), the concept of character entails a consistent deployment of dispositions so that patterns of behavior are established over time. Building on beliefs, attitudes, temperament, and tendencies, character must be nurtured by the environment and developed in a holistic and harmonious manner. Among the various dimensions of character, intellectual character is shaped by the thinking dispositions a person possesses. In other words, intellectual character is constituted by a set of dispositions that both configure and motivate intellectual behavior. Even though each person has their own intellectual character, we could ask ourselves, are there traits of intellectual character that interdisciplinary researchers have in common? Is it possible to speak of an intellectual character of interdisciplinary researchers? Or, more specifically, what would be the *intellectual virtues* that constitute the *ideal* character of an interdisciplinary researcher?

This special issue is dedicated to exploring these topics. In section 2, we will present a set of papers addressing intellectual curiosity, open-mindedness, intellectual humility, and intellectual honesty as key character traits of interdisciplinary researchers. In section 3, we will present papers that discuss the significance of intellectual creativity and intellectual trust for integrating the plurality of insights present in any interdisciplinary research in Science and the Big Questions. In section 4 we will argue on the basis of two papers for the need of a social cognition approach, emphasizing the importance of interpersonal intellectual virtues in inter-

disciplinary inquiry. Finally, we will suggest that all these virtues are key constituents of the intellectual character of interdisciplinary researchers.

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1. Intellectual virtues for interdisciplinary research

In the last four decades, a new field of epistemology focused on the study of intellectual virtue has been developing, primarily with the aim of solving several problems related to the justification of knowledge. The distinctive feature of the approach proposed by virtue epistemologists was to shift epistemology's focus from the evaluation of properties of beliefs to the evaluation of certain properties or dispositions of persons, emphasizing the consideration of epistemic virtues to account for the possibility of attaining knowledge of truth. Thereby, intellectual virtues can be understood as qualities that make us excellent thinkers. In responsibilist accounts of virtue epistemology, examples of virtues that shape the intellectual character of an individual are intellectual curiosity, open-mindedness, and intellectual humility, among many others.

Philosophers and psychologists have also explored the role of intellectual virtues in several applied fields. Among them, the role that epistemic virtues play in scientific inquiry is particularly relevant to our present discussion. Christopher Hookway (2003) suggests that intellectual virtues are the qualities needed to conduct well-regulated inquiries. In this sense, regulative epistemology aims to provide guidance for inquiry by promoting and inculcating virtuous dispositions (Roberts and Wood 2007; Ballantyne 2019b). From a different perspective, some authors have also explored the link between virtue epistemology and the philosophy of science (Fairweather 2014). They ask, for example, whether epistemic virtues can contribute to the resolution of the problem of underdetermination (Stump 2007), the study of perceptual responsiveness in scientific

observation (Vallor 2014), or the analysis of how intellectual virtues can be beneficial for a successful resolution of theory choice (Paternotte and Ivanova 2016), among other issues. Given that the concept of intellectual virtues helps to better understand the personal conditions that support the pursuit of knowledge across domains, it also takes center stage in the theoretical reflection concerning the challenges of interdisciplinary research in Science and the Big Questions, as we will see in the different articles that make up this special issue.

The intellectual virtues of curiosity and inquisitiveness have attracted much attention from epistemologists in recent years because they can be regarded as foundational character traits concerning the pursuit of truth (Schmitt and Lahroodi 2008; Ross 2018). Applying these two virtues to interdisciplinary efforts constitutes a great contribution to overcoming the ever-present problem of clearly defining the inputs from different areas and integrating them harmoniously into a shared understanding that goes beyond a simple juxtaposition of diverse knowledge.

In her paper "The role of curiosity in successful collaboration", Lani Watson shows that curiosity and inquisitiveness play an influential part in the successful collaboration of any research team, and especially if the research is conducted within an interdisciplinary context. Although both virtues have typically been regarded as synonymous, they are distinct dispositions closely interrelated. Curiosity motivates a person to acquire worthwhile epistemic goods that she believes is lacking, while inquisitiveness is a restricted form of curiosity characterized by being able to ask good questions about a subject. Watson notes that good questioning helps interdisciplinary efforts at least in three important ways: (i) by formulating the *shared epistemic goals* of the team members for a certain project in the form of research questions; (ii) by sharing knowledge and *building a common understanding* through the practice of asking reciprocal questions between experts in different areas, and (iii) by favoring the development of a smooth communication and *adequate interpersonal relationship* among them.

The need to achieve this shared understanding and deep integration of the knowledge provided by the different members of an interdisciplinary

team is also underlined by Nancy Snow but considering the contribution that can be made to this end by two other key virtues: open-mindedness and intellectual humility. In her paper "The value of open-mindedness and intellectual humility for interdisciplinary research", Snow traces the conceptual contours of these intellectual virtues and goes on to show how they can help to achieve success in all collaborative efforts, but particularly in what she calls *strongly interdisciplinary research*, i.e., research that brings together contributions from radically different areas such as the humanities and the empirical sciences. Broadly speaking, open-mindedness can be regarded as a disposition to be receptive to learning new things, to carefully consider different theoretical alternatives, as well as be willing to accept other views on an issue if they are well founded. In turn, intellectual humility is defined as a disposition by which one adequately pays attention to and owns one's intellectual limitations. Snow lists several obstacles that often affect interdisciplinary activity and that can be overcome by the application of these virtues, of which two are of special relevance: the failure (i) to engage appropriately with colleagues from other disciplines, and (ii) to develop a shared understanding of key concepts. Open-mindedness and intellectual humility address both difficulties insofar as they foster the establishment of a common vocabulary and a shared understanding of a complex subject achieved through adequate interpersonal relationships.

The view of intellectual humility understood as owning one's limitations and its importance for understanding the dynamics of interpersonal relationships in a research team is explained in greater detail in Jason Baehr's paper "Limitations-owning and the interpersonal dimensions of intellectual humility". Baehr defends this conception against objections that reject it for apparently neglecting the interpersonal dimensions of intellectual humility. But, as Baehr argues, even though the core concept of intellectual humility has to do with owning one's intellectual limitations, nevertheless it is correct to associate it with certain interpersonal dimensions because many of the limitations involved in the expression of intellectual humility are in themselves relational and interpersonal. First of all, intellectual humility usually implies a benefit for others, for in-

stance, by inspiring other people to feel more comfortable with their own limitations and ask for help in the appropriate circumstances. But also, because some intellectual limitations are in themselves relational due to the fact that no human being is intellectually autonomous and much of his knowledge depends on the expertise of others in an epistemic community. This is a crucial concept to be grasped by members of an interdisciplinary team. While everyone involved in the research should aspire to gain a great deal of understanding into other areas of knowledge in which they are not experts, they must recognize their own limitations and those of the discipline they cultivate in addressing the common problem being proposed.

A fruitful interaction of an interdisciplinary team, however, requires more than a mere recognition of one's own intellectual limits. This is important, but it is not everything. It is also imperative that all the contributors to the research be truly honest. In his paper, "Intellectual honesty," Christian Miller claims:

> Without a commitment to not misrepresent or distort the evidence that emerges from research conducted in fields like philosophy, theology, and science, it is hard to see how interdisciplinary work can ever lead to significant new discoveries.

In his article, Miller offers a preliminary account of the behavioral dimension of intellectual honesty and analyses its motivational dimension under a pluralistic framework. By assuming that the moral and the intellectual virtues are distinct sets of virtues, Miller argues for the distinction between the intellectual virtue of honesty and the moral virtue of honesty, which are still little studied.

2. The challenge of integrating a plurality of insights

Interdisciplinary research in Science and the Big Questions implies the recognition of an epistemic pluralism derived from the variety of disciplines involved in the investigation. It is commonplace that in each disci-

pline, researchers tend to exercise some mental operations more intensely than others. This preferred way of thinking is due to specific cognitive resources that are acquired during early disciplinary training, promoting the preferential use of some of them over others (Vanney and Aguinalde 2021, 164).

From very different perspectives, three articles in this issue address the challenge of integrating a plurality of approaches in interdisciplinary research. First, Rebecca Strauch and Nathan King analyze the intellectual virtue of creativity, aiming to clarify the intellectual contribution of the arts to university life. Second, Paul Harris studies the process that goes from charitable inference to active credence in young children as a mechanism for building trust in others. Finally, Juan Pablo Martínez *et al.* propose to analyze interdisciplinary research from an anthropological rather than an epistemological framework.

On the one hand, intellectual creativity is an essential habit of mind for interdisciplinary researchers. Following Baehr's account of this virtue (Baehr 2018, 47), we can say that it is a virtue that researchers should have to (i) explain one's disciplinary approach in a way that is understandable to others, (ii) conceive novel possibilities that go beyond individual disciplines, and (iii) organize sets of elements from diverse areas in a new and integrated way. However, as King and Strauch mention, the epistemic goods to which intellectual creativity aims are still little explored under the framework of virtue epistemology.

Art, which is a paradigmatic field for the *exercise* of creativity, offers a very different approach than the sciences to studying the Big Questions. While some authors have pointed out that "the arts must be taken no less seriously than the sciences as modes of discovery, creation, and enlargement of knowledge in the broad sense of advancement of the understanding" (Goodman 1978, 102), aesthetic cognitivism, or the consideration of arts as sources of understanding, is still an area to explore. In their article "Intellectual creativity, the arts, and the university," Strauch and King show that creative works of music and visual arts convey intellectual goods and argue that an account of intellectual creativity should include *knowledge by acquaintance* as a non-propositional epistemic good. They

conclude that intellectual creativity is a "virtue that breaks the propositional mold of much contemporary virtue epistemology," helping to clarify the arts' intellectual contribution to university life.

On the other hand, a fundamental trust must be developed over time among team members for successful interdisciplinary teamwork. But what would be the psychological factors involved and the personal conditions required to achieve the appropriate level of trust for such a group to successfully accomplish its objectives? It could be said that a certain readiness for charitable inference is required in the course of an interdisciplinary project where statements made by professionals from other areas will not always be clear at all times and consequently demand a certain vote of confidence in the expectation of a clearer and deeper understanding at a later stage.

From a developmental psychology approach, in his paper "From charitable inference to active credence", Paul Harris sheds some light on this point by discussing a possible explanation of how children gain confidence in various religious notions proposed by their parents or other members of their communities. According to him, children have a tendency to think charitably of other people's actions and remarks and to understand them in light of rational beliefs, even when there is no readily available naturalistic explanation. For example, if children observe an act of prayer, they will tend charitably to assume the prayer to be directed at an actual interlocutor in spite of the absence of objective sensible signs of the interlocutor's presence.

Finally, in their article "Knowledge and personal existence: Towards a radical interdiscipline", Martinez *et al.* emphasize the existential character of knowledge and propose to analyze interdisciplinarity, not from an epistemological but from an anthropological point of view. According to these authors, the difficulty of epistemic integration is due to the fact that the knowledge provided by the different sciences consists of fragmented objectivations always carried out from a third-person perspective. Thus, the authors argue that in order to integrate thought and being, it is necessary to attend to the existential subject and consider the act of knowledge as a vital action. They call this proposal "a radical interdiscipline".

However, a person-focused approach not only provides a radical foundation for the possibility of integrating a plurality of perspectives. It also illuminates the notion of interdisciplinary dialogue itself. For the reason that disciplines do not engage in dialogue, it is people who dialogue. Thus, considering a second-person perspective is also essential for understanding collaborative inquiry.

3. Intellectual virtues for collaborative inquiry

The success of any research activity depends largely, as mentioned in the previous sections, on researchers having developed in themselves a rich array of intellectual virtues, such as open-mindedness, intellectual humility, and intellectual creativity. We will consider, in this section, another set of virtues, which are essentially linked to different aspects of human intellectual interaction in a collaborative group.

The understanding of fundamental matters necessarily requires undertaking cross-field inquiry efforts. Since epistemic trespasses are inevitable in this kind of endeavor, Nathan Ballantyne (2019a) has pointed toward a social solution: rigorous investigations demand that we do not trespass alone. Group deliberative virtues, e.g., deliberative wit, friendliness, empathy, and charity, have been analyzed in recent years by social epistemologists (Aikin and Clanton 2010). However, they have received little attention yet in the field of virtue epistemology, probably because many epistemologists have focused so far mainly on problems related to the justification of knowledge attained by the individual, and the social or interpersonal aspects have been discussed only inasmuch as they affect knowledge attributions in the individual epistemic agent. We can say that *social virtue epistemology* is an area that is just starting to emerge now (Alfano, Klein, and Ridder 2022).

This recognition of the importance of taking into account the interpersonal dimension for the success of collaborative intellectual work constitutes the key point in Katherine Sweet's paper "Empersonal research practices: Getting to know our interdisciplinary collaborators". In it, Sweet emphasizes the essential role that our knowledge of others plays

in achieving the goals of a joint project, pointing out the benefits of having the members of an interdisciplinary team focus their attention first on knowing the peculiarities of their fellow colleagues' intellectual character before moving on to the consideration of the topics themselves. This ensures that researchers share a consistent framework and develop common modes of reasoning over time, thus improving the theoretical approach to the research topic. The intellectual virtue of empersonal inquisitiveness makes it possible for researchers to actively seek learning about each other as persons not only trough explicit testimonial exchanges, but also through non-verbal communications that represent the social-cognitive components of this character trait. Among these social-cognitive components, Sweet highlights the mechanisms involved in certain cognitive acts such as mindreading and perspective-taking. In our view, this approach opens an interesting prospect for exploring in depth the skills necessary for interpersonal knowledge.

It is worth noting that the neologism Sweet has chosen to designate this virtue, i.e., "em-personal" inquisitiviness, can be related to the term designating the closely related virtue of intellectual "em-pathy" analyzed in the final article of the issue. This neologism suggests, first of all, that the properly em-personal knowledge of others is not a merely *notional* knowledge, i.e., reduced to an abstract categorization of certain character traits from a third-person perspective. An impersonal knowledge of other people would simply remain in an objectified description of their characteristics, without grasping them in the peculiarity of their personal being as a Thou, whereas an "em-personal" knowledge seeks to access the reality of the other person as such. It is a knowledge of the concrete reality of the other person as an individual from a second-person perspective. This is what is etymologically implied, in turn, in the word "em-pathy".

"Em-pathy" denotes a way of knowing the other in which one can experience in oneself what the other is thinking and feeling. By contrast, a knowledge of others that was not "em-pathic" would be a description from a third-person perspective. For example, a doctor might list the symptoms experienced by a patient suffering from a certain disease without necessarily putting himself in the patient's place to understand his

thoughts and feelings. Taking this into account, we could conclude that the establishment of adequate interpersonal relationships among the members of a collaborative team presupposes adopting a second-person perspective as well.

In our paper, "Interpersonal intellectual virtues: A heuristic conceptualization from an empirical study", we discuss the results of a qualitative study whose objective was to determine which intellectual virtues are the most relevant for interdisciplinary research according to certain key referents. A heuristic analysis of the information gathered led us to identify a subgroup within intellectual virtues that we call *interpersonal intellectual virtues*. These virtues are personal character traits that facilitate the reciprocal acquisition and distribution of knowledge *with* and *through* other people. By their very nature, they are only exercised in an interpersonal relationship that seeks an epistemic good, so in some sense, they are at the intersection of social virtues and intellectual virtues. We suggest that interpersonal virtues are the key character traits of people involved in any collective epistemic endeavor, interdisciplinary research being a paradigmatic context in which we can clearly see their manifestation.

Conclusion

As in all researchers, the intellectual character of interdisciplinary researchers must be rich in intellectual virtues. The exercise of intellectual virtues is, however, more demanding in interdisciplinary work, because it entails (i) extending the application of these intellectual excellences beyond one's own field of study and (ii) reflecting deeply on areas other than one's own. Moreover, interdisciplinary researchers also need to develop an intellectual character that includes specific virtues that enable them to think *with* and *through* other people.

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