

## The Criteria for the Emergence of Collective Epistemic Traits

Strahinja Đorđević\* – Andrea Berber\*\*


Received: 3 August 2024 / Accepted: 6 April 2025

*Abstract:* The aim of this paper is to offer an analysis of the emergence that group epistemic traits may exhibit. Our research implements a methodological shift in the study of collective traits from defensive argumentation against summativism (the position that reduces the collective traits to the sum of members' traits), to offering a positive thesis on the nature of irreducible collective traits. We start from the assumption that there are cases of emergent epistemic traits. By analyzing and comparing examples of emergent traits, we establish three criteria that a trait must meet in order to be considered emergent. Additionally, based on the established criteria we introduce a distinction between the two types of emergences – strong and weak. In the end, we discuss whether there is a correlation between the types of emergence and types of epistemic traits (viz. character and faculty).

---

\* University of Belgrade


 <https://orcid.org/0000-0003-0076-7861>

 Institute for Philosophy, Faculty of Philosophy, University of Belgrade, Čika-Ljubina 18-20, Beograd 11000, Srbija

 [strahinja.djordjevic@f.bg.ac.rs](mailto:strahinja.djordjevic@f.bg.ac.rs)

\*\* University of Belgrade

 <https://orcid.org/0000-0002-2463-410X>

 Institute for Philosophy, Faculty of Philosophy, University of Belgrade, Čika-Ljubina 18-20, Beograd 11000, Srbija

 [berberandrea@gmail.com](mailto:berberandrea@gmail.com)



---

*Keywords:* collective virtue epistemology; emergence; summativism; non-summativism; weak and strong emergence.

## Introduction

A significant part of intellectual work and epistemic endeavors in science, business, and everyday life takes place within larger or smaller groups. For that reason, interaction within groups should be an important field for the study of epistemic virtues and vices. However, groups are not just an environment for the manifestation of individual virtues and vices, but groups as such can be proper agents for attributing epistemic traits.<sup>1</sup> The main idea of this research is that there are cases of group traits that are irreducibly collective or emergent. These particular traits cannot be explained summatively – by being reduced to the sum of individual characteristics of group members. With this in mind, we want to analyze examples of group traits to determine which conditions a trait needs to meet in order to be considered emergent.

The current thematization of collective traits in the literature is mostly focused on the arguments against the position that tends to analyze all group traits as a mere sum of individual traits. So the strategy in dealing with this topic is mostly negative and defensive – it is argued that not all group traits should be analyzed in a summative way (e.g., Gilbert 1989; Schmitt 1994; Lahroodi 2007). The strategy we employ in this paper is different: we will try to get to the essence of emergence, that is, to answer the question of what makes emergent traits irreducibly collective by offering criteria for emergence. This kind of understanding can have further importance for research relating to the attribution of different collective states, such as knowledge, belief, phenomenal states, desires, and intention to the groups.

The paper is structured as follows. In the first section, we explicate the basic assumptions used in this research and explain the summativist position concerning collective epistemic traits. Section two introduces examples

---

<sup>1</sup> In this paper, the term epistemic trait is used as a term that encompasses both epistemic virtues and epistemic vices.

of collective traits that are not subjectable to summative analysis. In the next section, section three, we analyze and compare the cases of collective epistemic traits which are not explainable in a summative manner. Section four proposes the general criteria for the emergence of collective traits and elaborates on them. In the final, fifth section we compare faculty and character collective epistemic traits with regards to the types of emergences they can manifest.

## 1. Setting the Stage for Research

At the outset, we want to explicate basic assumptions on which our investigation rests. Firstly, we want to stipulate that the types of groups relevant to our research are the established social groups since they can be seen as “paradigmatic cases of collectives” (Lahroodi 2019, 408). Established social groups, e.g. families, teams of coworkers, or juries, are characterized by a high degree of social cohesion and interaction between their members (cf. Ritchie 2020, 402–3), unlike loosely associated groups (people who have the same profession, or people older than 30).

The main assumption from which our research starts is that there are collective epistemic virtues and vices, that is, that groups can be a legitimate subject for attributing epistemic traits (Fricker 2010; Bird 2014; Tollefsen 2015; Lahroodi 2007, 2019). The collective epistemic traits hypothesis implies that groups can be genuine epistemic agents and as such, in an analogous way as individual epistemic agents, susceptible to the ascription of epistemic virtues and vices. Ascriptions of epistemic traits to groups can be encountered in different aspects of human interaction. Recall numerous cases when we have heard that a group of people has displayed intellectual virtue, for example, that the jury at a trial was fair-minded or that a team of scientists displayed intellectual courage in defense of their ideas. It seems like these examples imply that when some group of people comes together they are capable of manifesting examples of epistemic virtuousness as a group.

However, according to the position called summativism (Quinton 1976; Cohen 1989), statements about group virtues should not be interpreted literally as attributing these traits to the groups themselves. Namely,

according to this view, attribution of a particular trait to a group is, in fact, an attribution of that trait to the individuals belonging to the group.<sup>2</sup> This means that when we say that the scientific team is intellectually courageous, we are in fact saying that every member, or at least most of the members, has the virtue of intellectual courage. Thus, when one speaks of a group's virtue, this is merely a disguised speech about the virtues of the individuals that make up the group. Summativism is essentially a reductionist position with regard to group epistemic virtues: it boils down group virtues to individual ones.<sup>3</sup> We believe that summativism cannot be a universally accepted position when it comes to analyzing group epistemic traits, that is, certain cases cannot be analyzed in a summative way, and reduced to the individual level. It is important to point out that there are traits that are exclusively related to the collectives and which, even in principle, cannot be reduced to individual traits because they do not have individual counterparts. Examples of such traits are the virtue of self-regulation and solidarity (Byerly & Byerly 2016). Yet, most of the traits that can be attributed to a group are such that they have individual counterparts, and the question of whether these traits should be understood summatively remains open. Denying summativism as a universally acceptable position does not imply that summativism is inadequate in all cases (Jones 2007; Fricker 2010). Understandably, there are some cases where summativism is exactly the right approach. For example, if we were to say that a family is honest, we may really want to claim that all, or most of its members, are honest.

We will not argue in detail against summativism as a universal position, since the compelling reasons against it have already been offered in the literature (for example Gilbert 1989; Fricker 2010; Lahroodi 2019). Our strategy is to cite examples that do not seem to be subjectable to summative analysis and thereby provide a *prima facie* case for non-summativism. By

---

<sup>2</sup> Summativism is formulated as a general view of attributing mental states to groups. In epistemology it has been extensively considered when it comes to attributing beliefs to groups (e.g. Wray 2007; Lackey 2014, 2020; Faria 2021). It can also be interpreted as a position on attributing epistemic virtues to groups (cf. Lahroodi 2019).

<sup>3</sup> In the literature, summativism is often referred to as individualism, and the term anti-individualism is used for a position that opposes it.

non-summativism, we mean the anti-reductionist view which claims that certain traits ascribed to groups are irreducibly collective and cannot be analysed as attributions of individual traits. On the background of presented examples, we will examine the notion of emergence and offer the conditions that group traits need to satisfy to be considered as irreducibly collective.

At the end of this section, it is important to introduce a distinction between faculty and character epistemic traits since both types of traits will be the subject of our consideration. This distinction is usually cited as significant in the context of understanding the differences between the two main approaches to the epistemology of virtue – reliabilism and responsibilism. Faculty virtues concern cognitive abilities or faculties such as sight, memory, and introspection. Character virtues are more sophisticated cognitive traits like open-mindedness, fair-mindedness, intellectual courage, and tenacity. Faculty and character virtues manifest differences in many significant aspects. Faculty virtues are innate or acquired in a non-reflective way, while intellectual virtues are intrinsically acquired, and their acquisition, maintenance, and exercise require reflection. Also, faculty virtues can be passive in their deliverance (e.g. seeing and hearing), unlike character virtues which are necessarily active and essentially related to the notion of good research (e.g. being observant or curious). Duncan Pritchard also emphasizes the axiological difference between the two types of virtues. Character virtues are constitutive of a productive and fulfilling intellectual life, while faculty virtues are at best just a necessary condition for it (Pritchard 2017: 7–8). It should be noted that almost all virtue epistemologists maintain that the very existence of both faculty and character epistemic virtues is not controversial, but the role of these kinds of virtues in epistemology is a matter of disagreement. Those who insist on the importance of faculty virtues for epistemology are called reliabilists (e.g. Sosa 1980, 1991; Greco 1993, 2002), while those who give central place to the importance of character virtues are considered to be responsibilists (e.g. Code 1984; Zagzebski 1996; King 2014). We assume that both types of traits can be ascribed to groups and as such are important for collective epistemology.

## 2. Examples of Collective Virtue Emergence

In this section, we list three hypothetical scenarios in which groups appear to exhibit irreducible collective traits. The scenarios will present situations in which it seems that some groups are able to manifest new or modified traits due to the dynamics of complex in-group interactions. Based on the analysis and comparison of these examples, we will try to figure out what would mean for a trait to be emergent. To put it differently, we will try to extract the “essence” of emergence from the examples of traits that are *prima facie* not summatively explainable. The idea behind our methodological strategy is to take a step further in the debate between summativism and non-summativism by moving away from considering individual cases and to offer general criteria to assess when a trait has an irreducibly collective character. Let us now consider the examples of emergent traits.

**EXAMPLE 1 ( $E_1$ )** Consider a case of two students who have a deadline to submit a joint research paper. Both manifest different epistemic vices, one of them is excessively meticulous, while the other is superficial. Initially, their work is not productive, due to the differences in their approaches which stem from the discrepancy in their epistemic characters. Since there is no initial intellectual agreement between them, compromises may occur over time. The student who is excessively meticulous will not be able to go into all the irrelevant details, because her superficial colleague is constantly flooding her with new ideas, which she cannot analyze in unnecessary depth and cannot overly devote to due to the lack of time. On the other hand, the superficial student will have to dedicate more time to concepts and problems that she would otherwise take for granted because her meticulous colleague is constantly demanding a more elaborated form of research. Only in this way, the two of them will be able to cooperate and perform the assigned task together. As a consequence of these intellectual compromises, it appears that they are both epistemically altered, and as a result of their joint work, studiousness emerges. In this situation, the interaction between the two epistemic vices, excessive meticulousness and superficiality, produced an epistemic virtue: studiousness. This is a trait that neither of the students individually had possessed before joining the group and will not

possess once separated. They manifest this epistemic virtue only when they are together and work as a team.<sup>4</sup>

**EXAMPLE 2 ( $E_2$ )** Let us imagine a team of 10 scientists doing research. All the researchers are of the same academic rank, are equally respected in the academic community, and have no external pressure that would affect their intellectual actions related to their research. Once the first phase of the research was completed, they published a paper that was praised and recognized by the academic community. All 10 scientists were satisfied with these results. However, after a while, they found that they have made some mistakes, which could be corrected, but that it would require some segments of their research to start over. Since the academic public did not notice these errors, the scientists could continue research and present further results as if no error had occurred. Most of the group members are in favor of continuing the research, but three of ten are against it. These three scientists want to adhere to the rules of good academic and scientific practice even at the cost of losing their current reputation and slowing down their career advancement. In that respect, they exhibit the virtue of intellectual courage because they put the truth above their personal interests. It is necessary to note that these three scientists outside this research group also manifest the virtue of intellectual courage, while on the other hand, the seven scientists who oppose admitting the mistakes are not intellectually courageous in their actions outside the group. Knowing that they have no influence on the other members in terms of seniority or any other means of coercion, the three courageous scientists set out to fix the mistakes which they all made at the beginning of the research and want to acknowledge them as their own, so the whole team wouldn't bear the blame. As time went by, other members of the group, prompted by the intellectual courage of these three members, realized that everyone should acknowledge to the public that they have made some mistakes and return to the beginning of

---

<sup>4</sup> It should be noted that the idea underlying this example – that individual epistemic vices through in-group interaction can produce a virtue at a group level – can be found in Hookway: “A research team may benefit from having some dogmatic members, and unwilling to take on board new possibilities, while others are much more ready to take seriously seemingly wild speculations. What would be vices in individual inquirers may be virtues when possessed by members of a team” (Hookway 2003, 189).

the research. After deciding to admit their mistakes at the cost of potentially losing their reputation or slowing down their career advancement, this whole team of scientists was perceived in the eyes of the academic public as an intellectually courageous team. The described episode of the collectively displayed courage by this research group did not, however, affect any of them in their actions outside the group in terms of manifesting the virtue of epistemic courage – those who were courageous continue to be so, those who were not, do not begin to show signs of this virtue.

**EXAMPLE 3 ( $E_3$ )** Let's consider a case where an old married couple consisting of person *A* and person *B* is instructed to remember as many details of the jointly experienced event as they can. There is a certain set of details *p* that person *A* remembers and a certain set of details *q* that person *B* remembers. By their mutual interaction, the couple comes up with a set of remembered details *r*, which is larger than a sum of sets of remembered details *p* and *q* together. As a result of the effort of the couple to remember as many details as they can, the mutual interaction between the two people caused their individual memories to increase, and this, in turn, affected their collective memory in the sense that it has expanded. Each one of them individually leaves this interaction with a larger set of remembered details than they had when entering the interaction.<sup>5</sup> A concrete example of such an interaction can be seen in the following case:

In trying to remember the name of a film, for instance, one person might volunteer that “It begins with a B.” The other might say, “Ooh, ooh, wait, wait,” and then later mention that the film was a comedy with a Faustian theme. This image might help the first to recall that Dudley Moore's costar wore a red satin “devil” suit in part of the movie. Eventually, one or the other partner might finally hit on the name (Wegner et al. 1985, 262).

---

<sup>5</sup> Empirical research shows that when members of small-scale groups are remembering events they had experienced together, so-called cognitive facilitation may occur. Cognitive facilitation means that they are able to remember more details of an event or to recall more individual events when remembering together than they could recall in isolation (Meade et al. 2009; Harris et al. 2017).



The mechanism that could enable this type of increase in the individual memory within a group is the so-called transactive memory system.<sup>6</sup> Transactive memory systems function within smaller groups whose members are closely related, like the couple from our example (Wegner et al. 1985, 256; Wegner 1987, 192), as well as families and teams, where each member of the particular transactive memory system has knowledge about other members' memories. Their mutual interaction results in the enhancement of their own memory stores (Lahroodi 2019, 412). It could be said that a transactive memory system is a kind of mechanism that can enable the collective memory of the group members to be greater than their individual memories summatively put together (Wegner et al. 1991, 923).

Before proceeding to the analysis of examples, we need to address a potential concern that may relate to the scope of our methodological strategy. There are two potential goals our methodology can serve. The first goal is dialectical – to get a comprehensive way to deal with the summativist position in the form of clear criteria that tell us which traits are not subjectable to summative analysis. This goal is still in the domain of discussion with the summativist; it only tries to offer a strategy that is more advanced with respect to mere consideration of individual cases. The second goal is metaphysical – the criteria offered can serve as a basis for understanding the metaphysical nature of the phenomenon of collective traits even outside the context of the debate with summativism.

Of course, one can question the extent to which these two goals coincide – will we automatically reach the essence of collectivity by isolating the criteria that tell us which group characteristics are not explainable summatively? These two goals may coincide, thereby if we find which properties make a trait resistant to summative analysis, we will also find which properties make it emergent. However, the assumption of coincidence of these goals carries certain dangers. By choosing examples that are dialectically

---

<sup>6</sup> Transactive memory systems could also be considered important because some authors treat such epistemic collaborations (as well as scientific research teams) as capable of producing group knowledge that is “resistant to aggregative analyses” (Palermos 2022). This is somewhat in favor of our main hypotheses in this paper, although our main point is focused primarily on the emergent nature of epistemic virtues and vices of groups.

most potent in the debate against summativism and building criteria based on them we are in danger of raising the bar too high – to make criteria too restrictive and thereby exclude examples of traits that are emergent. In a nutshell, this problem boils down to the question of whether there are traits for which a plausible summative analysis can be offered, and they are, nevertheless, truly emergent. This problem is not easy to answer because it seems as if there may exist group traits for which it is possible to give a plausible summative analysis without those traits actually being summative. In these cases, the summative analysis, although plausible, would not be correct. Thus, by excluding all traits that can be plausibly summatively analysed, we would exclude certain truly emergent properties by our criteria. However, we believe that if we have enough information about the individual epistemic profiles of group members, the dynamics within the group, and the epistemic profile of the group itself, it is not possible to provide a *plausible* summative explanation of a trait that is truly emergent. Conversely, if we have all the needed information about the trait and we are able to provide a summative analysis of it, it is an indicator that this trait is not emergent. With this in mind, we believe that the dialectical and metaphysical goals of this paper coincide and that the properties that make a trait resist summative analysis are precisely the properties that make it truly emergent.

### 3. Analysis of Non-Summative Cases

In this section, we will analyze the above examples to determine the similarities and differences between them. Based on that analysis, we will explicate the criteria that a property must satisfy in order to be irreducibly collective.

In  $E_I$  the group manifests the property that is not present in any member of the group separately. This property is genuinely new with respect to properties possessed by the individuals composing the team. If we accept that the situation conceived in  $E_I$  is realistic and that similar situations can occur in reality, then  $E_I$  is a strong case in favor of non-summativism. The virtue possessed by a group cannot, even in principle, be analyzed as an assertion that concerns the members of the group individually because no

member of the group individually possesses that virtue.  $E_1$  suggests that in some cases, group-level virtue may be produced due to the interaction of individual-level vices.<sup>7</sup>

A significant aspect of  $E_1$  is that the individuals who made up the team when split up no longer possess the virtue that the team manifests. This means that the team members as individuals have not been changed due to their participation in the team; in their individual activities, they continue to manifest epistemic vices as before. The ability to manifest a particular epistemic virtue depends essentially on being part of the team.

In  $E_2$ , unlike  $E_1$ , the trait exhibited by the group is not completely new with respect to the individual-level traits. At least some members possess the trait that manifests itself at the group level. Yet the virtue manifested by the group is the virtue that only a minority of individuals in the group possess. If we were to accept summativism, claims about the virtue of a group should imply that most members of that group possess that virtue, which is not the case in our example. So this example is not subjectable to a summative explanation and for this reason, we consider it an instance of non-summativism.<sup>8</sup> In the same way, as in  $E_1$ , the individuals that make up the team, in their individual activity outside the team, do not experience a change in their epistemic character: those who were intellectually courageous are still like that; those who were not do not become courageous. Again, the manifestation of virtue in those individuals who do not

---

<sup>7</sup> Also, it is possible to imagine a scenario in which individual-level virtues give rise to group-level vices.

<sup>8</sup> However, while the situation in  $E_2$  cannot be explained in a summative way, it seems that it can still be treated in a way that reduces the specific group virtue to individual level virtues, unlike  $E_1$ . In the  $E_1$  example, a trait that emerges at the group level is not possessed by any team member and in that sense cannot be reduced to possessing that virtue at the individual level in any way. In  $E_2$ , a trait possessed by a group can be explained in a way that involves invoking the possession of that trait by some members of the group and further explaining how those members influenced the whole group and conveyed their behavioral model to the others. Notwithstanding this difference, we believe that the example  $E_2$ , as well as  $E_1$ , can be taken into consideration as an example of non-summativism which will be further discussed in section 4.

possess that virtue outside the team depends essentially on belonging to the team.

Unlike  $E_1$  and  $E_2$  which deal with character virtues,  $E_3$  is concerned with the faculty virtue. In this example, the group manifests the virtue each of its individual members possesses. This means that, as in  $E_2$ , at the group level, a completely new trait with respect to those present at the individual level does not appear. Although the group exhibits exactly the same faculty virtue (in our example, it is memory) as each of its members individually, the scenario proposed in  $E_3$  cannot be analyzed in a summative way. Specifically, the capacity of group-level memory is much greater than the sum of individual memories of group members. The memory capacity in this example is quantified through the amount of detail one can think of. In our case, the set of details that a group can think of is much larger than the sum of the sets of details that each person can remember individually. The particular type of group interaction seems to increase individual memory capacity. However, as in  $E_1$  and  $E_2$ , this effect is intrinsically linked to membership in the team. As soon as the person leaves the group, this effect disappears.<sup>9</sup>

What all three examples have in common is that the trait at the group level arises from the specific interaction of individuals who are members of the group. This situation should imply that if these individuals split up and after some time reunite and interact in a similar way the same collective trait will reappear at the group level. Of course, it is possible that persons who have been in a group and whose interaction has produced the collective trait meanwhile change in their epistemic character. This change could prevent the specific interaction that led to the group trait from recurring. However, it is important to emphasize that the appearance of the same group

---

<sup>9</sup> Of course, a person, even when she leaves the group, still has the information that she obtained during the group interaction, which means that it is subjected to some form of change. However, we think that these changes individuals are subjected to do not make the significant difference between  $E_3$  example and  $E_1$  and  $E_2$  because the ability to remember better disappears when persons leave the group which means that their individual ability to remember is not permanently changed, although the opus of details that can be remembered about the event has increased during and due to the group interaction.

trait should be expected when the same people with more or less unmodified epistemic characteristics find themselves in sufficiently similar circumstances in which they should interact.

#### 4. Criteria for Emergence

The various criteria for determining emergence have already been proposed (e.g. Wimsatt 1986; Szanto 2014; Huebner 2016). However, as far as we know, these criteria were not specifically designed to analyze the potential emergence of epistemic virtues and vices.<sup>10</sup> Therefore, it is not clear whether they would be applicable, and if so, how they should be interpreted to be adequately applied to collective epistemic traits. For this reason, we believe that it is useful to introduce criteria customized for collective epistemology.<sup>11</sup> We propose the following three criteria for determining whether a property is emergent. Each of these criteria is individually a necessary condition for emergence and together they represent a sufficient one.

(*c*<sub>1</sub>) **Novelty condition** requires that a group must acquire a new type of property in comparison to the individual properties of its members for that property to be considered emergent. Therefore, group interaction must result in indisputable showcasing of a new property. This formulation of novelty condition can be considered as a novelty in the strong sense.

However, we can also distinguish the weak sense of novelty. The novelty in the weak sense is present when the collective property's level, intensity,

---

<sup>10</sup> The literature dealing with the formulation and application of these criteria is extensive, and there have been attempts to apply them to collective memory, collective behavior, collective intentionality, and distributed mind. Since the interpretation and application of the criteria is a very complex task with many challenges, this topic is fit to be a subject of a whole new research, and we will not deal with it in this paper. For more details see: Theiner (2013), Huebner (2014) and Szanto (2014).

<sup>11</sup> It is our hope that these criteria will have a broader significance and could be used to determine not only whether a collective epistemic virtue is emergent but also be applied to other kinds of group properties and processes (belief, intention, decision-making or problem-solving). But this question remains open for some future research.

or some other parameter exceeds the total sum of individual property parameters possessed by group members separately. The crucial difference between the strong and the weak senses of novelty is that the first sense implies that a completely new property emerges, while that is not the case for the second sense. Weak emergence occurs in those instances in which there is an increase in the scope of an existing property that cannot be explained in a summative way, but there is, strictly speaking, still no new property arising from the group interaction.

In a nutshell, strong emergence is a qualitative innovation with respect to the individual level, while weak emergence is a quantitative one. For the novelty condition to be satisfied, it is necessary for a trait to represent novelty either in the strong or in the weak sense. Clearly, it is not possible for one trait to satisfy both conditions at the same time. Traits that satisfy the novelty condition in the strong sense will be considered to have strong emergence, while those that satisfy the weaker form of this condition are said to be emergent in the weak sense. This distinction between weak and strong emergence on the basis of novelty conditions stems from the fact that this is the only one of the three conditions that have two forms and can thus distinguish between emergent traits.

(c<sub>2</sub>) The second condition for emergence we termed the *non-influence condition*. This condition prohibits the members of the group be influenced by the group interaction in such a way that they acquired the trait ascribed to the collective. This means that the group shows virtue only when it is together, and as soon as separated the virtue disappears. It is important to note that this is not a persistence across time condition, rather it takes into account a hypothetical situation in which we imagine what it would be like if the group was separated. Therefore, we do not consider the time in which it was separated, but a hypothetical scenario from the perspective of the time in which the members of the group are together. Meaning that this is a necessary feature of the synchronic identity of emergent traits.

If individuals, due to the in-group interaction, change in such a way that they develop the group (up to that point emergent) trait at full group-level intensity, the novelty condition would no longer be satisfied. Although the group trait would precede both ontologically and temporally the trait at the individual level, it could no longer be said to be emergent. This is

because nothing at the group level would be new with respect to individual traits nor would transcend the sum of individual traits.<sup>12</sup> In that way, a trait that is emergent at one point in time does not have to be emergent at some later point in time. The non-influence condition can be seen as the reverse of the novelty condition, as it specifies when the novelty condition ceases to apply.

(c<sub>3</sub>) The third and final condition for emergence is the *non-coincidence condition* that requires that members who have separated from a group that displays emergent (or emergently magnified) property and have lost the newly acquired property while separated will gain this property once again if they reunite with the same group. Interaction of the same group of people in similar circumstances will lead all of the group's members to once again jointly display the property that neither of them individually possesses. This condition is necessary to show that a collective trait was not a product of mere coincidence, that is, that certain properties did not develop (or that the already existing ones didn't magnify) randomly at the same time when certain individuals became part of the group. Therefore, the emergent effect must be reproducible in similar circumstances. By circumstances, in this context, we understand the epistemic character of group members and the tasks that a group should perform. Thus, the epistemic character of group members should not be significantly altered, at least not in terms of those traits that affect the formation of a collective trait that is considered potentially emergent. Likewise, when a group interacts again, it should perform a similar task in an epistemic sense, because if the task changes radically (for example, instead of writing a scientific article, they should devise a script for a short movie), it can prevent a specific

---

<sup>12</sup> It is possible that the members of the group develop a trait at the same time as, or after, the group does. The new group experiences can show them the value of this trait. Just like being exposed to individual courage can lead one to develop courage, being exposed to group courage (as a trait of a group one is part of) could lead one to develop individual courage. In such cases, the group trait would indeed be emergent but only until a member or members develop it in full intensity. Thus, our criterion does not exclude such cases completely but indicates that they can be treated as emergence only until a point in time. Thanks to the anonymous reviewer for pointing us to this question.

interaction that led to collective trait manifested in the previous episode of interaction.

We will now briefly consider whether our  $E_1$ - $E_3$  scenarios meet the emergence criteria. Scenario  $E_1$  meets criterion  $c_1$  in the strong sense. The trait displayed by the team of students is truly new in comparison to their individual traits. Conditions  $c_2$  and  $c_3$  are also fulfilled, the team shows virtue only when it is together, and as soon as separated the virtue disappears, which shows that they did not develop this virtue individually ( $c_2$ ). Also, the same virtue should be exhibited each time the team is put together, provided that the members do not change in an epistemic sense and gather for the sake of a similar task. Under these conditions, it is to be expected that they will interact in a similar fashion as before and that the virtue of studiousness will again emerge from that interaction ( $c_3$ ). In light of this, scenario  $E_1$  can be considered as an example in which the group shows a strongly emergent trait.

When it comes to  $E_2$ , the  $c_1$  in the strong sense is not satisfied. As for this condition in the weak sense, the situation is unclear. If the trait, in this case – the virtue of intellectual courage does not consist merely in the courage of the three members, the novelty condition in the weak sense would be satisfied. However, since we have no way of summing the intensities of intellectual courage, we cannot determine whether this condition is satisfied or not.

It should be borne in mind that we do not claim that the example  $E_2$  does not meet our criteria for emergence, which would be quite strange given the fact that these criteria were created on the basis of three examples, including  $E_2$  itself. However, although we intuitively think that  $E_2$  is an example of emergence, we refrain from making that claim due to methodological difficulties. Namely, although empirical psychology offers scales that measure the intensity of courage (e.g. Woodard and Pury 2007), it is still not clear how it is possible to add the intensities of courage of different individuals. To establish that  $E_2$  is an example of emergence we need to claim that the sum of the intensities of the individual courage of the members is less than the intensity of the courage shown by the group. Although this claim may seem intuitively acceptable, it is theoretically difficult to argue this in the absence of any idea of a plausible way to add intensities



of courage in different individuals. We hope that this methodological difficulty is only temporary and that the growing cross-fertilization of the fields of empirical psychology and epistemology of virtue will enable the development of both theoretical and empirical tools to tell us how the intensities of courage of different individuals interact.

When it comes to condition  $c_2$ , it is satisfied because both the people who were courageous and those who were not, remain the same as prior to group interaction. Additionally, it seems that the same group of scientists, should they find themselves in a similar situation, would show intellectual courage again, which would imply the fulfillment of  $c_3$ . For, as described in the  $E_2$  scenario, the intellectual courage of the group had resulted from the interaction of members, and if the same interaction were to be repeated in a similar situation, it is to be expected that it would produce the same collective virtue. To sum up, since  $c_1$  condition is necessary and we are not sure whether it is satisfied, despite the fact that  $c_2$  and  $c_3$  are satisfied, the situation as a whole seems to be undecidable with respect to the question of emergence.

In  $E_3$  the  $c_1$  condition is satisfied in the weak sense. The group memory capacity is greater than the sum of individual memory capacities. As in  $E_1$ , conditions,  $c_2$  and  $c_3$  are satisfied. The property in question in this scenario, the increased memory capacity, disappears when the transactive memory system is not together ( $c_2$ ) and in the case that the members of the transactive memory system reunite, the property reappears ( $c_3$ ). Since all three conditions are met, the memory capacity manifested by the transactive memory system qualifies as an example of weak emergence.

We have seen that two of our three examples meet the specified criteria. When it comes to the second example, we face a currently unsolvable methodological difficulty, due to which the status of this example is unclear. Nevertheless, we believe that our criteria, even in cases where we encounter similar methodological problems, can provide guidelines that are intuitively plausible for distinguishing cases of true emergence from those that are not.

## 5. Differences between Faculty and Character Virtue Concerning Emergence

After introducing the criteria for emergence, we believe that it is useful to briefly examine whether there are differences between faculty virtues and character virtues emergence. This consideration can contribute to the understanding of the differences between faculty and character epistemic virtues in their collective manifestation. The additional motivation is to indicate that a full understanding of epistemic traits and the differences between them cannot be achieved without considering their group manifestations.

We have found that there is a difference between the strong and the weak types of emergences based on a difference in the sense in which the novelty condition is satisfied. The examples we have constructed and analyzed suggest that both faculty and character virtues can be emergent. However, based on our examples, there seems to be a difference in the type of emergence (weak or strong) that faculty and character virtues may possess. The collective virtue in  $E_1$  satisfies the conditions for emergence in the strong sense, while the collective virtue in  $E_3$  satisfies the conditions for emergence in the weak sense. The question arises of whether there is a necessary connection between faculty virtues and emergence in the weak sense, on the one hand, and character virtues and emergence in the strong sense, on the other hand. In other words, we need to consider: 1. Is weak emergence the only form of emergence that faculty virtues can manifest or is it possible for them to be emergent in the strong sense?; 2. Can character virtues be emergent solely in the strong sense or is there a possibility that they manifest weak emergence too?

When it comes to the first question, we can claim that faculty virtues can be emergent only in the weak sense. This belief is based on the very nature of the faculty virtues. These are abilities that are mostly innate or acquired without willing control. Our ability to see or remember may of course change throughout life, become better or worse, but our possession of that ability is not something that varies in different contexts in such a way that we have this ability in one context and do not have it in another. Virtues such as memory and vision cannot be all of a sudden manifested in a group unless we as individuals possess them. As we have seen, the strong

novelty condition requires that a group manifest a whole new virtue with respect to the virtues of its members. This means that if we were to claim that some collective faculty trait is emergent in the strong sense we would have to accept that it is possible that individuals in the group do not possess some faculty at all and that this faculty can emerge through their group interaction. This would be the case if two people who do not possess the capacity of memory or vision would at once acquire these abilities through interaction within a group. Such acquisition and the manifestation of faculty virtues are not possible. However, from the  $E_3$  scenario, which is based on insights gained through the psychological research of collective memory, we can conclude that an individual can still surpass her individual faculties during and due to group interaction.

When it comes to the second question, it seems much more difficult to give a conclusive answer. There are no theoretical obstacles for collective character virtues to be an example of emergence in the weak sense. If we recall example  $E_2$ , as we already mentioned, the team may exhibit collective courage in intensity that is greater than the sum of the individual courage intensities. However, there is one currently insurmountable methodological difficulty here. The question is how we can sum the degrees of intellectual virtue. Can the intensity of a trait in one person simply additively be built on the intensity of that trait in another person or are there some other rules by which trait intensities are combined? If we had an answer to this methodological difficulty, we could determine if  $E_2$  is a case of emergence in the weak sense. Namely, if the intensity of intellectual courage displayed by the team is greater than the sum of the courage intensities of the three team members who possess this trait, then we could speak of emergence in the weak sense. Since we have no way of quantifying the degree or intensity of a virtue, the treatment of the  $E_2$  scenario, and in general the question of whether collective character epistemic virtues can be emergent in the weak sense, must be left for some future research.

It is necessary to briefly explain why in the case of faculty virtues there is no parallel methodological difficulty when it comes to their quantification. Memory capacity can be quantified based on the amount of information available through it. If a person individually possesses one set of information obtained through memory, but when she is in the group has access to

another, larger set, we can say that that the person's memory capacity increased in the group. Therefore, we can compare memory capabilities by comparing the sets of information that are available through their implementation. The parallel methodology can be used for any faculty that is aimed at gathering information of any kind.

Finally, one may wonder whether the insights that we gained through examining emergence have some further significance for our intellectual self-understanding. We have already pointed out that a new faculty virtue cannot appear in a group unless it is possessed by individual members. However, certain types of group interaction, such as memberships in transactive memory systems, may make accessible the information that would not be available separately to members of such systems. In this way, certain types of interactions can be said to enhance our faculties at least as long as we belong to a particular group or system. Bearing in mind that the product of enhanced memory capacity is a larger set of information that is available to us even individually, the epistemic benefit of such interaction is evident.

However, the fact that a group can manifest virtues not possessed by its members is far more intriguing. In the first section, we agreed with Duncan Pritchard's diagnosis that character epistemic virtues are constitutive of our intellectual flourishing, that is, of a truly productive and fulfilling intellectual life. However, if we consider the possibility that we can manifest some new (in addition to the virtues we individually possess) character epistemic virtues only as part of a group, then in-group interaction may become a necessary condition for our intellectual flourishing. Additionally, there is the possibility that some of our individual epistemic virtues, which we might otherwise find useful to ourselves and to the people we interact with, in certain group contexts, contribute to collective epistemic vice. A significant suggestion arising from the fact that character epistemic traits can be emergent in the strong sense is that it is necessary to study them in a group context to be able to fully understand them.

## Conclusion

In this research, we introduced the criteria for emergence of collective epistemic traits. We also differentiated between weak and strong forms of emergence. The search for criteria for emergence, as we have stated, can have two goals: dialectical and metaphysical. When it comes to the dialectical goal, our criteria provide a unified and comprehensive approach to discussion with summativism. In addition to being a useful dialectical tool in the discussion with summativism, it is our hope that the criteria we introduced, will also be the basis for a metaphysical understanding of group traits emergence in general.

## References

- Bird, Alexander. 2014. "When Is There a Group That Knows? Distributed Cognition, Scientific Knowledge, and the Social Epistemic Subject." In *Essays in Collective Epistemology*, edited by J. Lackey, 42–63. Oxford: Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780199665792.003.0003>
- Byerly, T. Ryan. and Byerly, Meghan. 2016. "Collective Virtue." *The Journal of Value Inquiry*, 50(1): 33–50. <https://doi.org/10.1007/s10790-015-9484-y>
- Code, Lorraine. 1984. "Toward a 'Responsibilist' Epistemology." *Philosophy and Phenomenological Research*, 45(1): 29–50. <https://doi.org/10.2307/2107325>
- Cohen, Jonathan. 1989. "Belief and Acceptance." *Mind*, 98(391): 367–89. <https://doi.org/10.1093/mind/XCVIII.391.367>
- Faria, Domingos. 2021. "Group Belief, Defending a Minimal Version of Summativism." *Epistemology & Philosophy of Science*, 58(1): 82–93. <https://doi.org/10.5840/eps202158111>
- Fricker, Miranda. 2010. "Can There be Institutional Virtues?" In *Oxford Studies in Epistemology* 3, edited by T. S. Gendler and J. Hawthorne, 235–52. Oxford: Oxford University Press.
- Gilbert, Margaret. 1989. *On Social Facts*. Princeton, New Jersey: Princeton University Press.
- Greco, John. 1993. "Virtues and Vices of Virtue Epistemology." *Canadian Journal of Philosophy*, 23(3): 413–32. <https://doi.org/10.1080/00455091.1993.10717329>
- Greco, John. 2002. "Virtues in Epistemology." In *Oxford Handbook of Epistemology*, edited by P. Moser, 287–312. New York: Oxford University Press. <https://doi.org/10.1093/0195130057.003.0010>

- Harris, Celia. B., Barnier, Amanda, Sutton, John, Keil, Paul. G., and Dixon, Roger. A. 2017. “‘Going Episodic’: Collaborative Inhibition and Facilitation When Long-Married Couples Remember Together.” *Memory*, 25(8): 1148–59. <https://doi.org/10.1080/09658211.2016.1274405>
- Hookway, Christopher. 2003. “How to be a Virtue Epistemologist.” In *Intellectual Virtue. Perspectives from Ethics and Epistemology*, edited by M. DePaul and L. Zagzebski, 183–202. Oxford: Clarendon Press. <https://doi.org/10.1093/acprof:oso/9780199252732.003.0009>
- Huebner, Bryce. 2014. *Macro cognition: A Theory of Distributed Minds and Collective Intentionality*. New York: Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780199926275.001.0001>
- Huebner, Bryce. 2016. “Transactive Memory Reconstructed: Rethinking Wegner’s Research Program.” *Southern Journal of Philosophy* 54 (1): 48–69. <https://doi.org/10.1111/sjp.12160>
- Jones, Todd. 2007. “Numerous Ways to Be an Open-Minded Organization: A Reply to Lahroodi.” *Social Epistemology*, 21(4): 439–48. <https://doi.org/10.1080/02691720701746565>
- King, Nathan L. 2014. “Responsibilist Virtue Epistemology: A Reply to the Situationist Challenge.” *The Philosophical Quarterly*, 64(255): 243–53. <https://doi.org/10.1093/pq/pqt047>
- Lackey, Jennifer. 2014. “Socially Extended Knowledge.” *Philosophical Issues*, 24(1): 282–98. <https://doi.org/10.1111/phis.12034>
- Lackey, Jennifer. 2020. “Group Belief: Lessons from Lies and Bullshit.” *Aristotelian Society Supplementary*, 94(1): 185–208. <https://doi.org/10.1093/oso/9780199656608.003.0002>
- Lahroodi, Reza. 2007. “Collective Epistemic Virtue.” *Social Epistemology*, 21: 281–97. <https://doi.org/10.1080/02691720701674122>
- Lahroodi, Reza. 2019. “Virtue Epistemology and Collective Epistemology.” In *The Routledge Handbook of Virtue Epistemology*, edited by H. Battaly, 407–20. New York: Taylor & Francis. <https://doi.org/10.4324/9781315712550-34>
- Meade, Michelle. L., Nokes, Timothy. J., and Morrow, Daniel. G. 2009. “Expertise Promotes Facilitation on a Collaborative Memory Task.” *Memory*, 17(1): 39–48. <https://doi.org/10.1080/09658210802524240>
- Palermos, Spyridon Orestis. 2022. “Epistemic Collaborations: Distributed Cognition and Virtue Reliabilism.” *Erkenntnis*, 87(4): 1481–1500. <https://doi.org/10.1007/s10670-020-00258-9>
- Pritchard, Duncan. 2017. “Extended Virtue Epistemology.” *Inquiry*, 61(5–6): 632–47. <https://doi.org/10.1080/0020174X.2017.1355842>
- Quinton, Anthony. 1976. “\*—The Presidential Address: Social Objects.” *Proceedings of the Aristotelian Society*, 75: 1–27. <https://doi.org/10.1093/aristotelian/76.1.1>

- Ritchie, Katherine. 2020. "Social Structures and the Ontology of Social Groups." *Philosophy and Phenomenological Research*, 100(2): 402–24.  
<https://doi.org/10.1111/phpr.12555>
- Schmitt, Frederick. F. 1994. "The Justification of Group Beliefs." In *Socializing Epistemology: The Social Dimensions of Knowledge*, edited by F. F. Schmitt, 257–87. Lanham: Rowman & Littlefield.
- Sosa, Ernest. 1980. "The Raft and the Pyramid: Coherence versus Foundations in the Theory of Knowledge." *Midwest Studies in Philosophy*, 5(1): 3–25.  
<https://doi.org/10.1111/j.1475-4975.1980.tb00394.x>
- Sosa, Ernest. 1991. *Knowledge in Perspective*. Cambridge: Cambridge University Press. <https://doi.org/10.1017/CBO9780511625299>
- Szanto, Thomas. 2014. "How to Share a Mind: Reconsidering the Group Mind Thesis." *Phenomenology and the Cognitive Sciences* 13 (1): 99–120.  
<https://doi.org/10.1007/s11097-013-9323-1>
- Theiner, Georg. 2013. "Transactive Memory Systems: A Mechanistic Analysis of Emergent Group Memory." *Review of Philosophy and Psychology*, 4(1): 65–89.  
<https://doi.org/10.1007/s13164-012-0128-x>
- Tollefsen, Deborah. 2015. *Groups as Agents*. Cambridge: Polity Press.
- Wegner, D. M. 1987. "Transactive Memory: A Contemporary Analysis of the Group Mind." In *Theories of Group Behavior*, edited by B. Mullen and G. R. Goethals, 185–208. New York: Springer. [https://doi.org/10.1007/978-1-4612-4634-3\\_9](https://doi.org/10.1007/978-1-4612-4634-3_9)
- Wegner, Daniel M., Erber, Ralph., and Raymond, Paula. 1991. "Transactive Memory in Close Relationships." *Journal of Personality and Social Psychology*, 61(6): 923–29. <https://doi.org/10.1037/0022-3514.61.6.923>
- Wegner, Daniel M., Giuliano, Toni., and Hertel, Paula. T. H. 1985. "Cognitive Interdependence in Close Relationships." In *Compatible and Incompatible Relationships*, edited by W. Ickes, 253–76. New York: Springer.  
[https://doi.org/10.1007/978-1-4612-5044-9\\_12](https://doi.org/10.1007/978-1-4612-5044-9_12)
- Wimsatt, William. 1986. "Forms of Aggregativity." In *Human Nature and Natural Knowledge*, edited by A. Donagan, J. Perovich, N. Anthony, and M. V. Wedin, 259–91. Dordrecht: Springer. [https://doi.org/10.1007/978-94-009-5349-9\\_14](https://doi.org/10.1007/978-94-009-5349-9_14)
- Woodard, Cooper. R., and Pury, Cynthia. L. S. 2007. "The Construct of Courage: Categorization and Measurement." *Consulting Psychology Journal: Practice and Research*, 59(2): 135–47. <https://doi.org/10.1037/1065-9293.59.2.135>
- Wray, K. Brad. 2007. "Who Has Scientific Knowledge?" *Social Epistemology*, 21(3): 337–47. <https://doi.org/10.1080/02691720701674288>
- Zagzebski, Linda. 1996. *Virtues of the Mind*. New York: Cambridge University Press. <https://doi.org/10.1017/CBO9781139174763>