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What Does the Nation of China Think About Phenomenal States?

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Abstract Critics of functionalism about the mind often rely on the intuition that collectivities cannot be conscious in motivating their positions. In this paper, we consider the merits of appealing to the intuition that there is nothing that it's like to be a collectivity. We demonstrate that collective mentality is not an affront to commonsense, and we report evidence that demonstrates that the intuition that there is nothing that it's like to be a collectivity is, to some extent, culturally specific rather than universally held. This being the case, we argue that mere appeal to the intuitive implausibility of collective consciousness does not offer any genuine insight into the nature of mentality in general, nor the nature of consciousness in particular.

1 Introduction

Let's start with a well-worn philosophical question: What is it like to be a bat?[1] The question seems legitimate to almost everyone, from philosophers and cognitive scientists, to students taking introductory philosophy classes. Even though most people have no idea what it's like to be a bat, most people are convinced that there must be *something* that it's like. But, what if we turn our attention to groups of

[1]To our knowledge, the first occurrence of this question as a philosophical discussion of experience occurs in Farrell (1950). However, the example is likely to have a familiar history within the philosophy of mind.

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people, or what we will call 'collectivities'? Although our ascriptions of subjective experience to various entities have a wide scope, they seem to give out when it comes to collectivities. For example, the question, "What is it like to be Microsoft?" seems to stand in stark contrast to the well-worn philosophical question, "What is it like to be a bat?" To put the contrast bluntly, faced with the question "what is it like to be Microsoft", philosophers, psychologists and cognitive scientists, as well as most students in introductory philosophy classes, are likely to look perplexed and take the question to suggest a deep confusion on the part of the person who is asking.

This difference between our understanding of individuals (even exotic ones such as bats) on the one hand, and collectivities on the other, may seem to be of little philosophical importance. However, critics of functionalist theories of the mind have often relied on this difference to motivate their positions. Functionalism allows mental states to be implemented by any structures that preserve functional organization. As Ned Block (1978) famously argues, this implies that the citizens of China, properly organized, would have mental states *at the level of the group*. But, as Block and many others have noted, this seems an affront to common sense: there just isn't anything that it's like to be the nation of China. Functionalism, therefore, appears to be an incomplete or inadequate theory of the mind. We are not convinced by this version of the argument, and in this paper we hope to take some of the wind out of the sails of those who object to the implementational plasticity of functionalist theories of mind by relying on the intuition that there is nothing that it's like to be a collectivity.

2 Are We Really Hostile to Collective Mentality?

We begin by noting that, despite protestations to the contrary, most people are quite comfortable ascribing mental states—such as beliefs, intentions, wants, wishes, and desires—to a variety of collectivities. For example,

1. Google intends to add a number of additional cities to the street-level feature in Google Maps;
2. The Democrats believe that they hold the upper hand in the upcoming election; and,
3. The Starbucks Corporation hopes that their profit margin will increase this quarter so that they do not have to close down any more stores.

Ascriptions of collective mentality are also commonplace in science fiction and rarely seem beyond the pail of plausibility. The Borg of *Star Trek*, the bugs of Heinlein's *Starship Troopers*, the Overmind of Clarke's *Childhoods End*, and the Precogs of Dick's "Minority Report" are all systems that implement cognitive processes in spatially distributed individuals. This suggests that the states that philosophers typically call intentional states are readily ascribed to a variety of systems. Moreover, such ascriptions are not simply artifacts of a hyperbolic news media or bizarre science fiction; the ascription of mental states to collectivities is systematic and empirically robust.

Paul Bloom and Deborah Keleman (1995, 25) have found that young children easily acquire collective nouns (e.g., family or army) that refer to a single distributed entity when the objects in a set 'bear some salient and enduring relationship to one

another'. Of course, a diversity of considerations might drive such judgments of entitativity (i.e., judgments about what counts as a single entity). However, Bloom and Kelemen suggest that intuitive judgments about what counts as a single entity are likely to be grounded in the antecedent commonsense theories that we have adopted in making sense of the world around us. But, what sorts of commonsense theories might produce such judgments?

One plausible explanation grounds the structure of commonsense judgments of entitativity in a theory of *purposeful behavior*. This theory builds upon a familiar set of data regarding the mechanisms at play in our commonsense understanding of an individual thing as locus of psychological states.[2] Consider one well-known result from within this research program, a study of the ascription of mental states conducted by Fritz Heider and Marry-Ann Simmel. Heider and Simmel (1944). Participants were presented with a short animated film that consisted of simple moving geometric shapes. In the key condition, the movement of the shapes was programmed in a way that appeared to be purposive. And, here, participants described the movements of the simple geometric shapes as the purposeful actions of entities that had the capacity for intending, wanting, and believing. Heider and Simmel suggest that this demonstrates the presence of a low-level theory of mind mechanism that facilitates the ascription of mental states on the basis of apparent goal directed behavior. This mechanism, argued Heider and Simmel, allows for the ascription of mental states even to incredibly simple entities, so long as these ascriptions offer some explanatory advantage in understanding the entity's behavior.

On the basis of this well known experiment, Paul Bloom and Csaba Veres (1999) examined the scope of commonsense ascriptions of mental states to distributed and unconnected *collections* of geometric objects, and obtained similar results. When participants were presented with collections of objects that moved together in an apparently unified way, they often described the movements by ascribing mental states to groups (e.g. 'the blue circles wanted to stop the green triangles'). On the assumption that the Heider and Simmel experiment tells us something interesting about the mechanisms that facilitate the ascription of mental states to individuals, this data suggests that similar theory of mind mechanisms can be deployed to treat an apparently unified collectivity as a locus of mentality.

Notwithstanding these results, it would be surprising if people thought that collections of circles and triangles *really were* in cognitive states. As Daniel Dennett (1978, 1987) has often argued, our commonsense ascriptions of intentional states form a motley assortment of genuine ascriptions, metaphors, façons de parler, and countless other varieties of clearly dubious mental ascriptions. So, just as we are likely to treat the ascription of mental state to triangles and circles as in some way dubious, there are deep theoretical reasons for resisting the idea that collectives can literally be in mental states in the same way that individuals can. The mere fact that people generally have a tendency to make such attributions does not by itself show that they are correct in doing so. Perhaps the theory of mind mechanism over-generalizes, and people reject its anthropomorphizing tendencies once they became

[2] This includes work on psychological development, autism, and the social reasoning capacities of non-human primates. For an overview of the literature, as well as an interesting positive theory, see Nichols and Stich (2003).

fully competent with mentalistic concepts. In other words, mere appeal to this sort of data is unlikely to persuade *anyone*.

However, another sort of data that has emerged in recent years is more difficult to dismiss. In a series of experiments directly targeting the commonsense understanding of collective agency, Mathew O'Laughlin and Bertram Malle (2002) have explored the psychological capacities that allow people to make sense of collective and purposive behavior. They begin by arguing that the commonsense theory of intentional action, allows people to view one another as having representational mental states, which, in turn. allows them to explain one another's intentional actions by looking to the mental states that provide reasons for action (cf., Malle and Knobe 1997). Actions are thus explained in terms of the intentions that cause them, and these intentions are in turn explained by the reasons that justify them. Unintentional actions, by contrast, are explained in terms of the causal history of the agent rather than the reasons underwriting their intentions (Malle 1999). On the basis of this model of intentional action, O'Laughlin and Malle (2002) argue that a more promising route for examining the plausibility of collective mentality (from the standpoint of commonsense theory) is to see whether people treat groups as cognitive agents by explaining intentional collective behavior in terms of the mental states that provide reasons for the group's actions (as opposed to causal histories). O'Laughlin and Malle (2002) show that while people often appeal to the causal histories of the members of various groups in explaining collective behavior, there are also numerous cases where people appeal to the group's reasons for acting—specifically, in those cases where a group is seen as *deliberatively unified* as opposed to *merely aggregated*. To our minds, these data suggest two things. First, there are conditions under which people seem to see groups as genuinely intentional agents. Second, and perhaps more importantly, there are conditions under which apparent ascriptions of mental states to groups could really be the ascriptions of a generic mental state to any of the unknown members of a group—as is likely to happen when there is very little information available about the group itself.

Together, these data about the ascription of mental states to groups suggest that there are intuitive mechanisms that facilitate the ascription of mental states to some sorts of collectivities.[3] Moreover, these mechanisms for intentional state ascription underwrite commonsense theoretical considerations about what entities are likely ever in mental states. With this foundation in mind, our goal is to explore an alternative, but compatible hypothesis that explains the theoretical resistance to the ascription of phenomenal, or subjective, states to collectivities as it often occurs in philosophical discussion of functionalism: that this resistance is the product of an intuitive theory that results from socialization within an individualistic Western culture. If our arguments are sound, this will suggest that such intuitions should not be taken to have the evidentiary force that philosophers have typically supposed them to have.

[3] In a recent conversation, Steven Quartz, informed BH of the results of a recent fMRI study demonstrating that regions of the brain classically associated with the ascription of mental states were activated when participants made predictions about the behavior of a market. We contend that this data provides further evidence for the claim that the ascription of mental states to at least some collectivities recruits the mechanisms that are used in ascribing mental states to individuals.

3 Theoretical and Empirical Constraints on Entitativity

Methodological individualism has been pervasive in the social sciences since the early Twentieth Century. In objecting to the methodological collectivism and arguments about collective mentality advanced by early sociologists and social psychologists (e.g., Durkheim 1895/1982: Le Bon 1895/2002; McDougall 1920), Floyd Allport (1924) famously argued that there can be no group mind because there is no group brain. Similar considerations have gained broad acceptance under the influence of the physiological psychology that has accompanied the cognitive revolution in psychology. However, there is some reason to think that the prominence of this sort of individualism could be, at least to a significant extent, a cultural artifact. As we argued in the previous section, commonsense psychology allows for the existence of collective psychological states in those cases where a group of individuals is deliberatively unified in a way that allows the group to engage in collective action. Perhaps in cultures where people see individuals and groups as being more similar in their capacity for agency, the intuitive hostility to collective mentality, especially the hostility to the idea of collective phenomenal states, might be even less pronounced.

In mounting our defense of the claim that the theoretical aversion to collective phenomenal states may be—at least in part—a cultural artifact, we begin by appealing to the vast array of research in recent social psychology that purports to demonstrate pervasive cultural differences between how people in the West and people in East Asia conceptualize and understand the world. Richard Nisbett et al. (2001) review a number of important cross-cultural differences in the psychological structures that underwrite commonsense theories of the world, and offer compelling arguments for the claim that people in the West conceive of the world in analytic terms, whereas people in East Asia conceive the world holistically when organizing their experience. Because our primary concern is with the commonsense theories that allow us to understand other cognitive entities, we leave these broader issues of differences in commonsense theories to the side and focus exclusively on the recent experimental data on cross-cultural differences in the conception of entitativity.

Bloom and Kelemen's hypothesis that judgments of entitativity are grounded in commonsense theories gains a great deal of empirical support by way of the analysis of cultural variation in self-construal and the understanding of agency. In a systematic review of cross-cultural differences in self-construal, Hazel Markus and Shinobu Kitayama (1991) found that people in East Asia typically understand the self in relational and context-dependent terms, making frequent appeal to the fundamental relatedness of individuals. On the basis of this data, they suggest that East Asian culture insists on the intrinsic interdependence of persons. In stark contrast to this data, however, Markus and Kitayama found that Americans tend to understand the self as a distinct and unique entity, valuing individuality and disvaluing dependence. These data are perhaps unsurprising given the promising theoretical accounts of the different conceptions of the self that are likely to arise on the basis of cross-cultural differences in socialization. Following the philosopher Roger Ames (1994), we thus distinguish between two ways in which 'individuals' can be understood. On the one hand, the individual can be seen as a separate and isolatable entity; on the other hand, the individual can be seen as a distinct location in a social nexus.

According to a view on which selves are separate and isolatable entities, something counts as the sort of thing that can have a self just to the extent that it is a single, indivisible, and separate entity. Such individuals can, of course, belong to a variety of different sorts of groups. However, on this view, the individual and her intrinsic properties will always be ontologically prior to her membership in any group. Moreover, the individual's intrinsic properties will not change when she becomes a member of a group unless they change at the individual level. On this view, considerations of individual autonomy and independence, as well as concerns about equality, privacy, and freedom, are likely to play a key role in making sense of the relationships that exist between these distinct, isolated entities—especially when they act together in order to form a collectivity. The empirical data advanced by Markus and Kitayama (1991), as well as the theoretical considerations advanced by Ames (1994) suggest that this theory of the individual self is most prevalent in Western societies, and is exemplified by the understanding of the individual self that we find in the United States.

An alternative view sees the individual as a location in a social nexus. On this view, an individual self must always be understood contextually—as a locus or focal point within a web of social relations. The individual is *not* ontologically prior to the group; instead, each individual has her essential properties a result of the social networks in which she is embedded. Hence, the individual self comes to exist by participating within the variety of collectivities in which she is embedded. On this view, the individual self is something that clearly occupies a particular, unique social location within a network of collectivities. However, such collectivities are also understood as unique social locations. After all, they are locations in the same webs that constitute the individuals that compose them. Such a view of the individual is intrinsically relational. While individuals are unique locations, they must be understood as having properties that are determined by something *beyond* the individuals themselves. Individuals must be understood in terms of the particular groups to which they belong. Indeed, according to this view, a high degree of individuality is achieved not by separation *from* social relationships, but by becoming distinguished *within* these relationships. Finally, the essential features of any particular collectivity are determined, at least in part, by the unique contributions that individuals make to the structure of the collectivity. Recalling the claim by Nisbett et al (2001), this means that the nature of the individual—as well as the nature of the collectivity—must be understood holistically rather than analytically.

These alternative models provide a significant reason for skepticism regarding the viability of a robust theoretical distinction between groups and individuals—at least in so far as such a theory is meant to provide a general account of individuality (cf., Hall and Ames 1998, and Rosemont 1991). Individuals can be understood as entities that are constituted (though not exhaustively explained) by the relationships in which they are embedded. However, this being the case, groups can also be understood as something more than the mere amalgamation of discreet, intersubstitutable entities. That is, a collectivity can be understood as an entity with its own unique identity, produced, at least in part, by the relationships that obtain between the persons that constitute it as well as its relations to other collectivities. On this view, individuals and groups are mutually constitutive. The properties possessed by a group depend on the properties of the individuals that compose that group; and, the properties

possessed by an individual depend on the properties of the groups to which she belongs. This suggests that groups too are unique entities.

Would differences in the understanding of the self have any ramifications for the ascription of mental states? The fact that some properties of a person must be understood relationally does not straightforwardly generalize to the conclusion that all of her properties must be so understood. Yet, while we concede that there is no straightforward entailment between the acceptance of a relational view of the self and a view according to which minds can be individuated relationally, we also hold that the adoption of a relational view of the self at least suggests the possibility of mental processes that are also understood relationally. Briefly, once it is realized that an individual person's actions are embedded in the rich social networks that constitute herself, it is a very short step toward thinking that such a person can off-load some of her cognitive processes onto others with whom she is close. In essence a relational model of the self slides very easily into a model of cognition that allows for other people to be used as social prosthetic systems (Kosslyn 2006) or as transactive memory structures (Wegner and Wegner 1995).

Building on assumptions such as these, social psychologists have examined the possibility that differences in self-construal might lead to differences in the mental states and abilities that would be ascribed to collectivities in East Asian cultures as opposed to Western cultures. For example, in an analysis of newspaper headlines containing ascriptions of mental states to collectivities and to individuals, Tanya Menon et al. (1999, 702), found that "while prevailing American theories hold that persons have stable properties that cause social outcomes and groups do not, the theories prevailing in Confucian influenced East Asian cultures emphasize that groups have stable properties that cause social outcomes". On the basis of this data, Menon et al (1999) suggest that while Westerners are willing to engage in some ascriptions of mentality to collectivities, they are far less willing to do so than their East Asian counterparts. On the basis of this assumption, Michael Morris, Tanya Menon, and Daniel Ames (2001) have provided further evidence for the claim that people from East Asian countries employ conceptions of agency that are highly social when they reason about what counts as a cognitive entity.

On the basis of this individualism/collectivism research, Kashima et al. (1995, 2005) investigated differences in the attribution of entitativity by East Asian and Western participants. In line with the research by O'Laughlin and Malle (2002) reported above, Kashima and colleagues found that two sorts of considerations underwrite the theoretical models that drive judgments of entitativity: psychological essentialism and agency. According to their model, psychological essentialism is seen as the assumption that individuals that belong to a group are likely to resemble one another in appearance and behavior as well as the belief that the properties of a collectivity are unchangeable because the collectivity has some underlying essence that is causally responsible for these similarities among its members. Kashima et al (2005) found that insofar as being a single entity is understood in terms of psychological essentialism, as with categories such as race, individuals are perceived to be far more entity-like than collectivities across cultures. However, in relying on considerations of agency, individuals are only perceived by Western participants to be more entity-like than are collectivities (Kashima et al. 2005, 162). In other words, people in East Asia are far more willing to ascribe agency to a collectivity than are

Western participants, and on this basis East Asian participants are far more willing to classify collectivities as single entities than are their Western counterparts.

This suggests that the intuitive plausibility of the methodological individualism that pervades the cognitive and social sciences may be grounded in a uniquely Western perspective. In fact, as some philosophers (even in the West) have noted, thinking that individuals are the only sorts of cognitive systems that there are requires a peculiar act of reification of an abstract entity—the individual person (cf., Nietzsche 1887/1998). This is not, of course, to claim that individuals are mere abstractions from collectivities. Rather, we suggest that the commonsense theories that underlie our understanding of something as a cognitive system may be structured by our theoretical commitments about which sorts of things are capable of intentional action. Thus, while there are strong evolutionary pressures (e.g., seeing another as a mate or as a threat) that are likely to militate in favor of seeing discrete, physically bounded entities as intentional actors, it seems reasonable to suppose that the primary factors operative in the construction of a theory of cognitive systems and intentional actors will be susceptible to a wide range of social pressures that are not biased in this way. These social considerations are likely to vary across cultures and even across a variety of more local social milieus. This, we suggest, should give us pause, evoking skepticism about the prominence of the intuition that collective mentality is impossible. This skepticism, we hold, opens up the possibility of cultural variation in the sorts of mental states that are likely to be ascribed to collectivities.

4 The Psychological States of Groups

In analyzing the possibility that there is cultural variation in the sorts of mental states that people ascribe to collectivities versus individuals, we took as our lead a recent study by Joshua Knobe and Jesse Prinz. Knobe and Prinz (2008) purport to demonstrate that people are willing to ascribe non-phenomenal states to groups, but that they are not willing to ascribe phenomenal states to these same groups. They presented their participants with sets of sentences that ascribed non-phenomenal states (e.g., beliefs, intentions, and desires) and phenomenal states (e.g., experiencing great joy, getting depressed, and vividly imagining) to the ACME Corporation. Participants were then asked to judge the acceptability of each of these sentences. For example, participants were asked to judge whether sentences such as 'Acme Corp is feeling excruciating pain' sounded natural on a 7-point scale ranging from 'sounds weird' to 'sounds natural'. Knobe and Prinz found that participants considered the ascription of non-phenomenal states to groups perfectly acceptable (M=6.16), but they found ascriptions of phenomenal states to groups unacceptable (M=3.14). These results provide some reason to think that there is a sharp distinction drawn by commonsense psychology between phenomenal and non-phenomenal states, at least in so far as their American population was concerned. More importantly for our purposes, this data seems to support the intuition that underwrites the well-known criticisms of functionalist theories of the mind; after all, if groups cannot be in phenomenal states, then the nation of China could not

possibly be a locus of phenomenal experience. But what are we to make of the fact that these participants' were willing to ascribe non-phenomenal, but not phenomenal states to groups?

To begin with, the fact that people appear to draw this distinction does not by itself establish that groups can be the subjects of non-phenomenal states but not the subjects of phenomenal states. There are theoretical reasons to think that a system like the nation of China would be as incapable of being in an intentional state as it would be of being in a phenomenal state. In fact, many people would be likely to object to the data presented by Knobe and Prinz by insisting that participants must be reading the ascriptions of non-phenomenal states to groups as acceptable *only in a metaphorical sense*. However, in a follow-up to Knobe and Prinz's study, Arico et al. (submitted) conducted an experiment in which they tested the hypothesis that the ascription of mental states to collectivities could only be understood metaphorically. Arico and his colleagues first tested whether their participants could distinguish between figurative claims and metaphorical claims, and then asked whether attributions of mental states to groups were to be understood as literal or figurative. In a striking result, even when those poor at recognizing metaphors were excluded, people tended to think that the ascription of mental states to groups should be understood as *literally* true.

This, however, does not address the really pressing issue about the nature of mental state ascriptions when they are applied to groups. As we noted above in the discussion of the data reported by O'Laughlin and Malle (2002), people are willing to utilize mental language in explaining the behavior of a collectivity in cases where they are unfamiliar with the precise character of a collectivity. That is, they will utilize the language of mental states in a generic way that can be applied to any member of the collectivity whatsoever. On this basis, the distinction between ascriptions of non-phenomenal as opposed to phenomenal states to a collectivity such as ACME Corporation might just be a result of an asymmetry in the amount of information required for ascribing phenomenal as opposed to non-phenomenal states to individuals. While it is quite easy to ascribe simple intentional predicates generically, on the basis of very little information, it is fairly difficult to do this with phenomenal predicates. That is, even though it is likely that any random individual who works at ACME Corporation believes that profits are falling, without knowing something about the precise psychological states of the various individuals who work at ACME Corporation it does not seem we are warranted in claiming that any individual who works at ACME Corporation will feel upset by this fact.

We, thus, began from a skeptical interpretation of the results obtained by Knobe and Prinz (2008). However, on the basis of the theoretical and empirical data suggesting the possibility of a robust difference between conceptions of individuality in East Asian and Western culture, we developed a simple experiment to test whether this difference in ascriptions of phenomenal and non-phenomenal states to groups was culturally robust. In addition to this cross-cultural comparison, we chose to decrease that likelihood of an immediate generic reading of the sentences with which our participants would be presented. For our experiment, we selected sentences in which the collectivities to which mental states were ascribed were likely to be quite familiar to our participants

5 A Cross Cultural Investigation of Ascriptions of Collective Consciousness

Twenty eight students from The University of North Carolina, Chapel HIll (UNC) and 28 students from the Chinese University of Hong Kong (CUHK) participated, outside of the classroom, in a study designed to examine cultural differences in the ascription of mental states. The demographic makeup of each group was consistent with the population at each institution more broadly, and all procedures were carried out in accordance with the procedures required by the Institutional Review Board at UNC. The design of our study was similar that of Knobe and Prinz (2008) and Arico et al. (submitted) insofar as participants were asked to rate the acceptability of various mental state ascriptions. However, unlike previous studies, our experiment surveyed a broader range of collectivities. Whereas previous studies focused on 'ACME Corporation', we asked participants about more familiar collectivities. We asked, for example, whether it is acceptable to say that "Sony is experiencing great joy at its increased sales", or to say that "The Catholic Church is vividly imagining the crucifixion".

Participants were provided with twenty sentences, ascribing a variety of mental states to a variety of individuals and collectivities (see Appendix 1) and the following set of instructions. Participants were asked to rate the acceptability of each sentence on a seven-point scale ranging from 'sounds unnatural' to 'sounds natural'. Because East Asian cultures allow for a more holistic interpretation of the world, and because our East Asian participants would be more likely to understand a collectivity as a locus of agency, we hypothesized that the differences between the ascription of phenomenal and non-phenomenal states would be less pronounced in East Asian participants than it would be amongst Western participants.

To begin with, although we used a number of different collectivities that were likely to be more familiar to our participants from UNC than the ACME Corporation, these participants showed a significant difference in their ascription of non-phenomenal and phenomenal states to collectivities, replicating Knobe and Prinz's original study (mean responses are reported in Table 1). As with Knobe and Prinz's original study, the most acceptable ascription of a phenomenal state to a collectivity (Feeling relief, M=4.04) was still less acceptable than the least acceptable ascription of a non-phenomenal state to a collectivity (Knowing that, M=4.14). Moreover, with our participants from UNC, the difference in acceptability between ascriptions of phenomenal (M=3.44) and non-phenomenal states (M=5.29) to groups was statistically significant, $t\ (27) = 8.49,\ p < .001,\ d = 1.45$.

However, in contrast to Knobe and Prinz's original results, our participants from CUHK did not find the most acceptable ascription of a phenomenal state to a collectivity (Experiencing great joy, M=4.71) less acceptable than the least acceptable ascription of a non-phenomenal state (Knowing that, M=4.39; Is proud of, M=4.39), though there continued to be a difference between the overall acceptability of ascriptions of phenomenal states (M=4.06) and non-phenomenal states (M=4.79) in the direction predicted by Knobe and Prinz. A mixed-model analysis of variance (ANOVA) with nationality as a between participants variable and the four sorts of states (individual phenomenal; individual non-phenomenal, group phenomenal; and group non-phenomenal) as within participants variables failed to reveal a significant difference between participants from UNC and

Table 1 Ascriptions of mental states to groups

	UNC	CUHK
Phenomenal states		
Experiencing great joy:	3.32	4.71
Vividly imagining:	2.54	3.57
Feeling embarrassed:	3.93	4.46
Feeling insecure	3.36	3.71
Feeling relief:	4.04	3.82
Non-phenomenal states		
Intending to:	6.50	5.29
Knowing that:	4.14	4.39
Wanting to:	6.00	5.14
Is proud of:	4.90	4.39
Thought that:	4.89	4.75

participants from CUHK, F (1, 54)=1.68, p=.20, η_p^2=.030. However, this analysis did reveal a significant higher-level interaction between the sorts of states being attributed and nationality F (3, 162)=7.66, p<.001, η_p^2=.124.

This interaction effect shows that there was some significant difference between the judgments of participants from UNC and participants from CUHK when across the various ascriptions of mental states to individuals and to collectivities. In order to make this comparison clear, we present the pooled-mean responses for each sort of state by participants from UNC and participants from CUHK (reported in Table 2). In examining the overall trend in the data, we note that although participants from UNC tend to judge that the ascription of individual phenomenal, individual non-phenomenal, and group non-phenomenal states are within the realm of permissibility, they also tend to judge that the ascription of group phenomenal states is, at least to some degree, impermissible. Participants from CUHK, by contrast see all four sorts of states as within the realm of permissibility. In looking to the overall trend in this data, it is clear that although the judgments of participants from UNC demonstrated a large difference between the ascription of phenomenal states to groups and every other ascription, this result is far less pronounced in participants from CUHK.

To further examine the differences between the two populations, we ran a within-participant ANOVA to examine the responses of participants from UNC and CUHK. This

Table 2 Pooled-mean ascriptions of mental states to groups and individuals

	UNC	CUHK
Individual phenomenal:	5.74	4.69
Individual non-phenomenal:	4.93	4.73
Group phenomenal:	3.44	4.06
Group non-phenomenal:	5.29	4.79

analysis revealed a highly significant difference in the judgments of participants from UNC across the four types of states, F (3, 81)=28.61, $p<.001$, $\eta_p^2=.515$. Subsequent post-hoc tests using the Bonferroni correction to control for the number of unique comparisons revealed significant differences for all but two comparisons (Individual P v Group non-P, mean difference=.357, $p=1.00$; Group non-P v Individual non-P, mean difference=.450, $p=.795$), all $p\leq.001$. However, while the parallel analysis revealed a significant difference in the judgments of participants from CUHK across the four types of states, this effect was less pronounced, F (3, 81)=4.57, $p=.005$, $\eta_p^2=.145$. In contrast to the pattern that we found in participants from UNC, subsequent post-hoc tests using the Bonferroni correction to control for the number of unique comparisons revealed only two significant differences (Group non-P v Group P, mean difference=.736, $p=.010$; Group non-P v Individual non-P, mean difference=.636, $p=.026$), with the remainder of the comparisons showing no significant differences within participants (Group non-P v Individual P, mean difference=.671, $p=.133$; all other $p=1.00$). This suggests that although our participants from UNC perceived the ascriptions of different sorts of mental states to individuals and collectivities to vary significantly in their acceptability, participants from CUHK saw the ascription of non-phenomenal states to groups to be slightly less acceptable than any other sort of ascription, but they did not see any significant difference between the acceptability of group phenomenal states and individual mental states of any sort.

Thus, although it was true that, overall, both participants from UNC and CUHK did find the ascription of phenomenal mental states to *individuals* more acceptable than ascriptions of phenomenal mental states to *collectivities* (UNC t(27)=5.65, $p<.001$, $d=-2.18$; CUHK, t(27)=−3.11, $p=.004$, $d=-1.20$), participants from CUHK did not seem to see the *considerable difference* between these ascriptions that is seen by participants from UNC. So, to target the differences between these two populations, a final planned set of comparisons was conducted, using a mixed-model ANOVA to analyze the interaction between nationality and the ascription of phenomenal states. This analysis revealed no statistically significant differences between the populations, F (1, 54)=.55, $p=.461$, $\eta_p^2=.010$; but it did reveal a statistically significant interaction between the populations and their ascription of phenomenal states, F (1, 54)=6.60, $p=.013$, $\eta_p^2=.109$. A planned comparison, using a mixed-model ANOVA to analyze the acceptability of ascriptions of mental states to groups as compared to individuals revealed a similar pattern of results, with no statistically significant differences between the populations, F (1, 54)=.04, $p=.838$, $\eta_p^2=.001$; but a statistically significant interaction between the populations and the ascription of mental states to groups, F (1, 54)=13.46, $p=.001$, $\eta_p^2=.20$. Finally, the difference between participants from UNC and CUHK concerning the ascription of phenomenal states to groups was marginally significant, t (54)=1.74, $p=.089$, $d=.46$.

Taken together, these results offer confirming evidence for our hypothesis that intuitive judgments about what counts as a locus of mentality are, at least in part, sensitive to cultural differences in the understanding of mental states. This suggests that our intuitions about what sorts of organisms can be the subjects of phenomenal states is determined, at least in part, by the culturally entrenched commonsense theories that we adopt in making sense of our world. The key differences between our participants from UNC and our participants from CUHK are explicable in terms of differing conceptions of individuality, agency, and the self. Put briefly, from the

standpoint of a Western participant who conceptualizes the self as a separate and isolatable entity, something can count as a locus of mentality just in case it is a single, indivisible, and separate entity. However, from the standpoint of an East Asian participant who conceptualizes the self in relational and contextual terms, considerations of separateness and isolability play much less of a role in determining whether something can be a locus of mentality—most dramatically, even when the mental state is phenomenal in nature. The fact that these effects are present even in participants from Hong Kong—a location that has experienced a significant degree of westernization—suggests that the intuitive force of Block's claims about phenomenal consciousness might be, at least partially, culturally relative.

It may be objected that even participants from CUHK judged the ascription of phenomenal states to groups to be less acceptable than the ascription of phenomenal states to individuals and less acceptable than the ascription of non-phenomenal states to groups. We concede this point. However, while it is true that the ascription of phenomenal states to collectivities is less acceptable than any other state, this does not undercut our central arguments. The theoretical arguments that we adduced above were not intended to demonstrate that the ascription of phenomenal states to groups would be *just as acceptable* to those raised in a more holistic society. Instead, our theoretical arguments were intended to show that people who were raised in a more holistic society would see a less pronounced distinction between the ascription of mental states, including phenomenal states, to individuals and to collectivities. This is precisely what our data suggest; and this is sufficient to show that culture is part of the explanation for the divergent response amongst participants from UNC. We thus contend that there is a significant role to be played by cultural considerations in explaining whether the ascription of phenomenal states to a collectivity will be seen as acceptable.

6 The Implausibility of Collective Mentality?

We began by noting that the intuition that collective consciousness is wildly implausible has garnered a great deal of philosophical support, and that this intuition has often been developed into an argument against functionalist theories of the mind (cf., Block 1978). However, there are many ways in which such arguments are open to challenge. Some philosophers have resisted such arguments by claiming that these intuitions, though pervasive, fail to demonstrate any significant philosophical or scientific constraints on an adequate theory of consciousness (cf., Chalmers 1996; Lycan 1987). We advance a different, and we believe more promising, approach to this worry: Our results suggest that the individualist intuitions that have often underwritten arguments against functionalist theories of the mind are not as universal as has typically been assumed.

First, sentences in which mental states are ascribed to collectivities are considered acceptable *across cultures*. In fact, people tend to read such sentences as saying something that is literally true (cf., Arico et al., submitted). More importantly, our data and the data reported by Knobe and Prinz (2008) concerning the judgments of American participants suggest that such ascriptions do not rely on a merely derivative or generic reading of these ascriptions. It does not, of course, strictly follow from the fact that people judge sentences ascribing mental states to groups to be acceptable that they are ascribing full-blown mentality to a collectivity. However, any claim

suggesting that they are not will require further argument beyond the mere appeal to the commonsense intuition that groups cannot be in mental states. Moreover, one of us (Huebner 2008) has argued elsewhere that collective representation is possible and that some groups in our world in fact possess the capacity for collective representation. In such cases, ascriptions of mentality would be acceptable both from the standpoint of commonsense psychology and legitimate from the standpoint of our most promising philosophical and psychological theories of the world. Furthermore, on the influential view that intentionality is the mark of the mental (cf., Brentano 1874), a capacity for genuine collective representation may be regarded as a sufficient condition for collective mentality.

Second, the presence of cross-cultural differences in the willingness to ascribe mental states to groups revealed in our study suggests that the intuition that groups cannot be conscious might not be nearly as secure as we, in the West, have supposed. On the basis of a Western cultural upbringing, the idea that there could be something that it's like to be Microsoft, or something that it's like to be the nation of China, may seem wildly implausible. However, on the basis of a more holistic worldview, such as the one we find in East Asian cultures, the intuitive resistance to collective consciousness is far less robust. Hence, arguments against functionalism that rely on the putative absurdity of collective consciousness should not be seen as possessing sufficient force to undercut the viability of an otherwise promising view of the mind. Our data, thus, provides a fairly direct response to Block's (1978) argument against the viability of functionalism. However, there is one further worry that must be addressed in this regard.

Justin Sytsma and Edouard Machery (2009) have recently argued that Knobe & Prinz fail to demonstrate that commonsense psychology draws a distinction between phenomenal and non-phenomenal states.[4] We agree that since it is not obvious that a corporation is functionally equivalent to an individual, the fact that people are unwilling to ascribe some mental states to groups does not warrant the conclusion that there is a commonsense concept of phenomenal consciousness. Given that we follow the methodology used by Knobe & Prinz, it thus may seem that a similar criticism can also be brought to bear on our results. However, it is important to note that our results we are not explicitly grounded on the issue of functional equivalence in this way. Our hypothesis—that cultural differences in the understanding of entities and agents drives the willingness to ascribe mental states to corporate entities—suggests that it is not the salience of functional equivalence that distinguishes mental state ascriptions but the perception of a collectivity as an *entity* as opposed to a mere *aggregate*.

Still, Sytsma & Machery's criticism raises the worry that our results are driven by facts about the collectivities we have examined as opposed to telling us anything interesting about the nature of consciousness. Although there are cultural differences in the willingness to ascribe some sorts of mental states, the relevant division of mental states may not be the distinction between phenomenal and non-phenomenal states. We

[4] Knobe and Prinz (2008) conceive of phenomenal states in line with Block's (1995) distinction between phenomenal-consciousness from access-consciousness. A mental state counts as access-conscious when it has a content in virtue of which it is poised for reasoning and rational control of action; it counts as phenomenally conscious when there is something that it is like for a subject to be in it. Block argues that phenomenal-consciousness is conceptually distinct from access-consciousness.

do not wish to take a stand on this issue. However, even if these commonsense judgments are grounded on 'affect' as opposed to 'consciousness' (Sytsma and Machery, forthcoming), the implication of our results still holds. Specifically, we hold that there are key cultural differences in the range of mental states that can plausibly be realized in a corporate entity, and that this difference is driven by a difference in the scope of perceived entitativity. So, even if there is a way to ground an objection to functionalism on the basis of affective states (as is also suggested by some reflections in Block 1978), our results should give philosophers pause in inferring the failure of functionalism from the intuitive implausibility of collective mentality of any sort. We thus contend that it doesn't matter how commonsense psychology conceives of 'subjective experience'. [5] Instead, differences in perceived entitativity are likely to yield important differences in the ascription of mental states.

This fact leads us to the following—tentative and speculative—suggestion: our results provide resources for challenging individualist assumptions about subjective experience more generally. As Susan Hurley (forthcoming) argues, there is a tension between the intuitive considerations and thought experiments that are taken to provide support for individualism and those that are taken to support dualism. As zombie thought experiments (e.g. Chalmers 1996) and explanatory gap worries (Levine 1983) show, it is difficult to imagine how a mass of neurons, skin, blood, bones and chemicals (or, anything else in the physical world for that matter), could possibly be a locus of subjective experience. And yet, appeals to brains-in-vats, swamp creatures, qualitatively indistinguishable hallucinations and illusions, etc. are all taken to support the claim that consciousness must supervene on the internal states of an individual (or, more precisely, the states of an individual's brain). This

[5] An anonymous reviewer suggested that our claim is also weakened by the fact that the mean response of participants from CUHK for the ascriptions of phenomenal states to groups range from 3.71 to 4.71 on a 7-pt scale. So, although participants from CUHK were *more willing* than UNC participants to ascribe phenomenal states to groups, they did not judge group phenomenal states to be clearly *natural*. However, it is important to recall that participants from CUHK judged ascriptions of phenomenal states to groups to be *no less natural* than ascriptions of mental states to individuals, suggesting that the 'intuitive' disanalogy between collective and individual mental states may not be strong enough to motivate an objection to functionalism. Yet, the fact that even the ascriptions of mental states to individuals did not *sound natural* is troubling. Perhaps by presenting the questions in English—a second language—we offered a task in which *none* of the ascriptions seemed particularly natural. In order to examine the generality of our data, we conducted a follow-up study in Mandarin Chinese with 35 college age people at Shanghai University (a population less 'Western' than our Hong Kong sample) and 49 students from Boston University; these data were collected in accordance with the procedures required by the Institutional Review Board at Tufts University. Participants read 4 mental state ascriptions (two phenomenal, two non-phenomenal) and offered judgments on a 6-point scale. Unsurprisingly, participants at BU judged it acceptable to say that a corporation could 'be happy' (M=3.17) but it could not 'feel upset' (M=3.0)—replicating results reported by Knobe and Prinz (2008). However, our Shanghai participants judged that a corporation could 'feel upset' (M=3.40) yet not 'be happy' (M=2.69). Participants in Shanghai saw significant differences between the acceptability of the various mental state ascriptions, $F(3, 102)=4.82$, $p=.004$. However, subsequent Bonferonni corrected post-hoc tests revealed only two significant differences (intending and planning, mean difference=1.429, $p=.014$; intending and being happy, mean difference=1.371, $p=.043$). Strikingly, this analysis revealed no significant difference between intending and feeling upset (mean difference=.657, $p=1.00$). Thus, although these data replicated our finding that some so-called phenomenal states are rightly attributed to collectivities, there may be relevant differences that do not cleanly track the phenomenal/non-phenomenal distinction (cf., Sytsma and Machery, submitted). We thus suggest that the ascription of mental states to collectivities is sensitive to cultural considerations; however, the precise range of collective mental states that are acceptable will require further empirical analysis.

raises what Hurley calls *the magical membrane problem*—given that there is pervasive intuitive resistance to understanding how subjective experience could be explained in physical terms at all, it seems illegitimate to appeal to the conditional intuition that if it can be explained, the explanation must be individualistic. By demonstrating the contingency of individualist intuitions about collective consciousness, our data help to diagnose the source of this tension and support Hurley's argument for the claim that individualist intuitions regarding supervenience based thought experiments ought to be viewed with suspicion.

To make these philosophical intuitions do more positive work, however, it will help to speak briefly to the sort of view of the mind that we think is likely to underlie the possibility of collective consciousness. First, we hold that there are plausible reasons for conceiving of individual minds as 'societies' of agents, each dedicated to a different sort of computational task (cf., Minsky 1988). This, however, is just to adopt the familiar functionalist view of the mind often defended by contemporary philosophers and cognitive scientists (Minsky 1988; Lycan 1987; Dennett 1978). Perceiving a baseball as it is tossed towards you, for example, requires a system dedicated to detecting the relevant range of spectral radiation to perceive the color of the ball, a system dedicated to constructing spatial boundaries (presumably out of the representations of edges and colors that have already been constructed by simpler systems), a system connecting these perceptual representations to an action system, and a host of other systems beyond these.

More interestingly, and in line with the theoretical model we wish to advocate in this paper, Varela et al. (1991) have demonstrated that this account of the mind is plausibly seen as sharing many of the central insights of the rich theoretical tradition found in Buddhist theory and practice. At points, Varela, Thompson, and Rosch articulate a view of the mind as a highly distributed structure lacking any sort of central controller; and they seem to suggest that the Buddhist understanding of the mind allows consciousness to "dependently arise" from the coordinated activity of a variety of subpersonal mechanisms. If Varela, Thompson, and Rosch are right to claim that the dominant Buddhist conception of the mind allows for a 'dependant arising' of mental states, then there is reason to suppose that this model could easily lend itself to the existence of minds that were distributed across bodies. Once the existence of a localizable, persisting Cartesian ego is denied, minds are allowed to be far more dependent on the holistic structures that provide the foundation for the 'dependant arising' of mental states. Thus, because this model of the mind does not require a centralized control system where mental states must be integrated before they are experienced, there is no principled reason for disallowing the distribution of mental states across individual bodies.

This is not, of course, to say that such models of the mind straightforwardly entail the existence of collective mental states—indeed, they do not. Our claim is more conservative. We claim that in the absence of a Western view that forces the understanding of the mind to focus on the existence of stable, permanent, and re-identifiable Cartesian egos, there is less reason to reject out of hand the possibility that a group of people could 'feel together' in the same way that the distributed structures of an individual's mind can 'feel together'. On this basis, we contend that holistic and relational understandings of the self and the mind are more likely to

allow for the possibility of collective and distributed minds; and, perhaps even to allow for the possibility of collective consciousness.

In this paper, we have provided initial evidence suggesting that commonsense psychology in East Asia does not generate nearly as great a gulf between the acceptability of an ascription of a mental state to an individual and the ascription of a mental state to a group as we find in the commonsense psychology of the West. We hold that this suggests a further reason to question the deeply held Cartesian intuition that there is a one-to-one correspondence between an isolatable individual and her mind. This Cartesian assumption seems to be, at least in part, an artifact of the dominant cultural considerations that have driven Western philosophy. We do not, of course, hold that this data demonstrates conclusively that there are group minds. Nor do we hold that this data demonstrates the falsity of the Western conception of the individual. However, the presence of these differences in intuition ought to give us pause in articulating our theories of the mind. On this basis, we contend that the default status of individualism in the philosophy of mind ought to at least recognize its cultural history.

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Appendix 1: Experimental Materials

Experiment 1

The Ming Dynasty felt relief after the rebellion was quelled.
Denmark feels embarrassed about losing the war.
Destiny's Child is feeling insecure after its poor performance last night.
The Catholic Church is vividly imagining the crucifixion.
Sony is experiencing great joy at its increased sales.

The Ming Dynasty thought that China was the greatest country in the world.
Denmark is proud of its Viking heritage.
Destiny's Child wants to put on a better show tomorrow night.
The Catholic Church knows that Christmas is coming soon.
Sony intends to release a new product in January to increase sales.

Tanya feels relieved after her mother's successful surgery
Agassi felt embarrassed after he lost the tennis match.
Paul McCartney is feeling insecure after his poor performance last night.
That bee is vividly imagining honey.
Dmitri is experiencing great joy at his new job.

Tanya believes that China is the greatest country in the world.
Agassi is proud of his American heritage.
Paul McCartney wants to put on a better show tomorrow night.
That bee knows where the honey is located.
Dmitri intends to start selling winter hats in January

References

Allport, F. 1924. *Social psychology.* Boston: Houghton Mifflin.

Ames, R. 1994. Reflections on the Confucian self. In *Rules, rituals, and responsibility*, ed. M. Bockover. LaSalle: Open Court.

Arico, A., B. Fiala, R. Goldberg, and S. Nichols. Submitted. The folk psychology of consciousness.

Block, N. 1978. Troubles with functionalism. In *Minnesota studies in the philosophy of science, vol. IX*, ed. C.W. Savage, 261–325. Minneapolis: University of Minnesota Press.

Block, N. 1995. On a confusion about a function of consciousness. *Behavioral and Brain Sciences* 18: 227–247.

Bloom, P., and D. Kelemen. 1995. Syntactic cues in the acquisition of collective nouns. *Cognition* 56: 1–30.

Bloom, P., and C. Veres. 1999. The perceived intentionality of groups. *Cognition* 71: b1–b9.

Brentano, F. 1874. *Psychologie vom Empiriischen Standpunkt*. Hamburg: Felix Meiner.

Chalmers, D. 1996. *The conscious mind*. Oxford: Oxford University Press.

Dennett, D. 1978. Intentional systems. In *Brainstorms*. Cambridge: Bradford Books: 3–22.

Dennett, D. 1987. True believers. In *The intentional stance*. Cambridge: MIT: 13–36.

Durkheim, E. 1895/1982. *The rules of sociological method*, ed. Steven Lukes and trans. WD Halls. London: Free Press.

Farrell, B. 1950. Experience. *Mind* 59: 170–198.

Hall, D., and R. Ames. 1998. *Thinking from the Han: Self, truth and transcendence in Chinese and Western Culture*. Albany: SUNY.

Heider, F., and M. Simmel. 1944. An experimental study of apparent behavior. *American Journal of Psychology* 57: 243–249.

Huebner, B. 2008. Do you see what we see? An investigation of an argument against collective representation. *Philosophical psychology* 21: 91–112.

Hurley, S. Forthcoming. Varieties of externalism. In *The extended mind*, ed. R. Menary. Ashgate.

Kashima, Y., et al. 1995. Culture, gender, and self. *Journal of Personality and Social Psychology* 69: 925–937.

Kashima, Y., et al. 2005. Culture, essentialism, and agency. *European Journal of Social Psychology* 35: 147–169.

Knobe, J., and J. Prinz. 2008. Intuitions about consciousness: experimental studies. *Phenomenology and Cognitive Science* 7: 67–83.

Kosslyn, S.M. 2006. On the evolution of human motivation: The role of Social Prosthetic Systems. In *Evolutionary cognitive neuroscience*, ed. S.M. Platek, T.K. Shackelford, and J.P. Keenan. Cambridge: MIT.

Le Bon, G. 1895/2002. *The crowd*. New York: Dover.

Levine, J. 1983. Materialism and qualia: the explanatory gap. *Pacific Philosophical Quarterly* 64: 354–361.

Lycan, W. 1987. *Consciousness*. Cambridge: MIT.

Malle, B.F. 1999. How people explain behavior: a new theoretical framework. *Personality and Social Psychology Review* 3: 23–48.

Malle, B.F., and J. Knobe. 1997. The folk concept of intentionality. *Journal of Experimental Social Psychology* 33: 101–121.

Markus, H., and S. Kitayama. 1991. Culture and the self: implications for cognition, emotion, and motivation. *Psychological Review* 98: 224–253.

McDougall, W. 1920. *The group mind*. Cambridge: Cambridge University Press.

Menon, T., et al. 1999. Culture and the construal of agency. *Journal of Personality and Social Psychology* 76: 701–717.

Minsky, M. 1988. *Society of the mind*. New York: Simon and Schuster.

Morris, M., T. Menon, and D. Ames. 2001. Culturally conferred conceptions of agency: a key to social perception of persons, groups, and other actors. *Personality and Social Psychology Review* 5: 169–182.

Nichols, S., and S. Stich. 2003. *Mindreading*. Oxford: Oxford University Press.

Nietzsche, F. 1887/1998. *On the genealogy of morality* (trans: Clark, M. and A. Swensen). Indianapolis: Hackett Publishing Company.

Nisbett, R., et al. 2001. Culture and systems of thought. *Psychological Review* 108: 291–310.

O'Laughlin, M.J., and B.F. Malle. 2002. How people explain actions performed by groups and individuals. *Journal of Personality and Social Psychology* 82:33–48.

Rosemont, H. 1991. Rights-bearing individuals and role-bearing persons. In *Rules, rituals, and responsibility*, ed. M. Bockover. LaSalle: Open Court.

Sytsma, J., and E. Machery. 2009. How to study folk intuitions about phenomenal consciousness. *Philosophical Psychology* 22: 21–35.

Sytsma, J., and E. Machery. Forthcoming. Two conceptions of subjective experience. *Philosophical Studies*.

Varela, F., E. Thompson, and E. Rosch. 1991. *The embodied mind*. Cambridge: MIT.

Wegner, T., and D. Wegner. 1995. Transactive memory. In *The Blackwell encyclopedia of social psychology*, ed. A. Manstead, and M. Hewstone. Oxford: Blackwell.