Against Group Cognitive States[[1]](#footnote--1)

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English users are not fazed by such sentences as "Microsoft intends to develop a new operating system" and "England wants to retain the pound as its unit of currency." We produce and consume such claims frequently and with ease. One might nevertheless wonder about their literal truth. Does Microsoft -- the corporation itself -- literally *intend* to develop a new operating system? Does England -- as a single body -- genuinely *want* to retain the pound as its unit of currency. More generally, it is a substantive philosophical and empirical question whether groups of individuals (who themselves instantiate mental states) instantiate mental states properly so called.

In what follows, I employ a squarely naturalistic methodology in my attempt to answer this question of group, or collective, mental states. Accordingly, the fundamental principle guiding my investigation is this: If a group has mental states, those states must do causal-explanatory work. On this way of approaching the issue, our practice of attributing mental states to groups -- noted above -- provides no more than a provocative point of departure. Unless empirical-cum-theoretical considerations can underwrite these attributions, we should adopt an error theory (although, as I argue below, the error involved may be subtle, and acknowledging it may not require that we treat the sentences in question as false). So, we should ask, "Do genuine mental states inhere in groups, considered as individuals?"[[2]](#footnote-0)

Even the question of the instantiation of group *mental* states will not be addressed directly. Rather, I ask whether groups instantiate *cognitive* states, where cognitive states are, at a first pass, those manifesting properties that distinctively contribute to the causal production of intelligent behavior (the *explanandum* of cognitive science). My circumscription rests on three considerations. First, in this chapter, I reach a skeptical conclusion regarding group psychological states, and I do not wish to make my case too easily. According to one common conception of the mental -- going back at least as far as Descartes -- mentality cannot be cleaved from phenomenological experience, that is, immediate conscious awareness of our thoughts or "what it's like" to have a certain experience. Given how little has been done to show that a group can itself be the subject of a phenomenal state (Rupert, 2004, p. 404, n27), my case might be open-and-shut, and thus un-enlightening, were I to focus directly on mental states. Second, many of those who advocate extension of mind or cognition beyond the boundary of the skull -- and who are so inclined at least partly on naturalistic grounds -- take a deflationary view of phenomenal states and their supposed qualia (Clark, 2001, Dennett, 1996, 2005). So, it is only fair when engaging, even indirectly, with such authors to bracket questions about the (supposedly) irreducible qualitative character of mental states, which groups seem so clearly to lack. Third, many philosophers inclined toward naturalism take -- rightly I would say -- cognitive science to be the ontologically relevant heir to our mentalistic thinking (*cf.* Churchland, 1981).[[3]](#footnote-1)

The remainder of the essay unfolds as follows: first, I give a quick argument against the ontological reality of group cognitive states, focusing on everyday cases; then I respond to a series of objections; and I conclude by arguing that matters do not change when we turn to the causal-explanatory project in cognitive science.

I. On Causal-Explanatory Work, and the Lack of It

It would, of course, be foolish to pronounce once and for all that group cognitive states have no causal-explanatory work to do. This matter is, after all, an empirical one, and who knows what new data and theoretical advances the future will bring? Nevertheless, from our current perspective, the situation does not look promising for the proponents of group cognitive states, or so I shall argue. The fundamental problem appears to be this: in the cases in which, in everyday speech, we're inclined to attribute cognitive states to groups, there seems to be available a complete causal explanation couched in terms of the cognitive states of individuals (together with the noncognitive, physical structures that individuals manipulate and transmit) (cf. Wilson, 2004, Ch. 12).

Take one of the examples mentioned at the outset. At a number of times in recent history, it has seemed that "Microsoft intends to develop a new operating system" was true. Did the alleged intention causally explain any data? If so, which ones? One possibility is the hiring of new employees. Take a particular person, call her 'Sally', who recently received a letter of offer from Microsoft, who now has a key to an office on the Microsoft campus, and who now has funds transferred to her account from an account with the name "Microsoft Corporation" attached to it. What explains these data? It seems clear that the occurrence of these events is due entirely to communication among individuals (e.g., members of human resources at Microsoft), cognitive activities of individuals (e.g., each individual on the hiring committee who voted to extend an offer to Sally), and actions of individuals (e.g., the person who transmitted the letter of offer to Sally). It is gratuitous to include an additional cognitive state, a state of Microsoft as a single entity, that causally accounts for the data.

**II. Does Ockham’s Razor Remove Too Much?**

Goldstone and Gureckis (2009, p. 426; cf. Huebner, 2008) object to this style of reasoning on the grounds that its eliminativist implications over-reach in obvious ways. In particular, a parallel application of Ockham's razor to the case of *individuals'* cognitive states would eliminate them from the set of things to which we are ontologically committed.[[4]](#footnote-2) After all, there is available, at least in principle, a complete, neural causal explanation of intelligent behavior in the individual's case. By parity of reasoning, then, it is gratuitous to posit individual cognitive states, and they should be eliminated from our ontology. That result is, however, clearly unacceptable. Therefore, my argument against group cognitive states must be flawed (see Rupert, 2005, p. 180, for a statement of this objection and an initial response to it).

There are, however, at least two significant points of disanalogy, which undermine the supposed *reductio* of the casual-explanatory argument against group cognitive states. The first concerns the motive for thinking that individuals have cognitive states. Each of us has what would seem to be decisive first-person evidence of the existence of mental states. For this reason and others, the quick causal-explanatory argument against group cognitive states should be qualified in an important way:

P.1. If it cannot be established that group cognitive states do distinctive causal-explanatory work -- and there is no independent reason to think they exist -- then we should tentatively conclude that they do no exist.

P.2. The antecedent of P.1's conditional is satisfied.

Conclusion. Thus, we should tentatively conclude that group cognitive states don't exist.

So qualified, this argument cannot be adapted to the case of individual states in a way that preserves the eliminativist result; for we have independent evidence, the first-person evidence alluded to above, of the existence of individual cognitive states.

I don't want to place too much emphasis on the preceding point, given the unreliability of introspective access (Nisbett and Wilson, 1977). Keep in mind, though, the weakness of the demand made by the independent-evidence clause. It may be reasonable to doubt specific claims of first-person access, for example, of direct access to particular motive that caused some instance of one's behavior. The issue at hand, however, pertains to the very existence of cognitive states. Although we frequently are wrong about the details of our cognitive processes, the empirical evidence does not seem at all to undermine our confidence that we have some cognitive states or other.

Consider one way of arguing for such minimal introspective access. Many have claimed, largely on empirical grounds, that humans simulate other persons' thought processes as a way of predicting and understanding others' behavior: we put ourselves in their shoes, so to speak, and reason away, to see what we would do. On the simulation-based view, broadly speaking, we have first-person access to our own case, then project it onto others. At least on most ways of fleshing out this view (e.g., Nichols and Stich, 2003), the model presupposes some access to one's own states (and see, *ibid.*, p. 172, for some experimental evidence of such access). A verbal report of a prediction of another's behavior is, for instance, a report of the output of one's own cognitive processes. If this view of mental-state attribution is correct, a certain amount of introspective access -- sufficient for present purposes -- seems to follow.

Moreover, even if one endorses the theory-theory of mind, the everyday (i.e., first-order, not philosophical) success of our use of that theory provides independent evidence of the existence of individual cognitive states. I'm not making a point about first-person access. The theory-theory doesn't presuppose first-person access to one's cognitive states; one's own cognitive states are treated as theoretical entities just as are everyone else's (Gopnik, 1993). We clearly succeed, however, at predicting and explaining others' behavior (Fodor, 1987). If an application of the folk theory of mind grounds such predictive and explanatory success, and that theory is partly constituted by talk of cognitive states, the success in question itself supports a claim to the mere existence of individual cognitive states.

Setting aside questions about introspective access and the theory of mind, I want especially to emphasize a second point of disanalogy between arguments for the elimination of group cognitive states and those for the elimination of individual cognitive states. Goldstone and Gureckis's worry fails to distinguish between intra- and inter-domain elimination. I have argued for a kind of intra-domain elimination: we should eliminate group cognitive states because of the availability of other cognitivist explanations of the relevant data -- those invoking the cognitive states of individuals. In general, once we have reason to introduce a certain kind of property (or have reason to think that there exists facts or laws or phenomena in a certain theoretical domain), then we should eliminate redundant or otherwise gratuitous instances of that kind of property. It is simply a matter of constructing the most parsimonious theory of that particular domain. In the case at hand, the theory is psychology or perhaps cognitive science.

The objection under consideration presupposes that this intra-domain strategy can be freely extended to the inter-domain case. In the inter-domain case, though, we face a substantially different question: Why we should introduce, or preserve commitment to, a distinctive kind of property or domain of phenomena, at all? The most common way to defend psychology against such wholesale eliminativism appeals to distinctive patterns -- patterns in intelligent behavior that have no theoretically natural expression outside of psychology. Psychology is a relatively successful endeavor and thus should be taken to identify distinctively psychological properties. One might hope for reduction in the face of this, but such reductions do not seem forthcoming given the (perhaps open-ended) variety of realizers of psychological properties or kinds (Fodor, 1974). Therefore, we have independent evidence of the existence of cognitive states: the evidence against the reducibility of psychology to neuroscience (or some other nonintentional science).

One might wonder, then, whether any distinctively *intra*-domain principles might block my appeal to Ockham's razor. (Such a principle could be thought of as providing, when applied, independent evidence for the existence of group cognitive states, thus neutralizing the first premise in my causal-explanatory argument.) Further possibilities are considered in the next section, but for the present, consider just this one: our best theory of individuals' cognitive states (or properties) itself provides independent reason to accept the existence of group-level cognitive states. Within a domain, once one has posited certain distinctive properties or state-types -- as a way of doing necessary causal-explanatory work -- certain instances of those properties might get an ontological free pass, so to speak. Here's an analogy: The mass of, say, a rigid body is a straightforward agglomeration of the masses of the body's component parts. Now, it might be that, according to the most defensible metaphysics of a body's mass, it -- the mass of the body -- has no causal power of its own. From the standpoint of physics, though, this would seem to be irrelevant. The theory of mass itself entails that the rigid body (the object occupying the space-time region in question) has a mass. Perhaps groups, similarly, possess cognitive states because our best theory of cognition -- of, say, the structure or information-processing steps distinctive of the states that do causal-explanatory work in individuals -- entails that groups instantiate such states (given the empirical facts about groups). Regardless of whether those group states do distinctive causal-explanatory work, it might be that the groups in question simply possess the right internal structure or information-processing properties or that they enter into the right apparent causal relations (even if according to some deeper philosophical analysis, the relations shouldn't be counted as genuinely causal). We would then seem to be ontologically committed to the existence of group cognitive states because we are justified in accepting a theory that entails the existence of cognitive states wherever certain structural properties or apparent causal patterns appear, and these happen to appear in groups.

This tack does not seem at all promising as a way to resist the causal-explanatory argument against the existence of group cognitive states. It is a demanding task to find group states that have the properties of cognitive states, as these are described when posited to do causal-explanatory work in the science of individual cognition. For example, representation plays a central role in individual cognition, yet typical groups do not have mental representations of the sort the positing of which has proven useful in cognitive science (see Rupert, 2005, for detailed discussion of mental representation and groups). This immediately precludes the defense currently under consideration with regard to *any* content bearing cognitive states -- which would seem to be nearly all of them. Moreover, when one attends to the structural, information-processing, and (apparent) causal profiles of just about any particular kind of individual cognitive state -- say, *having items in a short-term memory buffer* -- the prospects for group states seem dim, at least as their existence might be established by the current strategy.[[5]](#footnote-3)

Consider the way in which a human performs actions. Typically, a person executes a selected action *by* executing other actions, which all together constitute a chain of actions grounded in the execution of a relatively independent motor routine (Grush, 1997, 2004): I warn the police *by* flipping the light switch; I flip the light switch by reaching for it -- and here the chain ends with the activation of a motor routine. In the case of groups, although there may be a more or less centralized action-selection mechanisms, the actions bottom out in the actions of individuals. The basic actions of humans -- those that are not executed by any other actions -- are performed via the activation of relatively autonomous motor routines. In contrast, for the typical group, insofar as it has what might be thought of as basic actions, these are executed by a system that itself is comprised both of a more or less centralized decision-making system *and* relatively autonomous motor routines (both in the individual).[[6]](#footnote-4) There could be exceptions to this generalization: an automated factory might execute the actions of a corporate entity in a way that is architecturally similar to that of the typical individual human. My point, however, is that architectural dissimilarities are some of the many that stand in the way of a "side-effect" defense of group cognitive states currently under consideration.

I should reiterate the point of the preceding comments. I have *not* offered an argument of the following form: group cognitive states exist only if such states have the properties of individuals' cognitive states; they don't have such properties; therefore, they don't exist. Absolutely not. Rather, I have been criticizing the following argument: even if group states do not have any causal-explanatory work to do, they exist so long as they have the same profile as individual states; they do have the same profiles; therefore, they exist. Given the differences between group-level states and individual ones, the second premise is false. So, the differences to which I've directed the reader's attention do *not* ground an independent argument against group states; instead, they ground a criticism of a certain strategy for getting around my original causal-explanatory argument against group cognitive states.

To be fair, Huebner (2008, pp. 101-105) develops a more subtle version of the rejoinder from over-reaching. He argues that there must be something wrong with my original eliminativist argument because, even in the case of individual cognition, component parts of the individual cognitive system -- sub-personal representations, in particular -- carry content that is also the content of the personal-level cognitive states. To my mind, this version of the objection appeals to an indefensible notion of personal-level states. Individual cognition simply *is* the activity of the component mechanisms of the cognitive system housed in the individual organism (see Rupert, 2009, Ch. 3, for more detailed discussion). On this view, there is no distinct personal-level at which we find states of the sort that, according to Huebner, my casual-explanatory argument would eliminate (unacceptably). It is no objection to my causal-explanatory argument that, if its logic were applied across the board, it would eliminate personal-level states; for we already have independent reason to eliminate them, at least if they are supposed to be distinct from collections of subpersonal ones.

**III. Further Objections and Replies**

The remainder of this chapter addresses further objections, some found in the literature and some raised by audiences members.

*A. Distinctive patterns at the group level*

Above, I rehearsed a standard argument against the elimination of individual cognitive states, an argument that appeals to distinctive patterns that can be captured only at the psychological level. One might wonder, then (as Sydney Shoemaker did), why such considerations would not themselves speak in favor of a commitment to group cognitive states.

I take it that the ontological importance of distinctive patterns concerns the recognition of a distinctive *kind* of phenomena. But, when distinctive patterns involve straightforward combinations of patterns of entities of the same kind, the mystery is solved; there's no need to think that a new domain of enquiry must be opened up.

Recall the famous multiple realizability arguments against the reduction of psychological properties to physiological ones. According to such arguments, distinctive kinds of facts appear at the psychological level *because* there is a pattern that is only explicable by a hodge-podge of facts in a distinct domain. In the case of alleged group cognitive states, we are not faced with a domain of facts that can be explained only awkwardly by reference to odd groupings of properties from a distinct domain.

Digression: The objection currently on the table, and related objections raised below, is cast in commonly accepted terms; this is perhaps the best way to proceed from a dialectical standpoint. I'm more inclined, however, to think that realization relations tie distinct domains together *too* tightly -- engendering problems of overdetermination, causal exclusion, and in some forms, the *virtus dormativa* problem (Rupert, 2006, 2008). In which case, realization relations, within a level or otherwise, count *against* the ontologically autonomous status of the states in question (in this case, group cognitive states).

On this view, ontological commitment depends on whether are distinctive patterns *not* realized by (or which do not supervene on) the same-domain states (of individuals, in this case). For, the realization relation is too tight to have ontological implications. At least in the standard examples, group cognitive states almost certainly do not exhibit the requisite form of distinctiveness (i.e., they are not distinctive *qua* not being realized by anything else).

*B.* *Within-domain realization.*

The immediately preceding remarks disparage realization-relations as a ground for autonomy, but let us set these concerns aside, treating them as motivated by idiosyncratic metaphysics. It is much more common to think of the realization (or supervenience) relation as the appropriate relation to hold between properties in distinct domains each of which is ontologically autonomous. Moving back beneath the umbrella of orthodoxy, then, consider the following objection, raised by Mark Sprevak.

Why shouldn't we think that individual cognitive states *realize* group-level cognitive states? On a standard view of realization, this realization-relation would allow both individual and group cognitive states autonomous status, while accounting for the way in which individual states seem to determine group states.

My reaction to this thought parallels my reaction to the first objection. To me it seems to be based on a misunderstanding of the very purpose of talking, in philosophy of science, about realization relations: the theory of realization provides a way to understand the relations between *different* domains, that is, to make sense of the relation between different sets of relatively autonomous, but internally nomically related, properties. The idea of realization is meant to illuminate both the way in which such domains are autonomous while at the same time being part of a single, ontologically coherent (physical) universe. To hold that individual cognitive states realize group cognitive states -- all states within the same domain of cognition -- muddies such a picture to no good end. At the very least, much independent empirical motivation would be required for such a view, and it is part of my brief that there is no such motivation.

*C. Aren't many sentences that attribute cognitive states to groups true?*

Consider again the sentence, "Microsoft intends to develop a new operating system." Perhaps when we utter this sentence, we defer in some way to facts about individual employees at Microsoft (and their use of merely physical media). Why, however, should we not take such facts to be truth-makers of the sentence at issue? If they are, then Microsoft has a cognitive state; it has an intention. How could it be true that Microsoft intends to *P* if it does not have an intention to *P*?

This objection (raised in one form or another by Chris Heathwood and Harold Hodes) does not speak to the question in which I am ultimately interested. I take a state to be the instantiation of a property by an individual. Thus, if the statements in question are true, but their truth-makers involve nothing more than the instantiation of cognitive properties by individuals (together with their use of merely physical materials), then there are no group cognitive states in the relevant sense. No group, as an individual, instantiates a cognitive property.

For comparison, consider the following sentence: "The average American family consists of 3.14 persons." As of the 2000 census, this sentence (or something near enough to make my point) was true (see http://factfinder.census.gov/servlet/SAFFFacts). But, there is no individual family that instantiates the property of being comprised of 3.14 persons. The truth of the census-based claim no more entails the existence of partial persons than does the truth of "Microsoft intends to develop a new operating system" entail that Microsoft itself instantiates the causal-explanatory (or natural) cognitive property *intending that*.

*D. What about shared, or collective, intentions?*

It might seem simply obvious that there are shared, or collective, intentions. When *we* work together to move a heavy table, *we* intend to move the table. This is all well and good, but the most promising analyses of our concept of group intentions do nothing to establish group cognitive states.

Take, for example, Natalie Gold and Robert Sudgen's (2007) recent account, which emphasizes the individual's identification with a group or commitment to the goals of the group. Such an analysis might apply to cases in which people are willing to work together to bring about certain goals, that is, to contribute causally to the production of what we might think of as data to be explained. It does so, however, in a way that coheres with my response to the preceding objection. It explains how sentences that ascribe group intentions might be true without the group's instantiating the properties that appear in the causal-explanatory generalizations (or laws) of our best cognitive science. I might care about the fortunes of a group (e.g., the number of games the group wins by some particular metric), and I might believe that others on my team have the some concern; and the others on the team might, in fact, instantiate these same cognitive states. That collection of facts exhausts the cognitive materials required to explain the relevant outcome: the team's number of wins.

Similar comments apply to the entire range of analyses according to which individuals group members' beliefs (or knowledge) about the beliefs (or knowledge) of other members of a group determine collective intentions (see, e.g., Chant and Ernst, 2008, and many of the proposals surveyed therein).

*E. The effects of groups on intelligent behavior*

It seems indisputable that being in a group can affect the individual's behavior. Thus, the group itself plays a causal role in the production of intelligent behavior -- that of the individual at least. Absent a principled way of identifying only the genuinely cognitive contributors to intelligent behavior, such causally contributing group states count as cognitive.

Consider, though, what might be thought of as the independent cognition-related status of the relevant group state -- its status apart from its causal contribution to the intelligent behavior of the individual. At least as I presented the objection above, there is nothing particularly cognitive about the group states; the mere perceived physical presence of a group (by the individual) affects the individual's behavior. Seen in this light, then, one might think there is nothing specially cognitive about the group. If *it* is cognitive, then a tree perceived by an individual counts as being in a cognitive state; for when perceived, it can causally contribute to the production of intelligent behavior on the part of the individual -- perhaps her discourse on the tree's many important biological properties.

This alone might ground a straightforward response to the objection at hand. The group's contribution to the production of intelligent behavior is on par with the contribution of such things as perceived trees. Given that the latter is clearly not, simply on account of its causal contribution, in a cognitive state, neither is the group in a cognitive state.

Larger matters loom, however, including the question of what is to count as cognition (as Sandra Mitchell emphasized). Elsewhere (Rupert, 2009; cf. Wilson, 2002) I have argued at length for the following view: a state is cognitive if and only if it is the state of a mechanism that is part of a relatively persisting, integrated set of mechanisms that produces intelligent behavior. In the parlance of contemporary cognitive science, the integrated set of mechanisms is a cognitive architecture; this appears to be the fundamental explanatory construct of cognitive science, whether one's proclivities run toward computationalist, connectionist, or dynamicist forms of modeling. Limiting cognition to the activities of the cognitive architecture would seem obviously to exclude the tree from the collection of things in cognitive states. Moreover, in most (perhaps all) commonly cited cases, it precludes the group from doing so as well.

This approach raises a new question, though: Do groups instantiate a cognitive architecture? This, I think, is an open empirical question. Nevertheless, two concerns should temper our optimism about finding architectures in groups. First, the architecture is an integrated collection of mechanisms *that plays a privileged role in causal-explanations of intelligent behavior*, that is, in accounting for the distinctive *explananda* of cognitive science. To find a cognitive architecture in a group thus requires the identification of relevant *explananda*. And although I make some effort below to do this, it is no easy task to locate such data. Second, the positing of cognitive architectures seems to me to be constrained by the same intra-domain principles of elimination discussed above. In particular, in cases in which there are existing cognitive architectures the operation of which account for the data in question, it is gratuitous to add another. To be more concrete, if we already have reasons to posit cognitive architectures in individual employees of Microsoft, for example, and the activities of those cognitive architectures accounts for the data, then it is gratuitous to invoke the contribution of some further cognitive architecture. Modulo the "side-effect" considerations discussed above, this should eliminate commitment to a group-level cognitive architecture. Of course, this leaves open the possibility that group-level architectures do distinctive causal-explanatory work, a matter I return to in closing.

*F. Groups as subject to norms*

Much philosophical work has stressed the importance of norms (as did Margaret Battin and Elijah Millgram). If groups are subject to norms of evaluation -- for instance, of the rationality of their behavior -- this might itself establish the ontological status of groups as cognitive agents. Norms, however, do not appear from nowhere. The institution and enforcement of norms are the work of individuals. Individuals must invent norms, they must learn norms others have invented, they must choose to (and agree to) be bound by them, they must choose to write down statements (policy statements, for example) that they themselves or other individuals can access later (and they must decide, as individuals, whether to act in keeping with explicitly formulated norms), etc. Cognitive science explains these facts by adverting to the standard mechanisms of individual cognition, and it seems no surprise that it would do so. It is difficult to see any other naturalistically viable option, at least at present.

**Causal-Explanatory Power Revisited**

Up to this point, the discussion has proceeded mostly at an abstract level; where examples have been used, they involve everyday attributions of mental states to groups. Is there, however, any cognitive scientific evidence for the causal-explanatory role of group states -- evidence that would sink the simple argument around which discussion has been centered?

Our initial task is to identify something in the vicinity of intelligent behavior on the part of group. Here's a possibility that I think will be instructive. An existing body of literature on foraging identifies what are perhaps surprising patterns in the distribution of individuals across food sites. The basic result of interest is that, under many conditions, groups of animals distribute themselves in a way that is very nearly proportional to the distribution of food across sites. To keep things simple, if eighty percent of a quantity of food appears in one site and twenty percent at another, then roughly eighty percent of the animal population in the vicinity go to the first site, and twenty percent to the second. Thus, we might think of the population as a whole as engaging in a kind problem solving: efficient consumption of a resource (Goldstone and Gureckis, 2009, pp. 423-424).

If efficient consumption of a resource is itself intelligent behavior, then, one might think, whatever states explains it count as cognitive, regardless of whether those states' causal or structural profiles resemble those of the states that explain the intelligent behavior of individuals. What might the relevant state of the group be? The obvious candidate is the distribution of the group in space -- or perhaps a series of successive distributions of the group in space.

Here again, however, the group state plays no causal-explanatory role. The distribution of the group does help to explain why the food gets consumed efficiently. Nevertheless, there seems to be a complete causal, and clearly cognitive, account of the distribution. Individual organisms themselves pursue a strategy -- mediated in the standard ways by perception, computation, representation, and the like -- that determines the relevant distribution of the group.

Consider the underpinnings of optimal foraging in individuals. The frequency with which, for instance, an individual great tit visits a given food site, relative to the frequency which it visits other food sites, is itself proportional to the amount of food the bird has found at that site, relative to the other sites. Release one hundred great tits, then, and the probabilistic workings of their individual cognitive mechanisms lead unmysteriously, by simple aggregation, to the group's distribution that eventuates in efficient consumption. These results hold for various species of fish, fowl, and rodent (for review and citations, see Gallistel, Brown, Carey, Gelman, and Keil, 1991, pp. 18-21).

**Conclusion**

Nothing I have said precludes the existence of group cognitive states. Nor have I tried to show that no noncognitive group states do causal work. Rather, I have argued that the naturalistically minded proponent of group cognitive states must meet a significant burden, one that, at present, does not seem to be met, regardless of whether we focus on cases of interest to the folk or those of interest to cognitive scientists.

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2. I frame the question in this way for the following reason. I do *not* think the truth of a sentence of the form "things of kind P exist" has immediate ontological import; that is, I do not think it entails the presence of things of kind P among the furniture of the universe (cf. Armstrong, 1989, p. 89). Of central importance is what makes such a sentence true. There may, for example, be a legitimate meaning of "group mental states exist" in keeping with which the sentence expresses a true proposition, even though it is never the case that groups, taken as individuals, instantiate mental properties. See below, for further discussion. [↑](#footnote-ref-0)
3. Note, too, that a negative answer in the case of group cognitive states may well entail a negative answer to the question of group mental states. It's somewhat plausible that, where there are mental states, there is cognition -- from which it follows that, where there are no group cognitive states, there are no group mental states. [↑](#footnote-ref-1)
4. Throughout, when I use 'individual' without qualification, I have in mind individual organisms (in most cases humans). [↑](#footnote-ref-2)
5. Bear in mind that it is of little consolation to the proponent of group cognitive states to find a relatively small amount of match in casual profiles. Normally, a cognitive state that has been posited to do causal-explanatory work in the human case exhibits a wide range of theoretically important interactions with other cognitive states. [↑](#footnote-ref-3)
6. This suggests a more a prioristic argument against group cognitive states, at least for typical groups: any intentional action of system *S* must be executed via one of *S’s* basic actions (where a basic action is an action not executed by the performance of any other intentional action); collective systems execute no basic actions (all of their actions are executed via the basic actions of other intentional systems); therefore, collective systems perform no intentional actions.

   [↑](#footnote-ref-4)