Group Understanding

While social epistemologists have recently begun addressing questions about whether groups can possess beliefs or knowledge, little has yet been said about whether groups can properly be said to possess *understanding*. Here I want to make some progress on this question by considering two possible accounts of group understanding, modeled on accounts of group belief and knowledge: a *deflationary* account, according to which a group understands just in case most or all of its members understand, and an *inflationary* account, according to which a group's understanding does not depend solely on whether its members understand. I argue that both accounts face problems. The deflationary account has two such problems: *aggregation problems* that are familiar from discussions of group belief, and the problem of *different bases*, wherein members possess understanding for different but consistent reasons. The inflationary account faces what I call the problem of *distributed grasping*: while it is widely accepted that understanding requires a kind of "grasping", it is hard to make sense of how this requirement could be met at the group level while not necessarily being met by any individual member. Despite its problems, I make a case for the inflationary account. This will require addressing the problem of distributed grasping: to do this, I propose a different way of thinking about the grasping relation at the group level, such that it is constituted by a dependency relationship between members.

Keywords: understanding, groups, group knowledge, grasping

1. Groups as Epistemic Agents

While epistemic and doxastic states like knowledge and belief have traditionally been taken to be the property of individual agents, social epistemologists have recently asked whether *groups* can possess such states, as well. The motivation for thinking that groups can possess beliefs and/or knowledge is threefold. First, attributing groups belief and knowledge can make sense of our linguistic practices of making belief and knowledge attributions: as many writing on group belief have noted, it seems perfectly natural to make belief ascriptions like "the committee believes that the proposal has merit", "NASA believes that there will be up to 100 exoplanets discovered in the next year", etc.; similarly, group knowledge ascriptions like "the committee knows which proposals have been accepted and which have been rejected", "NASA knows that Pluto is no longer properly classified as a planet", etc., seem just as natural. Second, conceiving of groups as believers and knowers makes sense of the way that we treat groups as sources of information: as exemplified by the above attributions, we will appeal to NASA if we want to know the latest information about exoplanets, will seek out information from a lab if we want to know about relevant scientific developments, etc. That groups can provide us with such knowledge is again at least prima facie reason for thinking that they possess it.

Finally, attributing groups beliefs and knowledge can make sense of how groups behave. Consider a frequently cited case from Edward Hutchins (1995), which tells in detail the harrowing tale of the USS Palau, a ship which required all of its crew to work together to safely navigate it back to port after a serious malfunction. Hutchins draws the following conclusions from the case:

> The safe arrival of the *Palau* at anchor was due in large part to the exceptional seamanship of the bridge crew, especially the navigator. But no single individual on the

bridge acting alone - neither the captain nor the navigator nor the quartermaster chief supervising the navigation team - could have kept control of the ship and brought it safely to anchor. Many kinds of thinking were required to perform this task. Some of them were happening in parallel, some in coordination with others, some inside the heads of individuals, and some quite clearly both inside and outside the heads of the participants. (5-6)

In Hutchins' case, we have a successful action – the ship returning safely to port – that requires some specialized knowledge to perform. However, while the crew members individually possessed a lot of relevant beliefs and knowledge, no one member possessed all the relevant knowledge required to navigate the ship safely. That the action seems to have been performed by the crew as a group, then, again provides some motivation for thinking that it is the crew itself that possessed the relevant knowledge. In general, the lesson we can draw from Hutchins' case is that since successful action often requires relevant knowledge on how to complete that action, that a group can perform complex actions successfully gives us reason to believe that the group itself possesses the relevant knowledge.

None of these reasons are enough to definitively establish that groups do, without a doubt, possess beliefs and knowledge: instead, the motivation for investigating group epistemic states is one based on the seemingly best or simplest explanation. That being said, my aim here is to extend the investigation of group doxastic and epistemic states to include *understanding*. Again, the goal here is not to provide a definitive proof that groups possess understanding, but instead to motivate the investigation by appeal to the simplest or best explanation, and then to argue for a view that could account for a group's possessing understanding. To do this, I will

first survey the different positions that have been taken on group belief and knowledge to act as a template for the discussion of group understanding.

There are two possible answers to the question of whether groups have beliefs: either they have them, or they don't[1]. Call the latter view:

> **Group Belief Nihilism (GBN)**: Groups cannot be said to have beliefs in a
> nonmetaphorical way.

Note that one can be a proponent of GBN and still accept that we do, in fact, use language in such a way that ascribes beliefs to groups, treat groups as sources of information, and conceive of groups as capable of performing actions: one just has to deny that such ascriptions are anything more than loose talk, and to develop alternative accounts of group testimony and action. Of those who argue that groups *can* be believers, though, there are two main views:

> **Deflationary Group Belief (DGB)**: A group G believes that p just in case all or the
> majority of its members believe that p.

> **Inflationary Group Belief (IGB)**: Whether a group G believes that p does not depend
> solely on whether its members believe that p.[2]

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[1] References to those working on group belief will show up in various places in what follows, but some of the most prominent work on the topic includes Gilbert (1987), Tuomela (1992), Pettit (2003), Hakli (2006), List and Pettit (2011), Bird (2014), Goldman (2014), Lackey (2016), and Dunn (forthcoming), amongst others. Similarly, references to those arguing for group knowledge will show up in what follows, but again one can look to Goldman (2004), Tuomela (2004), Mathieson (2006), Hakli (2007), Lackey (2014), amongst others.

[2] The distinction between the deflationary and inflationary views as I present them here are intentionally course-grained in order to avoid delving too much into the debates surrounding the metaphysics of groups. There are potentially many different ways to be either a deflationist or inflationist according to the definitions I provide, but I take the three categories I present here – nihilism, deflationary accounts, and inflationary accounts – to exhaust the logical space at a broad level.

Similar positions can be taken when it comes to group knowledge. First, one might deny that groups can be properly said to know, in which case one would defend:

Group Knowledge Nihilism (GKN): Groups cannot be said to have knowledge in a nonmetaphorical way.

Similarly, of those who argue that groups can, in fact, be knowers, there are two main options:

Deflationary Group Knowledge (DGK): A group G knows that p just in case all or the majority of its members know that p.

Inflationary Group Knowledge (IGK): Whether a group G know that p does not depend solely on whether its members know that p.

In general, for the deflationist any attribution of group belief or knowledge that p indicates nothing more than its members believe or know that p, whereas for the inflationist one cannot infer from an attribution of group belief or knowledge that p to any member belief or knowledge that p.

The central challenge facing any theory that defends the existence of group belief or knowledge is to figure out how a group's state is related to the relevant states of its members. Both the deflationary and inflationary approaches face their own version of the challenge. First, deflationary accounts generally employ a kind of aggregation procedure to determine the state of the group. There are, however, concerns about the right way to aggregate member states, and worries that there are potentially multiple rational aggregation procedures that could be applied to members of a group that will in turn provide different outcomes with regards to the state of the

group[3]. Inflationary accounts avoid this problem in that they do not need to employ any specific aggregation procedure in determining group belief. However, a tension in such accounts is that while they allow there to be a difference between group and member states, it remains the case that group states cannot float completely free from those of its members. For example, one prominent inflationary account claims that for a group to believe that p does not require that any of its members *believe* that p, but that all or most of its members *jointly accept* that p, and that group belief consists in this joint acceptance (Gilbert, 1994). While it is not clear whether this view succeeds[4], it illustrates the problem that while a group can be in a state that few or none of its members are in, that state cannot come from nowhere: there has to be some relationship between group and members states, and the challenge is in figuring out what that relationship is[5].

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[3] See, for example, Gilbert (1994), List and Pettit (2002), Pettit (2003), and List (2005), amongst others.

[4] Others have argued that joint acceptance cannot constitute group belief since it does not have the hallmarks of belief (i.e. it is not necessarily truth-directed, and it is voluntary), and so group belief must be established in some other way. See for example Meijers (2003) and Mathieson (2006).

[5] While the general views one can defend with regards to either group belief or knowledge are the same, questions concerning the nature of group knowledge can be more complicated depending on how we think about what it takes to know. One could, for example, hold a *deflationary* conception of group belief while also holding an *inflationary* conception of *group justification*. Indeed, a number of inflationary conceptions of group justification have recently been proposed (see for example Schmitt (1994), Hakli (2011), Goldman (2014), Lackey (2016), Dunn (forthcoming)), along with various inflationary conceptions of related group epistemic states that can allow for a group to meet the required conditions for being a knower, for example that groups can meet the conditions of being a good informant (see Lackey (2016)) or the requirements of being a rational agent (Mathiesen, 2006)). Other approaches to group knowledge are also available: one could also simply reject the view that knowledge is analyzable into component parts (in the vein of Williamson (2001)), and thus not need to account for the ways in which a group could meet the above conditions. Or, one could argue that knowledge does not work in the same way at the group level as it does at the individual level: for instance, while it is popular to accept the view that knowledge entails belief, Raul Hakli (2007) has argued that this entailment does not hold at the group level, with groups being able to possess knowledge despite not being able to possess beliefs. I introduce these complications here not to adjudicate among them, but to draw attention to potential complications.

My primary interest here is not directly with determining the right way to think about group belief and/or knowledge, but rather to extend the framework of the discussion of these states to include understanding. Doing so faces immediate complications. First, unlike belief and knowledge, understanding has not received nearly as much attention from epistemologists, and thus many fundamental questions about the nature of understanding remain open, even at the level of the individual. Second, we have not yet seen any motivation for addressing the question of whether groups can, in fact, understand. In order to even get started on considering the space of possible positions one could take towards group understanding and the pros and cons thereof, then, we need to first get a sense of what understanding is, and why we should care about it at the group level.

2. Understanding

Any discussion of understanding has to start with the disclaimer that it is an area of significant debate as to what it takes, exactly, to understand. While there is no consensus as to what a fully-fledged theory of understanding consists in[6], there has at least been some agreement as to what the main questions are, and even some agreement on necessary requirements. One central question concerns the different *forms* of understanding, and whether one should be considered more fundamental than the others. For example, one can talk about *understanding-why* something is the case[7], *understanding-how* to do something[8], *understanding-that* something

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[6] A couple of the most fully fleshed-out recent conceptions can be found in Khalifa (2017) and de Regt (2017).

[7] See de Regt and Dieks (2005), Pritchard, Millar, and Haddock (2010), Hills (2015), Khalifa (2013), and Wilkenfeld et al. (2016), for example.

[8] See Zagzebski (2008).

is the case[9], or understanding some *object or phenomenon*[10], and it is up for debate how these various forms relate to one another. A second major question concerns whether understanding is reducible to knowledge (the *reductionist* view), or whether it constitutes a sui generis epistemic state (the *nonreductionist* view)[11]. In what follows I will remain agnostic with regards to the reductionism/non-reductionism debate, as I do not think anything important hangs on it here. I do need to say something, however, about the relevant forms of understanding I will address here.

While there is not enough space in a single paper to be able to address all the intricacies of each possible form of understanding, I do want to make two main distinctions that will narrow the discussion that follows at least a bit. First, we can make a distinction between forms of understanding that are *propositional* and those that are *non-propositional*. Propositional forms of understanding take a proposition as their object: understanding-why p, understanding-that p, and understanding-how p will, for my purposes, fall under the category of propositional understanding[12], whereas understanding an object or phenomenon will not[13]. Here I will be concerned with propositional understanding, as to better draw comparisons to discussions of group belief and knowledge. Second, I will not here have anything to say about so-called tacit or innate forms of understanding – for example, types of understanding that children might be said

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[9] See Bourget (2017).

[10] See Kvanvig (2003), Wilkenfeld (2013), and Kelp (2015).

[11] See Grimm (2006) for discussion.

[12] We might think that understanding-how doesn't belong on this list, as it might appear to involve skills and abilities that are not obviously propositional. While that may be the case, I still take it that ascriptions of understanding-how still apply to propositions.

[13] Again, we might worry about the distinction here, as we might think that even though understanding an object or phenomenon does not take a proposition as an object, the state of understanding such an object or phenomenon is still represented in a propositional way (see Kelp (2015), for example). Since it is, however, an open question as to how such a form of understanding is represented, I will separate it from the others here.

to possess when it comes to language development[14]. While there are many interesting things to be said about these types of understanding, I exclude these forms of understanding again for the sake of streamlining discussion.

With that being said, we can now get a general sense of the component parts necessary for understanding. Again, while there is no complete consensus on what these parts consist in, we can at least sketch the following minimal conception:

Minimal Conception of Understanding

For S to understand (why/how/that) p requires:

Representation: S possesses a representation of p and reasons that support it;

Getting It Right: p is true, or S's representation of p accurately mirrors reality;

Grasping: S grasps the relationship between p and the relevant reasons that support it.

There are a number of things to say about this minimal conception overall, as well as its individual components. Overall: first, I take these conditions to be necessary, but not necessarily sufficient, for the possession of propositional understanding. Second, this conception is neutral on the reductionism/nonreductionism question, since we can cash out the relevant conditions in either reductionist- or nonreductionist-friendly ways (for example, if one is a reductionist, then one could argue that the kind of representation that is involved in understanding is just believing, and that to grasp something is just to possess a certain set of knowledge; if one is a nonreductionist, then one could argue, for example, that grasping requires something more or

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[14] See, for example, Chomsky (1965), Bruner (1974), and Johnson (2007) for discussions of tacit understanding in language development from several different perspectives.

different than a mere collection of beliefs or knowledge). Finally, such a conception permits of *degrees* of understanding. For instance, one might possess "stronger" or "deeper" understanding depending on the amount of reasons that one possesses in support of a given proposition or the connections between reasons that one represents. I take this to represent an intuitive characteristic of understanding, namely that one can understand something better than something or someone else.

So far, so non-committal. Let us now consider each of these conditions in turn. The first condition – *representation* – is the general requirement that to possess understanding a subject must, in some way, represent the relevant content of that which is understood. This representation could, for example, take the form of belief – such that one believes p, reasons for p, and the relationship between p and reasons for it – or some other form[15]. Second is *getting it right*. It is not entirely straightforward how we should interpret this requirement. We might say that, at least when the relevant kind of understanding takes a proposition as an object – say in cases in which understands-that p – one *gets it right* when the relevant proposition is true. However, since understanding involves representing more than one proposition, we might think that *getting it right* requires more than the truth of a single proposition. Stephen Grimm (2012), for instance, helpfully discusses the concept of a representation "mirroring" reality: for example, Grimm argues that understanding mirrors reality in a way that is different from believing or assenting to a proposition, in that it takes on the "nomological structure of the world, in the sense that the grasped structure will inform the mind in a way that it failed to do before, when one merely assented to the proposition" (110). Consider, for example, understanding-why a glass that fell off a table shattered when it hit the tile floor: in this case one mentally represents the

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[15] For more detailed discussion, see Kelp (2015).

relationship between the glass, the floor, the tendency of glass to shatter when dropped from certain height, etc. One thus *gets it right* in the sense that one possesses a mental representation of a structure that is, in fact, reflective of reality[16].

The final and perhaps most controversial component of understanding is the *grasping* requirement. While there is again no consensus as to what it means to grasp something in the epistemic sense, a few different views have recently gained popularity. For example, according to an *abilities* account of grasping, grasping requires being able to do certain things with one's representation of p and reasons why p. Allison Hills (2015), for example, argues that in grasping one has *cognitive control* over p and propositions related to it. On Hills' account, this cognitive control involves one being able to do some or all of the following:

(i)   follow some explanation of why p given by someone else.

(ii)   explain why p in your own words.

(iii)   draw the conclusion that p (or that probably p) from the information that q.

(iv)   draw the conclusion that p' (or that probably p') from the information that q' (where p' and q' are similar to but not identical to p and q).

(v)   given the information that p, give the right explanation, q.

(vi)   given the information that p', give the right explanation, q'. (3)

One ability that has been considered particularly important is the ability to provide relevant explanations in the right kinds of circumstances: Khalifa (2013), for example, argues that

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[16] That understanding requires *truth*, in one form or another, is the dominant view; that is not to say that it is the only view (see, for example, Zagzebski (2008)). Here I will assume that one cannot understanding something that is false.

grasping "involves reliable explanatory evaluation", such that one possesses true beliefs of the form 'q entails p' and is able to evaluate and discriminate between different explanation for p[17].

While there are thus many open debates about the nature of understanding and its various components, few have discussed understanding as being possessed by anything other than an individual. As we will see in what follows, considering understanding as something that can be possessed by groups will complicate these discussions in various ways. Before getting there, however, I need to first motivate the view that groups can, in fact, possess understanding. As was the case for group belief and knowledge, this motivation will be threefold: first, just as we commonly and naturally ascribe belief and knowledge to groups, we also commonly and naturally make *group understanding ascriptions*; second, in the same way that attributing a group belief and knowledge was often the best way to explain group behavior, there will also be cases in which attributing a group understanding will be the *best way to explain group behavior*; finally, just as our appealing to groups as a source of knowledge is reason to attribute that knowledge to those groups, that we *appeal to groups as a source of understanding* is reason to think that said groups do, in fact, possess the relevant understanding. I consider these reasons in turn.

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[17] For additional conceptions of grasping one can look to Kvanvig (2003), Grimm (2006), Wilkenfeld (2013), amongst others.

3. Motivating Group Understanding

The first reason for thinking that groups can possess understanding comes from our commonplace ascriptions of understanding. Consider some examples of group understanding attributions from the world of business and advertising[18]:

> "The- Ray-Ban lab understands the design inside and out, which allows them to create the perfect shape for the sunglasses."

> "Atlanta Residential Property group understands your needs and wishes, are courteous, kind and a perfect company for the job."

> "Our team understands that there is no 'one-size-fits-all' in financial planning. That's why we take the time to listen to your concerns and goals before we crunch a single number."

Given that these kinds of attributions are made with the purpose of selling a product, one might be tempted to analyze them as little more than loose talk. However, it is similarly common to find attributions of understanding in more demanding contexts: for example, when it comes to laboratory groups, working groups, think tanks, and the like. Consider the following group understanding attribution:

> Roberta Diaz Brinton, a neuroscientist at the University of Arizona in Tucson, says it is clear that the NIH working group understands how the culture of science enables harassment. Science "can be the Wild West sometimes", she says, and its standards of professional conduct lag behind those of other fields. (Reardon, 2019)

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[18] All of these examples were taken from the iWeb corpus (https://www.english-corpora.org/iweb/).

It seems that while we would apply higher standards to a National Institute of Health working group than to, say, Ray Ban, both attributions are natural and seemingly felicitous.

In addition to natural language attributions of understanding to groups, we can also readily find discussions of group understanding in the world of science communication, where a goal is to gauge and ultimately improve the level of understanding of scientific issues at the community level. For example, questions can be asked about the extent to which a community understands issues of contemporary importance – for instance, concerning the existence of anthropogenic climate change and the safety of vaccines – and how best to increase that understanding. Finally, discussions of scientific understanding are directed not only at laypeople, but at scientists themselves. One debate in the philosophy of science concerns whether understanding should properly be considered a goal of scientific inquiry, and if so, how we should conceive of this goal. Hank de Regt (2019), for example, defends the view that science aims to produce understanding at three different levels: that of the individual, that of a community of scientists, and that of the scientific enterprise as a whole (90). Similarly, Paul Humphreys (2000) distinguishes between primary and secondary understanding – the first of which arises from a process of discovery, the latter arising from a process of instruction – and argues that such forms of understanding can exist at either the individual or group level. While I will not defend either of these views, group understanding attributions from the philosophy of science can again motivate us to investigate the nature of understanding at the group level.

One could, however, argue that all of the above evidence is perfectly compatible with a view in which group understanding attributions are merely metaphorical – perhaps they are a shorthand for discussions of the understanding of individuals within a group. In other words, one could accept everything that I have said thus far and still adhere to:

Group Understanding Nihilism (GUN): Groups cannot be said to have understanding in a nonmetaphorical way.

The GUN defender will, of course, have to provide some other explanation of how the above attributions are felicitous. There are two additional reasons, however, to think that GUN is not the best available view.

The second motivation mentioned above was that positing group understanding is often the best way to explain a group's actions. I will not here defend a robust theory of group action. Instead, I will look at some observations of what we might naturally describe as group action, and consider what the best explanations of those observations could be. Again, consider Hutchins' *USS Palau* example as a motivation for considering the existence of inflationary group knowledge, namely that successful group action is best explained by the group's possession of knowledge. What about the case of understanding? What we need to show is that there are actions that are ostensibly performed by a group that can be best explained by that group possessing understanding. Consider first some of the abilities that Hills outlines above that are arguably necessary for, or at least characteristic of, understanding, namely being able to provide explanations and draw conclusions from information and other information closely related to it. It is not required, of course, that understanding entails being able to provide *all* possible explanations of a given explanandum, or being able to draw *all* relevant conclusions from *all* related information: as understanding is something that comes in degrees, having more extensive abilities will be characteristic of having deeper understanding. That being said, offering explanations and drawing conclusions does seem to be something that groups do: a laboratory, for example, can not only report that a certain drug is an effective treatment for such-and-such ailment, but explain why it is, while think tanks can draw conclusions from information, and

when presented with related information, can apply their abilities to draw conclusions from it. Indeed, being able to do these things often seems like the point of forming such groups in the first place: since some problems exhibit complexity beyond the abilities of an individual, a group is required in order to explain them, and some groups are seemingly much better at being able to apply information to come up with new solutions to related problems than any individual could. That a group can not only solve complex problems, but explain the solution and apply it to related problems, suggests that such a group bears the hallmarks of the possession of understanding.

Finally, and relatedly, a reason for attributing understanding to groups is that we often treat groups as sources of understanding. For example, consider advice that we might give to someone looking to acquire some new understanding – "if you really want to understand how to make a good macaron then you should talk to that group of bakers" – or explanations we might give for how we came to acquire understanding – "I didn't understand why some people grow unsightly ear hair before I consulted the ear-hair lab", etc. [19] Furthermore, it seems that we often treat groups as experts, or possessors of expertise. Consider again some of the above understanding ascriptions: we might think that the prize committee is qualified to make prize decisions because the group possesses expertise in the relevant field, or that the NIH working group is best qualified to make recommendations concerning the climate of women in science given its expertise. That we will sometimes treat groups as the best source of information and as possessing expertise is again reason to think that said groups possess understanding. For

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[19] While I think we do seek out groups as sources of understanding, it is not as clear-cut how to conceive of a group as a source of understanding, at least in comparison to a group being a source of knowledge. This is because it is a matter of debate as to whether understanding (and not just the basis for understanding) can be acquired on the basis of testimony. For more on this debate, see Boyd (2017).

instance, Wilkenfeld et al. (2016) argue that a functional role of understanding attributions is the identification of experts: the authors conducted empirical studies of folk attributions of understanding, concluding that such attributions vary according to the extent to which folk ascribe explanatory information to the object of attribution, as well as the degree to which they are willing to defer to said object as an expert. Since, as the above examples illustrate, it seems clear that we do treat some groups as possessing a significant depth of explanatory information and, as a result, defer to them in the ways that Wilkenfeld et al. argue accompanies understanding attributions at the level of the individual, it stands to reason that attributions of group understanding would similarly follow suit.

Again, the reasons I have presented thus far do not by themselves constitute a definitive proof that groups do, in fact, possess understanding. However, attributing understanding to groups makes sense of the various linguistic data, relevant group actions, and the ways in which we rely on those groups as sources of information. Additionally, we might consider that if it were an *individual* about whom we made natural language attributions of understanding, who was able to solve relevant problems and apply information, and who we treated as an expert, that we would likely not hesitate to ascribe them understanding. That it is a group that exhibits characteristics of understanding should thus motivate us to examine the possibility of group understanding further.

Now that we are sufficiently motivated, we can develop two possible theories of group understanding that parallel those of group knowledge and belief:

Deflationary Group Understanding (DGU): A group G understands (why, how, that) p just in case all or the majority of its members understands (why, how, that) p.

Inflationary Group Understanding (IGU): Whether a group G understands (why, how, that) p does not depend solely on whether its members understand (why, how, that) p.

Right away there are two things that to be said about these formulations. First, since understanding comes in potentially many forms, there are potentially many different versions of DGU and IGU. I will be speaking generally about propositional understanding encompassing all of these three forms, as I again do not think that anything important hangs on the difference between the forms at this point. The second is that, depending on how we conceive of the general nature of understanding, DGU and IGU may be reducible to their respective parallel questions about group knowledge. Again, if we accept the reductionist view then DGU is simply a specific instance of DGK, and IGU is simply a specific instance of IGK. Without delving into the reductionist question, we can conduct an initial survey of DGU and IGU for plausibility. I will argue that each view faces its own significant problems: first, the deflationary account faces both aggregation problems and what I will call the *different bases* problem; second, the inflationary account faces what I will call the *distributed grasping* problem. Let's start with DGU.

4. Deflationary Group Understanding

In determining how we should think of a deflationary conception of group understanding we can again look to other deflationary conceptions of group doxastic and epistemic states. For example, according to a deflationary account of group belief, to determine group belief we look at what members of the group believes, and then apply some relevant aggregation procedure. DGU, then, would presumably also work by looking to member states and applying an aggregation procedure of its own.

There are, however, different member states that we could aggregate when determining group understanding according to DGU. First, we could aggregate individual member understanding. According to this approach, we look to each member to see if they possess some relevant understanding, and if there are enough members that possess that understanding then the group is taken to possess the relevant understanding, as well. One worry with this approach is that it results in a potentially uninteresting conception of group understanding, in that we are perhaps doing little more than stipulating that a group possesses understanding once its members have reached a relevant critical mass. Indeed, it is not clear why we should prefer a view like DGU over GUN if we are determining group understanding in this purely summative way.

There is, however, perhaps a more pressing problem, which is that we can generate cases in which all of the members of a group possess understanding but in which it the group itself does not. Consider the following toy case of a group with two members:

> *Disagreeing Historians*: Two historian colleagues, Celine and Tamika, both specialize in Roman history. However, they disagree about many causes of events in the history of the Roman empire, specifically its demise: while Celine believes that invading barbarian tribes was the primary cause, Tamika believes it was widespread government corruption. While these sets of reasons do not conflict with one another, Celine and Tamika disagree about which explanation is correct. As it turns out, they are, to an extent, both right: the fall of Rome was overdetermined, and thus while each cause by itself would have been enough to topple the empire, the full account involves multiple causes.

Here is what I think we should conclude from the case: while both Celine and Tamika possess a degree of understanding as to why Rome fell, the group consisting of both Celine and Tamika

does not possess that understanding. This result conflicts with a summative view that dictates that since all members possess a degree of understanding, so, too, does the group.

These claims need some more support. First, note that both Celine and Tamika can possess a degree of understanding and disagree with one another while both meet the *getting it right* requirement: since they are disagreeing about an event that is overdetermined, they can both represent reasons and relations that accurately reflect reality, even though neither reflects reality in its entirety. Second, the fact that they disagree with one another should not deny either of them their degree of understanding: it seems completely acceptable, for instance, that I should be able to understand something to a certain degree even though others disagree with me about it[20]. Finally, note that the case attributes a *degree* of understanding, but not, say, a complete understanding to the group members. This is again because neither member accepts *all* the relevant reasons why Rome fell. However, that understanding can come in degrees allows for the possibility of having a degree of understanding while not possessing every relevant reason.

Why, then, should we think that the *group* does not possess some degree of understanding, as well? Here we can again appeal to our characteristic indications of understanding, and to note that the group consisting of Celine and Tamika does not possess those

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[20] One might worry that the situation is actually worse for Celine and Tamika, in that we should not ascribe them even a degree of understanding: this is because they seem to be *wrong* about the fall of Rome, insofar as they misrepresent the event as one in which there was, in fact, a primary cause. To deny them any degree of understanding on this basis, though, would again set the standards for the possession of understanding too high: just as one can possess a degree of understanding without possessing all possible supporting reasons, it seems that one can possess a degree of understanding despite being *wrong* about some relevant reasons. For example, we still want to say that novices who start learning about a subject matter can increase their degree of understanding in it despite possessing some false beliefs along the way (I make this as a general observation, and will not here defend a specific view concerning how much one can get wrong before losing all of one's understanding). Thanks to an anonymous reviewer for pushing this worry.

characteristics. This is because the historians are, from their point of view, conflicted: although they agree that Rome did, in fact, fall, they cannot agree on which reasons support that answer. As a result, the group is unable to provide a consistent explanation (as its members do not agree what such an explanation should be), is unable to draw relevant conclusions from related information (as its members do not agree on what lessons one can draw from the fall of Rome), and is unable to act as a good source of information (as seeking out information from such a group would likely just result in confusion about what the right answer is). Note that, of course, each member *individually* possesses these abilities – both Celine and Tamika on their own can give consistent (although incomplete) explanations, can draw relevant conclusions from related information (although not all such conclusions), and can act as good sources of information. That they can do so individually, however, is simply indicative of their individually possessing a degree of understanding.

Call the problem exemplified by *Disagreeing Historians* the *different bases* problem: although all or most members of a group may possess some relevant degree of understanding, when their understanding is based on different reasons that not all members accept, the group itself may not possess any degree of understanding. It does not seem, then, that a simple aggregation of member understanding is sufficient to determine group understanding. Instead, we need to look more closely at the reasons that members of a group possess.

What else should we be aggregating when determining whether a group possesses understanding according to DGU? We have seen that understanding requires more than belief in an individual proposition, so in determining, say, whether a group understands-why p, it will not be enough to simply determine whether a group believes that p. We could, however, make some strides towards a deflationary conception of understanding by looking not just at whether a

group's members believe that p, but also if they believe or otherwise represent reasons for p and the relationship between p and those reasons. Here, then, is one way we could develop DGU: we could say that since in order for a group to understand (why/how/that) p minimally requires that the group believes p and reasons for p, we could look to members of a group to see if all of these beliefs are represented at the group level.

Trying to determine whether groups meet these conditions on the basis of an aggregate of member beliefs, however, faces a familiar problem found in literature on summative models of group belief. Consider another toy example: say that to understand (why/how/that) p minimally requires that one possess the set of beliefs p, reasons q and r for p, and the relevant beliefs that p because of those reasons (i.e. the belief that p because q and r). The problem in determining whether a group meets all these conditions on the basis on a summative model of member beliefs comes about when the members hold different sets of beliefs. Consider the following set of beliefs for members A, B, and C, of some group:

	P	Q	R	P because Q	P because R	P because Q and R
Member A	Yes	Yes	No	Yes	No	No
Member B	Yes	No	Yes	No	Yes	No
Member C	Yes	Yes	Yes	Yes	Yes	Yes

This set of member beliefs faces a version of Pettit's (2005) "doctrinal paradox" for aggregative views of group belief: according to Pettit, there are multiple procedures one could use to aggregate member beliefs, and thus come to different conclusions about what that group believes. Our problem is to determine whether we should think that a group consisting of members in the states represented by the above table does, in fact, meet the minimal

requirements for understanding. However, if we consider whether each individual member meets the condition of believing P because Q and R , then we will get the result that since the majority of the members of the group do not meet this condition, then neither does the group (this aggregation procedure is akin to Pettit's "conclusion-centred" approach). If, however, we consider the group's position toward each individual belief, then since the majority of the group's members all believe P, Q, R, P because Q, and P because R, then so too should we consider the group to believe all of these as well, and thus that the group also believes that P because Q and R (this aggregation procedure is akin to Pettit's "premise-centred" approach).

The version of the doctrinal problem for determining conditions for group understanding is that we are stuck with the choice of using one of two aggregation procedures that gives equally plausible but conflicting results. In the toy example above, the problem stems from a situation in which understanding is determined by possession of a number of reasons, but for which only a minority of members believe all of those relevant reasons. This is not to say that the problem is insurmountable – perhaps there is reason to prefer one type of aggregation procedure over another – but it is at the very least a problem that the DGU proponent needs to address.

I have argued thus far that there are two problems in aggregating member states in determining group understanding, one that is familiar from aggregation problems for beliefs, and one that is more specific to understanding. We could avoid these problems if we accepted an inflationary account of group understanding, instead. However, inflationary views face their share of problems, as well.

5. Inflationary Group Understanding

As mentioned earlier, the primary challenge in defending any inflationary conception of group doxastic or epistemic states is to determine how the state of the group is related to the relevant states of its members given that the group does not necessarily share any state with its members. It is clear that the epistemic state of a group cannot be *completely* divorced from the states of its members – it is implausible, for example, that a group could know that p while none of its members had any relationship with p or propositions related to p[21]. The problem is thus in determining what relationship members do need to have towards a proposition or set of propositions in order to produce a different relationship at the group level. When it comes to IGU, our question becomes: what exactly, do members of a group need to possess in order for the group to understand?

We can again turn to conceptions of other group epistemic and doxastic states for guidance. For instance, as we saw above one inflationary conception of group belief that has received considerable attention is Margaret Gilbert's (1996) view that group belief consists in *joint commitment*. According to Gilbert:

> (i) A group G believes that p if and only if the members of G jointly accept that p. (ii) A group jointly accepts that p if and only if it is common knowledge in G that the individual members of G have openly expressed a conditional commitment jointly to accept that p together with other members of G. (204-05)

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[21] Alexander Bird (2010) defends a view that perhaps has the most significant disconnect between group and member states, as he argues that there can exist "socially distributed" knowledge wherein the scientific community as a whole can possess knowledge in such a way that the relevant members neither know nor believe what the entity knows.

Such a view can account for how a group can possess a belief that p despite none of its members believing that p, while still maintaining a relationship between the state of the group and the states of its members. Of course, understanding has more moving parts than belief, and so an inflationary conception of group understanding will potentially have to take into account more than one relationship between the group and its members. Perhaps the most significant hurdle in developing an inflationary conception of group understanding involves the grasping component. While we do not have a definitive conception of grasping at the level of the individual, it is even less clear as to what it would mean to say that a "group grasps". We also saw that, at the very least, grasping does not involve a relationship with a single proposition, but instead a proposition as it relates to reasons that support it, as well as relevant abilities to do things with the information represented. In developing an inflationary conception of group understanding, then, we need to determine what it would mean for a group to grasp, and how that grasping can be produced by its members.

To help develop these ideas, it will be illustrative to apply a metaphor common from discussions of individual understanding. Conceptions of epistemic grasping are sometimes modeled off of conceptions of physical grasping: just as it is the case that to have a physical grasp of some object is to be able to manipulate it in certain ways, so, too, is it the case that to have an epistemic grasp is to be able to manipulate the relevant information in certain ways (for example, in the ways the Hills (2015) describes above). We can, then, similarly appeal to cases of physical group grasping to help model epistemic group grasping. Consider, for example, a case in which a man has fallen into a river, with a strong current threatening to carry him downstream and out of reach of help. Thinking quickly, a friend on the shore tosses him a rope, which the man in the river is able to hold onto. With the current being so strong, however, the

friend on the shore has to call on three others for help, all of whom grab part of the rope. Individually, none of them would be able to maintain a grip on the rope, or manipulate it in the desired way (i.e. to rescue the drowning friend). Together, however, they are able to pull the man to shore.

That the group of friends is able to grasp the rope while no individual is able to on their own shows that group grasping, at least when it comes to physical grasping, is not some exotic notion. Of course, what is more important is what lessons we can draw from the physical concept in developing the epistemic one. In the physical case, the group's grasping of the rope is exemplified by certain abilities to do something with it, namely to pull their friend to shore, and to make small adjustments if needed, say if there are any obstacles in the river they need to get around. As was the case for individual grasping, we might then think that epistemic grasping at the group level similarly requires the group to be able to manipulate the relevant information in certain ways; again, perhaps by being able to produce explanations of the relevant information and information related to it.

While the discussion so far is incomplete, it at least shows that epistemic grasping at the group level makes conceptual sense. We are, of course, still left with the question of how this grasping actually comes about at the group level when it may not be possessed by any individual member. In this regard we can again model a notion of epistemic group grasping on one of physical group grasping: just as in the physical case grasping requires that each member *rely* on the work of the other to produce the intended outcome, we can say that so too in the epistemic case does group grasping require a kind of reliance that is directed towards a common goal. Here, then, is a way we can conceive of epistemic grasping at the group level:

Group Grasping: A group G grasps p and its relationship to reasons that support p just in case (i) G represents p and reasons for p, and (ii) the members of G are *mutually p-reliant*.

Part (i) of this equation captures the requirement that the necessary material to be grasped is represented somewhere within the group, although I leave it open as to how, exactly, the relevant material is represented (one could, for instance, appeal to a theory of group belief)[22]. More important is (ii), and the notion of "mutual p-reliance". To illustrate what I have in mind, consider again the way in which individuals rely on one another in the case of physical group grasping: they rely on each other insofar as they are aware both that they must direct effort towards the same goal, and that if any other let go then they would not be able to pull their friend to shore safely on their own. In the epistemic case the situation is analogous: if the goal of the group is to understand (why/how/that) p, then members of the group are mutually p-reliant in the case that they recognize both that they are contributing towards the relevant goal (perhaps in the form of representing reasons and relationships between reasons), and that they would not be able to achieve that goal on their own (given the circumstances). To illustrate, consider the following cases, one in which a group contains members that are mutually p-reliant, and another that does not:

> *Dependable Autobody*: The local autobody shop is known for its efficiency and
> camaraderie amongst the workers. The shop consists of a series of specialists: one who
> works on engines, another on brakes, another on wheels and alignment, etc. Cars going

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[22] There is much that could be said about what it takes for a group to represent p and reasons for it. The current formulation is, however, intentionally schematic, and is neutral on which theory of group representation is the right one.

into the shop go through a certain process: first, the onboard computer is checked for errors; next, it is sent to the specialist on wheels and alignment to check from problems; after that, it goes to the specialist on brakes; and so forth, until every part of the car has been inspected. While each specialist is focused on their part of the job, they nevertheless trust that the other has done what they need to do when looking for problems in their part of the car. In general, the group works well as a team, and the significant majority of cars that come into the shop go out fixed in a short amount of time.

Dysfunctional Autobody: The autobody shop one town over is known for the fact that no one working there really gets along. It, too, employs a number of specialists of the same quality as those at *Dependable Autobody*, but their process of fixing cars is haphazard: instead of going through a streamlined process, different mechanics check up on different parts of the car at different times, and constantly double-check the work as they generally do not trust that the other has done their job properly. As a result, while cars going into *Dysfunctional Autobody* do tend to go out fixed, the repairs typically take much longer.

Here's what I think we should say about these cases: *Dependable Autobody* possesses some relevant understanding with regards to fixing cars – we might say that they understand-how to fix cars, or understand-why such-and-such solution is suitable in a given situation – and that *Dysfunctional Autobody* lacks much of the understanding that their local competition possesses. This is not because cars do not come out of *Dysfunctional Autobody* repaired – the difference between the two shops is not, then, due to an failure of a relevant *getting it right* condition – but rather that in the former the relationships between the members is one that is able to produce a relevant grasping at the group level, whereas this is not the case in the latter.

To see why this is the case, consider again how the members of each group relate to one another. Each member of *Dependable Autobody* is reliant on the other in figuring something out – for example, why it is the case that a particular car refuses to start – and each member acts under the assumption that their coworkers possess the skills and knowledge required to properly work on their respective parts of the car. It may very well be the case that there is minimal or no overlap in relevant skills and knowledge between members – for example, the engine specialist might know little about the finer points of how brakes work, and the brakes specialist might not know anything about alignment. But that they are aware of each other's knowledge and abilities, and take it for granted in doing their work towards the goal of fixing the car, demonstrates the extent to which each member is reliant on each other in working towards a shared goal. This is not the case for *Dysfunctional Autobody*: since each member of this group works in isolation and generally distrusts that the other members know what they are doing, members of the group are not in the relevant sense reliant on each other.

As a result, the *Dysfunctional Autobody* group will again fail to exhibit some of the characteristic indications of possessing understanding. Say, for example, that a car is producing an odd noise as a result of a combination of problems with the brakes and alignment[23], and that if it were to be sent to either autobody shop it would come out in such a condition that it no longer produced that noise. Due to the way in which members of *Dependable Autobody* rely on each other and are aware of each other's duties and abilities, it seems that the group could understand the cause of the noise: the group could provide an explanation of why the noise was occurring (e.g. as the communication between members would allow them to discover the source of the problem), could draw relevant conclusions from that information (e.g. that similar problems

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[23] Thanks to an anonymous reviewer for suggesting this example.

could occur in the future due to the interaction with other key components), and could act as a good source of information (e.g. could inform the owner exactly what was wrong with the car). Since the members of *Dysfunctional Autobody* do not have the same kinds of relationships with one another, however, it seems that this group would not be able to possess the same understanding, given that it would be unable to provide consistent explanations (since there is minimal communication between members it is unlikely that they could recognize a problem existing at the intersection of two different areas of the car), draw relevant conclusions (as a lack of communication between members will preclude the possibility of such reasoning), or act as a good source of information (as the group would not be able to tell the owner why the noise was occurring). The key difference between the two cases, then, is that while members of *Dependable Autobody* are mutually p-reliant, members of *Dysfunctional Autobody* are not.

Note that an important component of mutual p-reliance is that it involves relationships of reliance that are, in fact, *mutual*. This is required as to rule out cases in which there are reliance relationships within a group that all go one way, such that one or a small number of members are doing all the heavy lifting. Consider again the river rescue case, but change it so that the friend who initially throws the rope is a bodybuilder, and thus perfectly capable of rescuing his friend himself. His other friends might then grab onto the rope as well, perhaps in an attempt to look like they are helping, while in reality not contributing anything. Thus, while the friends rely on the work of the bodybuilder, this reliance is not *mutual*, in that the bodybuilder does not require anyone else's help, and indeed is doing all of the work himself. In this case, then, we would not say that the *group* has a grasp of the rope, but that the bodybuilder does, since there are no mutual dependence relationships between the individuals. As an epistemic analogue, we can consider a case in which several members of a class have been assigned to complete a group

project, but in which one student does all of the work, while the remaining group members fail to contribute anything. Here we would say that the student who did the work grasps and possesses the relevant understanding, but not that the group does. Again, this is because while there are reliance relationships in the group – all the lazy members of the group rely on the hard-working member – these relationships are not mutual.

One might have the following objection to the interpretation of the two autobody cases that I have provided: instead of thinking that there is understanding *possessed* by a group, we should think that there is merely understanding *produced* by a group[24]. I take it that the idea that understanding comes about as the result of the work of a group is much less controversial than the idea that the group itself can possess that understanding. For example, in coming to understand the nature of some complex scientific fact I might consult a number of expert scientists who all provide me with information from their own areas of expertise: in such a case we might say that while the group of scientific experts were required for the production of understanding, it is ultimately *I* who possesses that understanding, not the group with members consisting of the experts I consulted. We might worry, then, that a case like *Dependable Autobody* merely illustrates that cases in which members of a group all contribute towards understanding do not necessarily demonstrate that the group possesses that understanding.

There are a number of reasons why we should resist this interpretation. First, unlike the case in which I seek out the advice of different scientists to understand a complex scientific fact, there is no individual member in the *Dependable Autobody* team that possesses the relevant understanding of how to fix a car in its entirety. After all, if we think of the group merely as

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[24] Thanks to Mikkel Gerken and an anonymous reviewer for raising this worry.

producing understanding then that understanding needs to be possessed by *something*, so if it is not possessed by any individual then the remaining option is that it is possessed by the group. Second, and relatedly, no individual member of the group is able to perform the kinds of actions that are characteristic of the possession of understanding how to fix a car in its entirety: while the brakes specialist can apply her skills to many different types of brakes in many different circumstances, say, she is unable to deal with problems that arise when it comes to steering, alignment, etc. That the group can deal with such potential problems again implies that the understanding is not merely produced by, but possessed by the group. Finally, as we saw above one of the motivations for attributing understanding to groups was that possessing understanding is characteristic of expertise, and we often treat groups as experts. In the case in which I acquire understanding as the result of group production of understanding, it is plausible that *I* should be treated as an expert. However, in the case of *Dependable Autobody*, it does not seem to be the case that any individual member of the group should themselves be treated as an expert in how to fix a car in its entirety (we could, of course, still treat them as an expert in their area of specialization). That we would defer to the group and not any individual again indicates that understanding is not merely produced by the group, but possessed by it, as well.

There is a separate worry one might have with the cases I have presented thus far, namely that they are idealized in the sense that they involve a group comprised of members that are not only all working towards a shared goal of which they are all aware, but are also fully aware of the skills and knowledge of every other member. Clearly, though, not all groups to which we want to attribute understanding function this way. Consider, for example, a very large lab that is working towards the goal of understanding how a virus replicates in order to try to cure a certain disease. It may very well be the case that there will be members of the group working on the

same problem that do not rely on every other member in the ways described above, perhaps because they work only with those within their local team. In such a case, then, there would not be mutual p-reliance in the sense that *all* members of the group directly rely on every other member, although we would still want to say that the lab as a whole possesses the relevant understanding.

What this example illustrates is that within large complex groups can exist smaller subgroups which themselves exist in reliance relationships with other subgroups and members. We should, then, make an adjustment to the concept of mutual p-reliance. Say that members of a group are mutually p-reliant either if they are *directly* reliant on each other, or if they are a member of a mutually-reliant subgroup that is itself mutually reliant on other subgroups within the main group. This latter variety of mutual p-reliance is that which is exemplified by the lab case: each member will still be reliant on, for example, members of their own smaller team, which will in turn be reliant on other members and teams, and which are all ultimately directed towards the goal of figuring out the same thing. That mutual p-reliance can be established by reliance relationships between members and subgroups within groups thus allows us to account for how a group like the large lab can be said to grasp and possess understanding in an inflationary sense.

In developing an inflationary notion of group grasping we have, then, tackled the most significant problem in developing an overall inflationary notion of group understanding. While the goals of this paper have been to motivate and argue for the possibility of group understanding, I do not take myself to have solved all the potential problems that could come alone with such an investigation; regardless, I take there to be at least a good amount of motivation for investigating the nature of group understanding as not just metaphorical.

Furthermore, while I think that the debate between deflationary and inflationary accounts of group understanding has not been settled here, I have presented what I take to be at least a first step towards determining how a group can be related to its members in such a way that understanding can come about at the group level even if it is not possessed by any of its members.

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