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Alignment and commitment in joint action

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ABSTRACT

Important work on alignment systems has been applied to philosophical work on joint action by Tollefsen and Dale. This paper builds from and expands on their work. The first aim of the paper is to spell out how the empirical research on alignment may be integrated into philosophical theories of joint action. The second aim is then to develop a successful characterization of joint action, which spells out the difference between genuine joint action and simpler forms of coordination based on alignment. I begin by introducing the empirical research and two definitions of joint action. I then argue that instead of using this research in conjunction with Searle's account of collective intentionality, as Tollefsen and Dale suggest, we would be better served by applying this research to Gilbert's account of plural subjects. In the final sections I distinguish between alignment, coordination, and joint action, clarify the roles of joint commitment and sub-personal alignment in joint action, and argue that these concepts are both consistent and mutually supportive. Combining these two research programs gives us an account of joint action that does justice to both the empirical and philosophical research.

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1. Introduction

This paper concerns the role of low-level cognitive and bodily alignment in the production and maintenance of joint action and the relation between this alignment and higher level states such as joint intention and commitment. The basic idea is that philosophical theories of joint action aim to explain a very particular phenomenon and that in order to maintain that distinctiveness, we must appeal to joint intention or commitment, as opposed to alignment *simpliciter*. The first aim of the paper is to spell out how the empirical research on alignment may be integrated into philosophical theories of joint action. The second aim is then to develop a successful characterization of joint action which spells out the difference between genuine joint action and simpler forms of coordination based on

alignment. More specifically, I emphasize that while alignment may play several important roles in a full understanding of joint action, it is insufficient as a characterization.

Important work on lower level coupling, synchronization, entrainment, and perception-action matching in social psychology and cognitive science has been applied to the philosophical work on joint action by Tollefsen and Dale (2012). I begin by introducing the research they report, discussing two conceptions of joint action, and relating how Tollefsen and Dale conceive of the philosophical importance of alignment. I then make two claims, one negative and one positive. The negative claim is that their attempt to interpret this research in terms of Searle's account of collective intentionality and the Background fails because of Searle's adherence to forms of individualism and internalism. The positive suggestion is that we turn instead to the conceptual framework detailed by Margaret Gilbert in her plural subject theory. Because Gilbert proposes a normative theory of joint action, in the last section I clarify the roles of joint commitment and sub-personal alignment in joint action and argue that these concepts are both consistent and mutually supportive. After this discussion, I return to the question of the proper characterization of joint action and attempt to distinguish between alignment, coordination, and joint action.

Using the notion of an alignment system allows us to sharpen the conceptual distinctions between coordination and joint action and to explain several aspects of the initiation, execution, and maintenance of joint action that are underdeveloped in Gilbert's picture. It is therefore vital for a full account of joint action. Nonetheless, we need to add some significant theoretical sophistication in order to capture various degrees of coordination and the "sharedness" or "togetherness" present in joint action.

2. Alignment systems

Tollefsen and Dale (2012, p. 391) introduce the concept of an 'alignment system' based primarily on linguistic and psychological research on conversation and interpersonal interaction. An alignment system is a loosely connected set of cognitive processes that facilitate social interactions. 'Alignment' refers to the dynamic matching or coordination of the behavior or cognitive states of two or more people over time, for example, in their gestures, gaze, attention, word choice, or posture. The basic idea is that individuals engaged in collective activity may become subpersonally aligned across a variety of bodily and cognitive levels, the three main ones being perceptuomotor, attentional, and psycholinguistic. In other words, their bodily movements may become synchronized, their eye movements coordinated, and their speech patterns more similar (Tollefsen & Dale, 2012, pp. 391–393; Tollefsen, Dale, & Paxton, 2013, pp. 50–53).

It is important to distinguish genuine alignment, which involves continual mutual adaption, from mimicry, which is the simple matching of behavior in a

single instance and is often asymmetrical. Unlike mimicry, an alignment system involves the coordination of behavior over time and is achieved through mutual responsiveness. Nonetheless, mimicry may be the bedrock upon which alignment is built. Tollefsen and colleagues argue that:

Although we conceive of alignment as distinct from mimicry, our capacity to form coupled systems likely relies on the basic ability to mimic the behaviour of others. Low-level mimicry and basic priming mechanisms that may generate mimicry probably help to start and sustain mutual adaptiveness (Tollefsen & Dale, 2012). What we wish to highlight is that the integration of these low-level processes, contextual variables, high-level cognitive plans and so on, sustains a robust pattern of interaction between human beings when they interact. (2013, p. 51)

'Alignment' is best thought of as a general term for a variety of psychological phenomena including entrainment, synchrony, mutual adaptation, and perception-action matching. The study of these phenomena encompasses a wide range of methodological and theoretical approaches in social psychology and cognitive science (Knoblich, Butterfill, & Sebanz, 2011; Sebanz, Bekkering, & Knoblich, 2006). Tollefsen and Dale abstract from many of these differences, and I follow them in this respect. The empirical research they report includes, for example, studies in which the eye movements of people looking at a painting dynamically couple if the participants share a certain level of mutual understanding (Richardson & Dale, 2005), the phases of people swinging their legs or rocking together in rocking chairs synchronize (Richardson, Marsh, Isenhower, Goodman, & Schmidt, 2007), or the pattern of tapping on a table becomes aligned (Oullier, de Guzman, Jantzen, Lagarde, & Kelso, 2008).

This research suggests that alignment has two features which are important for our purposes. First, it is responsive to higher-level cognitive states such as shared beliefs and intentions, but it can also give rise to shared cognitive states via bottom-up processing (Tollefsen et al., 2013, p. 50). This multi-level interaction also occurs within an alignment system itself, so that behavioral alignment gives rise to attentional and linguistic alignment, and vice versa. As Tollefsen and colleagues state, "Behavioral alignment seems to give rise to alignment in conversation, which, in turn, gives rise to a mutual understanding and deeper understanding of one another, which amounts to an alignment of overall interactive comprehension" (2013, p. 52). Second, the degree of alignment influences the success of many interpersonal processes, such as learning, information exchange, and communication. According to this research, interaction between individuals over time can be greatly facilitated by low-level cognitive processes as well as higher level cognitive plans.

Tollefsen and colleagues (2013) also point to research that suggests that aligning with others in synchronized movements such as dancing and marching both improves perceptual and motor ability during cooperative tasks and enhances the general rapport and pro-social behavior of the participants. It is important to emphasize that this also holds for cases in which the behavior is *complementary*

rather than matching (Fusaroli et al., 2012; Ramenzoni, Riley, Shockley, & Baker, 2012; Richardson et al., 2007). Ramenzoni and colleagues (2012), for example, found that when two people perform a precision task activity involving different roles, they form a complementary perception-action system that lowers the complexity of their task performance.

Combining these features makes it clear that alignment processes contribute to the successful completion of collaborative tasks, and perhaps joint actions. Building on this research, Tollefsen and Dale aim to show that “alignment is crucial to understanding joint actions and should be integrated with philosophical approaches” (2012, p. 385). They claim that philosophical theories of joint action have several shortcomings that limit their ability to explain the initiation, execution, and maintenance of joint actions. By attending to the role alignment systems play in coordination, we can integrate this empirical research with the philosophical theories to overcome these shortcomings. I agree with Tollefsen and Dale that alignment has an important role in the explanation of several aspects of joint action. Nonetheless, after discussing the proper definition of joint action in the next section, I show how Tollefsen and Dale’s proposed integration fails and suggest an alternative.

3. Joint action

The difficulty with applying this research to joint action is that alignment based on lower level processes can occur unintentionally. The participants in these studies are often not aware that they are bodily or linguistically entwined, and they become aligned without aiming to do so. In fact, in many studies, alignment occurs even when the participants are told to ignore each other’s actions (Knoblich et al., 2011, p. 67). This research is somewhat at odds with that of philosophers working on this issue, who start from the distinction between the summation of individual acts and genuine joint action, which involves two or more people doing something *together*.

The distinction between aggregative, parallel individual actions and genuine joint action is best brought out using contrast cases.¹ Different versions of contrast cases are found in the work of many joint action theorists and are often used to introduce the phenomena philosophical accounts of joint action are meant to explain.² The most famous version, which is also used to introduce the concept of joint action in Tollefsen and Dale (2012, p. 387), is from John Searle (1990, p. 402).

Searle asks us to imagine a number of individuals scattered about in a park. Suddenly it starts to rain, and each person runs to a centrally located shelter. There is some base level of coordination, as people avoid running into one another, but running to the shelter is not, in the sought-after sense, something that the picnickers do together. It is simply parallel action in close proximity. Now imagine a second scenario with the same individuals executing the exact same bodily movements, but as members of a dance troupe performing a piece in the park. In these two cases, there is no outward physical difference, and there is no difference in the

summation of individual behavior. That is, if we just add up what each individual is doing at each moment, it appears that the two cases are the same. However, for the dancers, adding up the individual movements leaves something out, namely the fact that they performed a particular piece. The dancers are doing something *together*, whereas the picnickers are not.

The philosophical theories of joint action aim to separate parallel individual actions from joint actions, to account for the difference between these two phenomena, and to explain the distinguishing feature of doing something together, which is often labeled “sharedness” or “togetherness.” To do so they normally appeal to phenomena such as shared intention, we-intentions, or joint commitment because, for most people working on joint action, no purely summative combination of individual intentions plus common belief or knowledge can adequately explain the difference.³ By design, then, explaining the difference between contrast cases requires jointly intentional notions.

The research that Tollefsen and Dale report, however, does not fully observe this distinction, because alignment can be brought about purely by subpersonal processes and is present in both simple matching and coordination, and in genuine intentional behavior. This is unsurprising since the psychological literature Tollefsen and Dale build on often employs a potentially broader conception of joint action. In a review article of that literature, Sebanz and colleagues offer the following definition: “Joint action can be regarded as any form of social interaction whereby two or more individuals coordinate their actions in space and time to bring about a change in the environment” (2006, p. 75). As Godman (2013, pp. 590, 601 note 1) points out, while this definition can be understood as involving jointly intentional notions, depending on how we read the phrase “to bring about a change,” it may or may not require them. Further, according to the minimalist reading, which does not require jointly intentional notions, the focus of this definition is on *coordination*, rather than any particular psychological attitude.⁴

We are then left with two potential understandings of joint action, the (jointly)⁵ intentional one preferred by those aiming to explain the difference in the contrast cases and the minimalist one suggested by Godman (2013, p. 590).⁶ The significant difference between these two readings is that on the minimalist reading, the distinction between parallel and joint action in contrast cases disappears. The non-joint action instance in contrast cases are purposefully described so as to involve coordination, social interaction, and a common effect. The summation of the effects of the behavior of the individuals running to the shelter bring about many changes in the environment, some of which they may be incapable of on their own. They trample grass, alter the course of falling raindrops, and change the composition of the air under the shelter. If, improbably, there are enough individuals and they run in a certain pattern, they may even unintentionally form a path. Further, there is coordination, which keeps the individuals from running into one another, and social interaction in the form of mutual beliefs and a degree of mutual responsiveness. We may even suppose that the path is brought about as

a direct result of their coordination.⁷ On the minimalist view then, the individuals running to the shelter may also be engaged in a joint action.

The differences between these two conceptions of joint action raise two questions. These two questions correspond to the two aims referred to in the introduction and frame the rest of the paper. First, how do these differing views of joint action shape the project of combining the empirical research on alignment with philosophical theories? Second, is there a way to characterize joint action that distinguishes in a principled way between alignment, coordination, and joint action, and allows us to account for the difference in contrast cases?

4. Tollefsen, Dale, and Searle on joint action

Tollefsen and Dale do not explicitly offer a definition of joint action. When they are discussing the importance of alignment systems for joint action, they seem to be sympathetic to a minimalist definition. On the other hand, when they are discussing the philosophical theories, they work with the intentionalist definition. In this section, I highlight this ambiguity by discussing both the role that Tollefsen and Dale spell out for alignment systems in joint action, and the way that Tollefsen and Dale attempt to integrate alignment systems into Searle's theory of collective intentionality. I also argue that if we temporarily resolve this tension by working with the intentionalist interpretation, their integration fails for another reason, namely there is a conflict between the concept of an alignment system and the philosophical framework they choose.

In the positive view of the relationship between shared intentions and alignment systems Tollefsen and Dale put forward, they argue that alignment necessarily underwrites all joint action. They state, "The alignment system provides a necessary structure in which we-intentions can be formed and maintained" (2012, p. 398). As a result, while joint commitments and intentions have an important role in joint action, they are not alone sufficient. They make this explicit by stating both that "We-intentions may be necessary for joint action, but as we have argued, they are not sufficient" (2012, p. 398) and that "Deep commitments are clearly not sufficient for joint agency" (2012, p. 400). They are willing to extend this thesis, in a limited fashion, to the claim that commitments/intentions may not be necessary for joint action. They discuss cases of the collective behavior of animals in which "surface synchrony may be all there is to animal joint action" (2012, p. 401). These doubts about the necessity of intentions/commitments are strengthened by their discussion of an "illusion of the we-will," which highlights their concern that if the commitments/intentions are generated through alignment induced by laboratory settings, they cannot be genuine commitments/intentions since "the we-will is an effect rather than a cause of the activity" (2012, pp. 402–403). From this it may be argued that more complex collective behaviors may be brought about by preintentional processes, making recourse to higher-order cognitive processes such as joint intention or commitment explanatorily superfluous and possibly

epiphenomenal. This suggests that directly referring to intentional concepts in our account of joint action is mistaken since shared intentions are potentially neither necessary nor sufficient for joint action.

On the other hand, Tollefsen and Dale also consider the relation between this view of alignment and specific accounts of joint action. They suggest that incorporating the empirical research on alignment as a mechanism of cohesion between individuals serves several purposes for the literature on joint action. First, joint action theories informed by this research are better equipped to deal with how joint actions are initiated, implemented, and executed, and second, if we assess the compatibility of the empirical research with the various theories of joint action, the scientific research may help to adjudicate between philosophical theories (2012, pp. 389–391).

For this project to be coherent, we must here adopt the intentionalist interpretation of joint action. This follows because philosophical theories of joint action are aimed at explaining the difference between contrast cases, which, as we have seen, are designed to require jointly intentional notions. This is not itself a criticism of Tollefsen and Dale. They introduce the concept of joint action using the contrast case presented by Searle, and, at times, they are quite explicit about adopting the intentionalist definition. They state, for example, that “we agree that a theory of joint action needs to appeal to mental states like intentions, and we are persuaded by the arguments that these intentions should be ‘shared’ in some manner” (2012, p. 388).

In order to reconcile these claims about the necessity of alignment for joint action with the philosophical literature and make good on their claims about the potential benefits of incorporating the concept of an alignment system into an account of joint action, Tollefsen and Dale attempt to apply their research to Searle’s theory of collective intentionality (2012, pp. 397–401). Searle argues that what separates the two park scenarios is that in the second case each individual has an intention of the form, “We intend to run to the shelter,” and that any personal intention an individual may have derives from and is dependent upon this collective intention. Further, the capacity to have we-intentions is a simple biological primitive that is shared by humans and several other animal species (2010, pp. 46–50).

Tollefsen and Dale suggest that lower level alignment can work in tandem with these we-intentions, and that lower level cognitive processing fills out Searle’s concept of the Background. On Searle’s account, the Background is a technical term that refers to a set of non-intentional capacities that enable intentional states to function and is presupposed for seeing the other as a candidate for cooperative agency. Tollefsen and Dale argue that “One way to conceive of this set of capacities, however, is to understand them as structures or features of an alignment system” (2012, p. 398). Their central point is that an alignment system provides the necessary structure for the formation and continuation of Searlean we-intentions. In relation to Searle’s example of the dance troupe, they see the relationship as follows:

The ballet troupe's higher-order we-intentions will inform their lower level processes and explains how their perceptual and motor systems can function together to achieve their goal. Similarly, the presence of an alignment system explains how we-intentions can be formed on the fly, so to speak, without prior planning or agreements. (2012, p. 398)

Further, lower-level alignment explains the way in which we-intentions in individual minds lead to unified agency. The coordination of minds and bodies over time is facilitated by the alignment system, and therefore the we-intentions themselves do not need to be interdependent. According to Tollefsen and Dale, this allows Searle's account to avoid the criticisms raised by Meijers (2003) and Schmid (2009) that Searle fails to account for the interpersonal relations that make shared activity *shared*. In particular, Meijers' concern is that because Searle's account does not require we-intentions to be interrelated, it allows for the possibility that the we-intentions are simply coincidental. Further, without an individual having a complex set of attitudes about the other participants and their attitudes, it seems unclear how we-intentions will result in successful coordination toward shared goals. Tollefsen and Dale argue that alignment processes fill this gap, and they do so without requiring an explicit structure of interdependent intentional attitudes.

The issue for Tollefsen and Dale is that Searle places the following two conditions on his account of collective intentionality (1990, pp. 406–407):

- (1) all the relevant cognitive states and processes are had entirely by individuals
- (2) the structure of any individual's intentionality depends completely on facts about that individual's mind, independent of any feature of the world.

The first condition represents Searle's adherence to one form of individualism because it denies that groups themselves can be the subject of intentional states. The second condition represents Searle's adherence to internalism, as it holds that collective intentions do not depend on any aspect of the environment. These constraints are Searle's gloss on the ideas of "methodological individualism" and "methodological solipsism" (Searle, 1990, p. 415, note 1).

One consequence of this view is that it allows for a view of collective intentionality on which individuals can have collective intentions in complete isolation. Searle explicitly argues that genuine collective intentionality could just as well be had by a brain in a vat (1990, p. 407). It also entails that Searle accept atomism⁸, although of a modified form (Meijers, 2003, p. 173). Meijers points out that while Searle may hold that our human capacities may require, in the actual world, that we exist in a social world, this is not logically necessary. This follows from his exposition because according to the second condition, all intentionality, be it individual or collective, is independent of what the real world is like. These conditions apply equally to the Background. Searle states "*That* I have a certain set of Intentional

states and *that* I have a Background do not logically require that I be in fact in certain relations to the world around me” (1981, p. 154).

The issue is that the concept of an alignment system, as Tollefsen and Dale employ it, conflicts with these conditions. In order to align in the way that Tollefsen and Dale describe, which involves dynamic change over time based on mutual adaptation, individuals have to stand in particular concrete relations to one another.⁹ Alignment is something that essentially involves multiple agents, the relations between them, and particular environmental factors. A set of brains in vats cannot form an alignment system. Therefore, alignment is not a viable way of filling out the concept of the Background.

Further, as we saw at the beginning of this section, according to Tollefsen and Dale, this interrelation is structurally necessary for the formation of a we-intention (2012, p. 398). This is in tension with Searle’s categorical exclusion of the necessity of any external relation for we-intentions. Searle is committed to the view that it is not just a logical possibility but also a natural possibility that an individual could have a we-intention and yet be mistaken about the presence of any other individual. He states that “Collective intentionality in my head can make a purported reference to other members of a collective independently of the question whether or not there actually are such members” (1990, p. 407). From the context of this passage,¹⁰ it is clear that Searle holds that it is possible not just for brains-in-vats but also for creatures like us that are subject to natural laws like ours to have collective intentions in complete isolation. In contrast, Tollefsen and Dale are committed to the view that the connection between alignment and we-intention is a matter of natural necessity. Thus, the story that Tollefsen and Dale tell about how we-intentions arise conflicts with Searle’s individualism and internalism about we-intentions. We can run the following argument to that conclusion, interpreting necessity here as natural necessity.¹¹ For Searle, no external relations are necessary for the formation of a we-intention. For Tollefsen and Dale, alignment is necessary for the formation of a we-intention. Alignment is an external relation. Therefore, Tollefsen and Dale’s account conflicts with Searle. It is important to note that this may not affect an account of *successful* joint action, as for Searle that would require that the individuals are not mistaken about the presence of other participants and their intentional states. Nonetheless, if alignment presupposes two or more agents, and is naturally necessary for the formation of a we-intention, Tollefsen and Dale’s account conflicts with Searle’s on the issue of the formation of we-intentions.

5. Alignment systems and Gilbert’s account of joint action

Despite this conflict with Searle’s theory, Tollefsen and Dale present a novel addition to the literature on joint action, which may be consistent with another theory. Further, they are correct to suggest that the concept of an alignment system may serve several purposes in such a theory. They emphasize that joint action

is a dynamic, self-organizing process that involves various sub-processes that contribute to its initiation, maintenance, and success. They also spell out how this dynamic development works in great detail, elaborate on the types of lower level cognitive processes that lead to alignment between individuals, introduce potentially important concepts such as shared motor intentions, and clarify their relation to higher level cognitive states. It appears that they have developed a consequential area of overlap between lower level cognitive processes and collective intentionality and have suggested several potent areas where the use of empirical research on the coupling of lower level cognitive processes could be highly valuable for theories of collective intentionality. Contrary to Tollefsen and Dale, however, I suggest that we can best understand the role of alignment processes in conjunction with Gilbert's theory of plural subjects. Because this section carries on the discussion of the integration of alignment systems into a philosophical framework that aims at accounting for contrast cases,¹² I employ the intentionalist understanding of joint action.

Gilbert begins her account by considering the simple example of two people walking in close physical proximity. She then asks the question: what are the minimum conditions we need to add to this situation to say that these two people are going for a walk together? She rejects an analysis that holds that they are walking together if each individually hope that they continue walking in this manner and that they each know that the other feels the same way because it lacks an important normative dimension (1990, pp. 4–6).¹³ According to Gilbert, when people are genuinely walking together, there are *obligations* and *entitlements* between them such that, when one participant fails to perform the necessary contributory actions, or perform them in an appropriate way, the other participant has the *right* to rebuke her. Joint actions involve a special standing to make demands, which is itself a function of the joint activity (Gilbert, 2006, p. 104). This normative dimension is explained by the existence of a joint commitment, which is “a kind of commitment of the will. In this case the wills of two or more people create it, and two or more people are committed by it” (Gilbert, 2006, p. 134).

When two or more people are jointly committed they form a ‘plural subject’. Plural subjects and joint commitments are correlated concepts; there can be no plural subject without joint commitments and all instances of joint commitments involve the formation of a plural subject. According to Gilbert, a plural subject is an entity or “a special kind of thing, a ‘synthesis *sui generi*’” (1996, p. 268) formed when individuals bond or unite in this particular way. She emphasizes that the concept of a plural subject does not require a single center of consciousness nor a distinct form of subjectivity.

Plural subjects are formed by prior agreement or by an “expression of readiness” that may itself be either implicit or explicit (Gilbert, 2014, pp. 26–30). Gilbert distinguishes among three ways a joint action can be initiated: prior planning, spontaneous explicit statement, and spontaneous implicit communication. This allows for the possibility that some joint actions arise from simpler forms of collective

behavior, which is most pronounced in the case of implicit expressions of readiness. Several features of the concept of an implicit expression of readiness make it consistent with the literature on lower level alignment. An implicit expression of readiness may take various forms which correspond to the ways that people simply “fall into” a joint action, and they may be *manifested in action, developed over time, and present independent of the conscious awareness of the participants* (2006, pp. 139–140).

Gilbert discusses, for example, the case of a group forming to help a crash victim. They may not explicitly agree to do something together and yet they nonetheless seem to be involved in a joint action. Further, they take themselves to have the standing to make normative claims on one another about how to carry out the action, normative claims that arise from the fact that they are doing something together and not just from general requirements of morality. In other words, all bystanders may have some moral obligation to help the crash victims, but those who have implicitly expressed their readiness to help by somehow indicating that they are part of the group forming to help the victim have additional normative requirements based on their participation in a plural subject. This indication may take many forms. Imagine that a bystander sees that the crash victim is trapped under the car, begins running beside the other bystanders towards the victim, and exclaims, “I’m going to try to lift the car off of him.” She looks around at the other bystanders, who return the look and look at one another, and then they all reach down to grab a part of the car to lift. In this case, each bystander, by responding to the look and initiating action, expresses their readiness to jointly commit to helping the victim by lifting the car. Each of these expressions is an intentional and communicative act, but they are not explicit agreements. The idea here is that an expression of readiness may emerge from more basic level of shared behavior, but the shared behavior is not a joint action until it is present (2006, pp. 139–140).

All of this suggests that some expressions of readiness may originate on a sub-personal level, making them good candidates for explanation by the various lower level processes that Tollefsen and Dale describe. These features of the “relevant expressive behavior” may be partially explained by the subpersonal bodily, linguistic, and attentional alignment. For example, Tollefsen and Dale consider studies that show that many of the processes that support conversation are sub-personal alignment processes, such as bodily posture (Shockley, Santana, & Fowler, 2003), verbal cues (Shockley, Baker, Richardson, & Fowler, 2007), and various other levels of linguistic organization, from diction to sentence structure (Tollefsen et al., 2013, p. 51). They also discuss the role of priming in alignment, which predicts that the cognitive accessibility of many behaviors, such as a chosen sentence structure, is induced by hearing another person use it, and thereby increasing the probability of producing a similar behavior oneself.

This account of the role of gaze, posture, and other such processes in alignment plays out Gilbert’s claims about expressions of readiness by providing detailed mechanisms that subconsciously initiate the process of introducing a collection

of people to each other as possible subjects of such an expression and expands on the ways such an expression may take place. Many of these processes are at work in the information exchange that leads up to an expression of readiness, and therefore parts of a relevant explanation of how an implicit expression of readiness comes about, the forms it may take, and the way in which it is received. By increasing cognitive accessibility, pro-social tendencies, and feelings of rapport and familiarity, alignment processes provide a background on which expressions of readiness become more likely. Further, as Michael and Pacherie have argued (2015), alignment reduces uncertainty about the representations and behavior of others and thereby increases predictability, which helps to establish a minimal form of social orientation that may in certain cases induce expressions of readiness. Thus, the empirical research Tollefsen and colleagues and Michael and Pacherie report gives us strong evidence that alignment increases the probability of an expression of readiness.

It is not, however, that alignment processes are all there is to expressions of readiness, nor that they are alone sufficient for such expressions. An expression of readiness involves some act on the part of the person giving it that they are ready to participate in the joint action, as in the case of the responders to a car crash, while alignment is unintentional. An alignment system may often feature in the causal story about the production of an expressions of readiness, but it is not itself this expression. Further, expression of readiness must be separated from the formation of the plural subject itself, as it is only once matching expressions of readiness to enter a particular joint commitment have been expressed under conditions of common knowledge by the participants that the plural subject is formed. It is also important to note that for Gilbert there is common knowledge that p among certain parties if and only if the parties notice that p is “open” with respect to all of them, where “openness,” according to Gilbert, may involve varying levels of potential knowledge of one another’s knowledge (2014, p. 43).

Instead of Searle’s account then, we should integrate alignment into the philosophical framework developed by Gilbert. Her account leaves open the possibility that expressions of readiness come about through subpersonal social interaction that involves increasing levels of coordination based on mutual responsiveness and adaption over time. This makes it well-suited to incorporate the insights present in the empirical research on alignment.

6. Lower level alignment in joint action

Now that we have seen how the empirical research on alignment can feature in an account of joint action, we can return to the broader question of the role of alignment in joint action.

Understanding these lower level processes in the way presented above specifies a different role for alignment and commitments in joint actions from the one preferred by Tollefsen and Dale in their seemingly minimalist discussion. Under

the view developed here, according to which a full account of joint action must be able to deal with contrast cases, alignment is neither necessary nor sufficient for joint action; it may, however, be an important part of a joint action in certain cases because it plays a significant role in creating and explaining some expressions of readiness. Alignment systems do not constitute or function as expressions of readiness, and while they *may* be causally necessary for the formation of implicit expressions of readiness, they are not for explicit expressions or prior agreements. Not all instances of explicit expressions or prior agreements require the spatial proximity necessary for bodily coupling or the regularity of interaction necessary for linguistic alignment. For example, we can imagine cases where joint actions are initiated, and perhaps even carried out, by a few texts or an exchange of emails. Therefore, alignment processes are not necessary for all joint actions. They may, however, be necessary for many non-explicit expressions of readiness because these types of arrangements generally seem to take place in person and involve a gradual implicit exchange of information.

It also appears that alignment is not sufficient for joint action because it cannot differentiate between individual coordinated behavior and genuine joint action. Tollefsen and Dale discuss cases such as “joint following,” in which subtle directional cues cause two or more people to wander in a direction that neither intended, simply by “following” each other. This case involves many surface-level coupling processes and leads to an apparently collective outcome, but it is not a case of joint action because it is not a case of doing something with someone else *together* in the relevant sense. The joint following mechanism is simply an explanation of their individual coordinated behavior. Because the story of subpersonal processes leading to an alignment system does not adequately differentiate between joint action and individual coordinated behavior, we need something more than a concept of alignment derived from preintentional processes to delineate genuine joint action. In other words, alignment is incapable of adequately dealing with contrast cases and is therefore not suitable as a characterization of joint action.

In order to make this differentiation, we still need to appeal to a sufficient condition for joint action. Here we may return to the account given by Gilbert. A joint action involves joint commitment to a shared goal, and therefore more than simple alignment or coordination. Under this view, surface level coupling may begin before there is a joint action; it may “jump start” shared behavior, but there is no joint action until there is, in addition to alignment, expressions of readiness under conditions of openness that create a joint commitment. We may then think of “spontaneous joint action” as joint action with a particular causal history, namely as joint action that is initiated by an implicit expression of readiness that is itself initiated by shared behavior resulting from alignment. Low-level coupling may be a causally necessary condition for implicit expressions of readiness, but it is joint commitment to a shared goal that is necessary and sufficient for a joint action.

Tollefsen and Dale consider a version of this view and reject it on the basis that it injudiciously restricts the concept of joint action and limits the potential for empirical research to inform philosophical accounts. They state that:

One might argue that unless or until a joint intention (or shared intention) is in place, there is no joint action and so the mechanisms which initiate joint action and give rise to shared intention are not, themselves, important for a theory of joint action. (2012, p. 390)

This is a potential problem because it suggests the following reasoning process: “provided high-level conditions are met (appropriate shared intentions, etc.), it is irrelevant what specific cognitive processing phenomena give way to them” (Tollefsen & Dale, 2012, p. 389). This reasoning process in turn makes empirical research into the initiation, implementation, and execution of joint action unimportant for a philosophical theory of joint action.

Tollefsen and Dale are correct that a philosophical theory that ruled out the usefulness of empirical research into the generation, implementation, and execution of joint action would be incomplete and mistaken. However, as I attempt to show, looking for the conditions which delineate joint action does not entail ignoring the ways in which empirical research can inform an account of joint action. These projects can and should proceed in tandem.

One important aspect of the view presented here is that it maintains the distinction emphasized by Tollefsen and Dale between joint actions that result from prior planning and those that arise spontaneously, and the distinction between initiating a joint action and maintaining it over time. Tollefsen and Dale do briefly consider Gilbert’s account but reject it because her account is only concerned with “the intentions or commitments that are formed prior to the action” and fails to take into consideration how joint actions unfold over time (2012, p. 389). More generally, Tollefsen and Dale claim that “Philosophical accounts tend to focus on joint actions that come about by a conscious and planned manner, and many of them attempt to provide necessary and sufficient conditions for joint action (or shared intention) and hence rule out the possibility of joint action arising in different and less cognitively complex ways” (2012, p. 390). These are certainly worthwhile concerns, but supplementing Gilbert’s account with the concept of alignment systems allows for an explanation of both the multiple initiation of a joint action from more basic forms of shared behavior and the continued unity of a plural subject without renewals of commitment. As the discussion of implicit expressions of readiness shows, giving an account of the necessary and sufficient conditions for joint action does not rule out the gradual development of a joint action from less cognitively complex processes. Further, it does not rule out that the subpersonal interactions between participants detailed by research on alignment are an important component of a full explanation of how expressions of readiness lead to sustained coordination between individuals over time without constant explicit communication or reinforcement.

7. Alignment, coordination, and the proper characterization of joint action

There is a large spectrum of coordination, cooperation, and complexity in the collective behavior of individuals. By allowing joint action to arise from less complex coordinated behavior, as opposed to requiring explicit planning, we seem to have blurred the lines between joint action and simpler forms of collective behavior. Further, joint action does appear to be able to arise spontaneously and be initiated in several different ways. If we are to respect this aspect of joint action, we cannot go so far as to require explicit representation of the collective, the collective goal or aim, and each individual role by each participant in the joint action before that action is underway. We must allow for the fact that at times there is a realization of the possibility of a joint action rather than a prior plan. It is in this middle ground that both alignment and implicit expressions of readiness function to differentiate the various processes and stages. This seems to suggest that we would be better off employing the minimalist, coordination-based definition of joint action.

On the other hand, the gradation between some form of coordination and a concept of joint action that adequately captures the idea of “sharedness” or “togetherness” cannot simply be a matter of degree of complexity of coordination. Some intentional joint actions involve very simple forms of coordination, such as two people arm wrestling, while some very complex forms of coordinated behavior are not jointly intentional actions, such as strangers avoiding each other while walking down 5th Avenue on Christmas Eve. Employing a minimalist definition of joint action does not allow us to distinguish between these two cases. If we take coordination to be the primary marker of joint action, it may lead us to the conclusion that strangers independently walking down 5th Avenue on Christmas Eve are acting more “jointly” than two people arm wrestling. Under the minimalist definition, we simply cannot separate out cases of parallel but individual action from genuine cases of acting together.

There is then good reason to adopt an intentionalist definition of joint action and combine it with a recognition of the importance of coordination, both in its own right and for the role it plays in joint action. Further, distinguishing genuine joint action from highly coordinated individual action has benefits for conducting empirical research because it allows us greater room to investigate various kinds of coordination. We can, for example, study “planned coordination” that follows from explicitly initiated joint actions in isolation from “emergent coordination” that arises prior to any plans or intentions (Knoblich et al., 2011).

We are searching for a distinguishing feature of joint action that acknowledges and accounts for the features of multiple and emergent initiation, and leaves room for the exploration of further mechanisms which aid in execution, implementation, and maintenance. Alignment systems are too weak to play this role because they are present in cases of simple coordination. Explicit representation by each individual that they are acting as a member of a collective as the initiator of a joint

action is too strong, as it rules out implicit spontaneous cases such as the car crash responders. The normative relations proposed by Margaret Gilbert, supplemented by an account of how they may arise from more simple forms of coordination by way of an expression of readiness, are the best candidate because they account for the fact that some joint actions may be spontaneously initiated from behavioral regularity and subtle behavioral cues. At the same time, they maintain the relevant distinction between summative behavior and joint action because they require an intentional, communicative act on the part of the participants, which differentiates them from coordination and generates the normativity involved in acting together. As a result, they provide a plausible answer to the question of what distinguishes the picnickers in the park from the dance troupe.

8. Conclusion

Adopting the concept of an alignment system, as developed by Tollefsen and Dale, has many benefits for a theory of joint action. It contributes to the explanation of how joint actions may be initiated by preintentional collective behavior, specifies some of the cognitive processes by which they are implemented, and clarifies how they are successfully carried out. By directing the attention of philosophers to this empirical research, Tollefsen and Dale have made an important contribution to work on collective intentionality. However, instead of attempting to use this research in conjunction with Searle's account of collective intentionality, which involves a commitment to certain restrictive forms of individualism and internalism, we would be better served by applying this research to Gilbert's account of plural subjects.

The view presented here maintains an intentionalist view of joint action on the grounds that explaining contrast cases is an important desideratum of joint action theories and that delineating joint action from coordination provides a richer conceptual framework for empirical research. Under this view, dynamic lower level coupling and alignment have a much more circumscribed role than they do in the account presented by Tollefsen and Dale, as they are neither necessary nor sufficient for joint action. Nonetheless, they retain an important explanatory function. Most joint actions are likely to involve both joint commitments and alignment systems because there are complementary limits on what each can achieve (Knoblich et al., 2011). Although joint intentions based on explicit agreement may prepare individuals for their parts in the action, they do not guarantee successful implementation, and they do not explain synchronization, or the ability to predict and spontaneously respond to another's actions, abilities that are often vital to the completion of a joint action. More specifically, the concept of an alignment system benefits Gilbert's account in particular, in that it illuminates the concept of an implicit expression of readiness and explains how joint actions may be sustained over time without a renewal of commitment. On the other hand, alignment processes do not explain the distribution of labor or the ability to reflect

upon one another's tasks in order to improve efficiency (Knoblich et al., 2011). They also do not account for cases of joint actions that are mediated or too brief to allow for linguistic alignment and for cases that happen at a distance, thereby avoiding bodily and attentional alignment. By applying Tollefsen and Dale's concept of an alignment system to the theory of plural subjects given by Margaret Gilbert, we are able to account for these considerations, and therefore have the beginnings of an account of joint action that does justice to both the empirical and philosophical research.

Notes

1. This label is from Bratman (2014, pp. 9–10).
2. See, for example, contrast cases involving riding a bike (Gilbert, 1990, 2014), painting a house (Bratman, 2014), or going to the zoo (Schweikard & Schmid, 2013).
3. Bratman's version of "augmented individualism" involves special contents of and interrelations between individual states that goes beyond a standard summative account involving simple common knowledge of individual intentions (2014, pp. 11–12). I therefore include him in the class of philosophers that deny summative accounts. Another potentially fruitful consideration of alignment systems is possible in the context of Bratman's account, both for the initiation of joint action and for the way individuals are interrelated. Because of considerations of space, I do not undertake that project in this paper.
4. It is not clear that this is the interpretation Sebanz and colleagues would accept, see Knoblich and colleagues (2011).
5. From here on I use 'intentional' for 'jointly intentional'.
6. For a discussion of minimalist accounts of joint action see Pacherie (2011).
7. For example, in "stigmergic path formation" independently acting agents coordinate to create these kinds of common effects by following traces left on the environment by previous agents. In these cases, actions build on each other and result in the spontaneous emergence of a common path, often in ways that are surprisingly beneficial. A classic real-world example is the system of paths formed between university buildings on many campuses. Although in the real-world cases this often takes place over larger stretches of time, for the thought-experiment in question, we may imagine that the path is formed through coordination in the time it takes for the picnickers to get to the shelter. For a philosophical discussion of this issue in a different context, see Goldstone and Gureckis (2009), Goldstone and Roberts (2006), and Theiner, Allen, and Goldstone (2010).
8. Atomism is understood here roughly in the sense of Pettit (1993), namely as the claim that a solitary individual, an individual that is and always has been isolated from other human beings, may display all normal human characteristics and capacities.
9. While it may be possible to understand alignment without this requirement, perhaps simply as a set of individual capacities, this is not the understanding with which Tollefsen and Dale work. They state, for example, that an alignment system is a "multi-component" system that essentially involves "continual mutual adaptation" and the "coupling of cognitive agents" (Tollefsen et al., 2013, pp. 50–51). I would like to thank an anonymous referee for pressing me on this point.
10. See also Searle (1997, p. 450) for a slightly different expression of this view.

11. I would like to thank an anonymous reviewer for helping me clarify this issue and giving form to this argument.
12. While I think that it is important for an account of joint action to be able to deal with contrast cases, I do not mean to suggest that all philosophically interesting notions in the area must be subordinated to this requirement. In particular, I think it is a valuable task to provide a philosophical account of coordination that is distinct from an account of joint action. I will not, however, attempt to provide such an account in this paper. Thanks to an anonymous reviewer for helping me develop this point.
13. Despite the normative nature of Gilbert's account, she may still be considered an intentionalist because she holds that there are many collective phenomena that involve joint commitment, but that joint *intention* is the distinguishing feature of joint *action* as opposed to collective belief, collective acceptance, and so on (2009).

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References

- Bratman, M. (2014). *Shared agency*. Oxford: Oxford University Press.
- Fusaroli, R., Bahrami, B., Olsen, K., Roepstorff, A., Rees, G., Firth, C., & Tuyen, I. K. (2012). Coming to terms quantifying the benefits of linguistic coordination. *Psychological Science*, 23(8), 931–939.
- Goldstone, R. L., & Gureckis, T. M. (2009). Collective behavior. *Topics Cognitive Science*, 1, 412–438.
- Goldstone, R. L., & Roberts, M. E. (2006). Self-organized trail systems in groups of humans. *Complexity*, 11, 43–50.
- Gilbert, M. (1990). Walking together: A paradigmatic social phenomenon. *Midwest Studies In Philosophy*, 15, 1–14.
- Gilbert, M. (1996). *Living together: Rationality, sociality, and obligation*. Lanham, MD: Rowman and Littlefield.
- Gilbert, M. (2006). *A theory of political obligation*. Oxford: Oxford University Press.
- Gilbert, M. (2009). Shared intention and personal intention. *Philosophical Studies*, 144, 167–187.
- Gilbert, M. (2014). *Joint commitment*. Oxford: Oxford University Press.
- Godman, M. (2013). Why we do things together: The social motivation for joint action. *Philosophical Psychology*, 26(4), 588–603.
- Knoblich, G., Butterfill, S., & Sebanz, N. (2011). Psychological research on joint action: Theory and data. *Psychology of Learning and Motivation*, 54, 59–101.
- Meijers, A. W. M. (2003). Can collective intentionality be individualized? *American Journal of Economics and Sociology*, 62, 167–183.
- Michael, J., & Pacherie, E. (2015). On Commitments and other uncertainty reduction tools in joint action. *Journal of Social Ontology*, 1(1), 89–120.

- Oullier, O., de Guzman, G. C., Jantzen, K. L., Lagarde, J., & Kelso, J. A. S. (2008). Social coordination dynamics: Measuring human bonding. *Social Neuroscience*, 3(2), 178–192.
- Pacherie, E. (2011). Framing joint action. *Review of Philosophy and Psychology*, 2(2), 173–192.
- Pettit, P. (1993). *The common mind*. Oxford: Oxford University Press.
- Ramenzoni, V. C., Riley, M. A., Shockley, K., & Baker, A. A. (2012). Interpersonal and intrapersonal coordinative modes for joint and single task performance. *Human Movement Science*, 31, 1253–1267.
- Richardson, D. C., & Dale, R. (2005). Looking to understand: The coupling between speakers' and listeners' eye movements and its relationship to discourse comprehension. *Cognitive Science*, 29(6), 1045–1060.
- Richardson, D. C., Marsh, K. L., Isenhower, R. W., Goodman, J. R., & Schmidt, R. (2007). Rocking together: Dynamics of intentional and unintentional interpersonal coordination. *Human Movement Science*, 26(6), 867–891.
- Schmid, H. B. (2009). *Plural action: Essays in philosophy and social science*. London: Springer.
- Schweikard, D. P., & Schmid, H. B. (2013). Collective intentionality. In E. N. Zalta (Ed.), *The Stanford Encyclopedia of Philosophy* (Summer 2013 Edition). Retrieved from <https://plato.stanford.edu/archives/sum2013/entries/collective-intentionality/>
- Searle, J. (1981). *Intentionality*. Cambridge: Cambridge University Press.
- Searle, J. (1990). Collective intentions and actions. In P. Cohen, J. Morgan, & M. E. Pollack (Eds.), *Intentions in communication* (pp. 401–415). Cambridge, MA: MIT Press.
- Searle, J. (1997). Replies to critics. *Philosophy and Phenomenological Research*, 57, 449–451.
- Searle, J. (2010). *Making the social world*. Oxford: Oxford University Press.
- Sebanz, N., Bekkering, H., & Knoblich, G. (2006). Joint action: Bodies and minds moving together. *Trends in Cognitive Sciences*, 10(2), 70–76.
- Shockley, K., Baker, A. A., Richardson, M. J., & Fowler, C. A. (2007). Articulatory constraints on interpersonal postural coordination. *Journal of Experimental Psychology: Human Perception and Performance*, 33, 201–208.
- Shockley, K., Santana, M. V., & Fowler, C. A. (2003). Mutual interpersonal postural constraints are involved in cooperative conversation. *Journal of Experimental Psychology: Human Perception and Performance*, 29, 326–332.
- Theiner, G., Allen, A., & Goldstone, R. (2010). Recognizing group cognition. *Cognitive Systems Research*, 11(4), 378–395.
- Tollefsen, D., & Dale, R. (2012). Naturalizing joint action: A process-based approach. *Philosophical Psychology*, 25(3), 385–407.
- Tollefsen, D. P., Dale, R., & Paxton, A. (2013). Alignment, transactive memory, and collective cognitive systems. *Review of Philosophy and Psychology*, 4, 49–64.