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Why We Do Things Together

The Social Motivation for Joint Action

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Why We Do Things Together

The Social Motivation for Joint Action

Abstract

In this paper I argue that joint actions are often driven by agents' shared social motivation that is not directly related to the target goal of the action.

Paradigmatically the shared social motivation, such as various social emotions, enables agents to form and reinforce social bonds with one another. We should therefore adopt a two-function approach to joint action where (1) is the achievement of a jointly or individually intended target outcome of an action, and (2) is the attainment of a benefit that primarily is related to being part of a social bond. Attention to the shared social motivation for joint action will allow us to better explain a broader range of joint actions, including those that are competitive and explorative in character.

Introduction

Here is a question: why is joint action so prevalent amongst humans? Surely the prevalence is not just because there is just no other way for individual agents to achieve their aims. In fact, to put things bluntly, we often do things with others because *we like to do things with them*. Sebanz and colleagues in a recent review article on joint action, briefly note that this could be a desired characteristic of certain joint actions: “Musicians in a band might strive to experience a sense of agency that transcends individual boundaries, which is based on what it feels like to produce action effects as a group” (2006: 75).

I will argue that this sort of experience is much more central to joint action than has commonly been supposed and that *many joint actions are driven by a*

*shared motivation to engage with one another – a motivation that is essentially social in character.*¹

The structure of the argument is as follows: In 1, I give some reasons for choosing a broad working definition of ‘joint action’. In 2, I discuss some scenarios, which fall under the guiding definition, and suggest that social motivations have an important role in driving many of these interactions. I also try to demonstrate that the shared social motivation cannot be reduced to an intention to achieve the target goal of the joint action. Rather, we are socially motivated to engage in joint action because it allows us to attain benefits associated with being a part of a social bond, as is suggested in section 3. In 4, I consider ‘social play’ as a central kind of joint action and give some examples of the social motivations involved, such as empathy and social emotions, that are responsible for promoting the formation of social bonds. In 5, I respond to a potential criticism and argue that we should adopt a two-function approach to joint action and (in 6) also consider whether social motivations can be accommodated within existing accounts of the psychological prerequisites for joint action. The final section, 7, concludes by summarising how attention to shared social motivations and the social function of joint action might inform future research.

1. Defining joint action

The paradigm case of joint action, which research has tended to focus on, is a group of individual agents solving or performing some precise task together, whether it be moving an object around a space, finding their way by looking at a map, or performing a pas de deux. But obviously many of our social interactions with others occur when there is no apparent problem to be solved and when there is no interest in cooperation per se.

We could of course limit the domain of research and investigation, by defining joint action as the class of interactions between agents that are, at least primarily, of a problem-solving and cooperative character. However this

¹ This is not to say that all cases of joint action are enjoyable or cooperative. Indeed I will argue that we should work with a concept of joint action which includes interactions in more competitive or antagonistic contexts.



seems unduly restrictive. We have good reason to suppose that the same type of shared attention and coordination in behaviour, which occurs in the cooperative contexts, may also be present when individuals are far less cooperative. Moreover most researchers concerned with joint action also seem reluctant to stipulate that they are concerned with interactions that are cooperative and/ or tend toward a joint goal. On the contrary they seem to favour a broad definition of joint action. For these reasons I propose we adopt the definition that Sebanz et al. propose in their review article:

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.

(Sebanz et al. 2006a; see also Knoblich and Sebanz 2008)

This definition has the advantage of not presupposing that any particular psychological attitude or mechanism on behalf of the agents.² It also quite correctly focuses on the fact that joint action requires some degree of behavioural *coordination* – which arguably is one of the main reasons why researchers first got interested in joint action as a unitary phenomenon.

I will hence take this understanding of joint action for granted; yet, in what follows, I will try to demonstrate that if we consider the range of social interactions that fall under this guiding definition, we also need to bring in another type of explanation for what is driving these cases than is currently on offer. As is often the alleged, this explanation does appeal to something that can be *shared* between individual agents, but instead of appealing to a shared goal, intention, or representation, I suggest we should appeal to a *shared social motivation*.

2. Three examples of joint action

To begin to get an idea of how shared social motivations drive joint actions, consider the following scenarios:

² Of course this depends on what is meant by “to bring about a change in the environment”. One might take the expression to mean that agents *must* have a shared intention or task representation in order to bring about a change in the environment. Yet nowhere do Sebanz et al. state that this should be part of the definition and nor shall I assume that it is.

(A) Two experienced movers are brought together for a one-off job to move a piano from the fourth floor to the street by carefully lowering it using a rope and pulley. The task is familiar to both of them and the goal is clear. Moreover both agents are to some degree individually motivated to perform the task. It therefore seems reasonable to suppose that they have a joint target goal and/ or a shared intention to get the job done. However, let's also suppose they have no history of working together and due to work arrangements, they are mutually aware that there are very slim prospects that they will work with, let alone encounter, each other again. There hence seems to be no *prima facie* reason to suppose that social motivations have any role in explaining this case of joint action.

The reason I have included this scenario (A) is that I want to grant from the outset that a social motivation *need* neither be present nor drive all cases of joint action. There might also be joint actions when there is no *shared* social motivation, such as when only one or a minority of the agents is socially motivated to interact. Neither possibility will affect my argument. What matters, and what I would like to persuade you of is, rather that there are many, if not majority of, joint actions where all the involved agents either are or become socially motivated; where there, in other words, is a *shared social motivation*. So let's move on to two scenarios where this seems clearly to be the case.

Consider a scenario where an experienced mover has just taken on a trainee in hope of employing him in her company (B). The trainee is also very keen to get this job. They embark on their first joint task that, as it so happens, mirrors the first case: to move a piano from the fourth floor to the street by using a rope and pulley. The target goal is therefore the same as in (A). However, in this case the two agents are not only individually motivated to perform the task, they are also socially motivated since ultimately, given that all goes smoothly, the mover wishes to employ her trainee and the trainee wishes to be employed. The joint action then appears to be driven not only by a shared intention, but also by a shared social motivation. The social

motivation is responsible for the feeling of reciprocity and reward, and moreover the feedback between their social motivations enhances these effects. However, even though it is a shared social motivation *it may not be the same type of motivation* in both agents, e.g. the experienced mover is say socially motivated by approval and the trainee by wanting to impress³.

Now consider a case where there in contrast to scenarios (A) and (B), is no apparent joint goal or shared intention, but which nonetheless falls under our definition of joint action. Two siblings are sitting across from each other at a kitchen table, discussing how to split their mother's inheritance (C).⁴ They each have goals of negotiating a reasonable share of the inheritance but it turns out that each sibling in fact wants more than the other. Because there is in considerable tension between their target goals for the negotiation – one might even say they are in direct conflict. We would therefore be hard pressed to posit a shared intention. However, let's also suppose the two siblings both sincerely feel that the issue should not have any severe impact on their long-standing relationship – this mutual wish representing a shared social motivation. It's even the case that they each would have called their lawyers rather than negotiated if the shared social motivation had not been present. Considering the complexity of the siblings' motivations, the joint action in scenario (C) cannot be characterised as purely cooperative or competitive – if anything, the negotiation is *explorative*. The nature and outcome of the negotiation depends on their individual targets on the one hand, and the shared social motivation, on the other. Both impact on the negotiation, in terms of how verbal behaviour, facial expressions and body movements are coordinated.

Though all above scenarios involve joint action we cannot posit a joint target goal or shared intention to explain what drives the joint action in (C)⁵,

³ See however p. 14, where I argue that we need not cash the shared social motivation out in terms of shared propositional content.

⁴ Language, in terms of coordination both in gestures and speech, is generally understood as joint action, albeit considered to be a highly evolved kind (cf. Sebanz et al. 2006).

⁵ You might think the scenario can be explained by a shared intention to strike equilibrium between their individual aims and their shared interest in not severing their relationship. But the scenario need not collapse into such an account. For instance, let's suppose that one of the

and in (B), the shared intention is only one *part* of the explanation for what drives the joint action. I therefore contend that in explaining what drives interactions like (B) and (C), we must appeal to a shared social motivation.

These scenarios also suggest how a shared social motivation can be distinguished from target goals and shared intentions by two jointly sufficient conditions. The first condition (1) is purely negative: A shared social motivation is not directed toward the benefits of attaining a target goal.⁶ Since the notion of a ‘shared intention’ is usually thought of as precisely being oriented toward the target goal or outcome of the action (see e.g. Bratman 1992; Pettit & Schweikard 2006), this also implies that the shared social motivation cannot be reduced to a shared intention either.⁷ (Of course agents that are socially motivated to joint action are often also motivated to attain individual target goals (as in (C)) or shared target goals (as in (B)), and I will have more to say about how these different types of motivation interact in section 5).

The second condition (2) gives us a *positive* reason for distinguishing shared social motivations from both target goals and shared intentions and is therefore more interesting. This condition is that the social motivation performs a *different function from shared intentions* since it is directed toward benefits for the agent(s) that lie beyond the token outcome of the joint action. The next section explains what these benefits are.

3. The benefits of social bonds

I want to suggest that the reason why we are socially motivated for joint action is that joint actions normally function to create, maintain, and strengthen social bonds and relationships. Some joint actions can also

siblings has a stronger social motivation and the other will pursue her individual goal further.

⁶ There is of course an issue about how to define particular shared intention/ joint goal; i.e. in scenarios A and B, does the joint goal refer to getting the piano onto the street, to its new home or finishing work etc.? Note however that this issue will not arise in the account of social motivations, since we needn’t conceive of social motivations as propositional attitudes.

⁷ Of course shared intentions and joint target goals may not be synonymous; for instance one may not want to evoke shared intentions in all cases where there is an evident joint target goal. However, for the purposes of this paper, the differences will not matter, and I will for the most part use the two terms interchangeably.

function to establish a social hierarchy, such as in cases of bullying. In support of my argument I'd therefore like to pause briefly to elucidate why it is likely that both natural selection and human culture has found ways that ensure the social bonds are formed.

The earliest and most paradigmatic form of social bonds in mammalian evolution is the one between mother and infant. However, throughout the past 170 million years of mammalian evolution many different beneficial forms of social bonds have evolved (Curley and Keverne 2005). The differential fitness effects conferred to individuals who are part of social bonds has recently also been studied and demonstrated empirically. Social bonds have for instance been shown to reduce levels of aggression between females and the risk for infanticide in the house mouse (Dobson et al. 2000), and increase the shared care for dependent young and decrease the cost of maternal investment in wood mice and prairie voles (Gerlach & Bartmann 2002; Hayes & Solomon 2004). In longitudinal studies of the effects of social bonds on wild female baboons' inclusive fitness it was concluded that socially integrated female baboons are much more reproductively successful than females who are more solitary (Silk et al. 2003). Moreover if circumstances demanded it, females formed strong bonds with non-relative females, indicating that the importance social bonds persists and goes beyond close kin (Silk et al. 2006).

Once we turn to humans we hardly need to refer to the implicit or long-term reproductive awards of social bonds in order to see how they matter. Indeed if there is any truism in the social psychological literature it is that social bonds, such as those with colleagues, friends, family, and partners have direct and indirect beneficial effects on human health, reproduction, and general well-being across the life span – and, conversely that there are quite detrimental effects associated with social isolation (House 1988; Baumeister & Leary 1995; for two recent studies see Uchino 2009; Cornwell & Waite 2009). In short, any way you choose to cut it, social bonds have adaptive value for

humans and other mammalian species.⁸ This also suggests that mechanisms that ensure that the social bonds are formed are likely to be favoured by either natural selection or human culture (or both).

4. Social play and its social motivations

In section 2, I already hinted at how joint actions might help us form and maintain social bonds. In scenario (B), moving the piano may result in a mutually beneficial employment, and in (C), the negotiation may result in an ongoing understanding between the two siblings. I now want to discuss the connection between joint action and social bonds in slightly more detail by considering a particular central kind of joint action: social play. I will follow suggestions made by ethologists and psychologists on social play and claim that its prevalence and importance in humans especially in childhood, is connected with how it functions to establish social bonds. Moreover I will argue that this is principally achieved by the fact that play engages our social motivations.

Social play in many ways seems like a paradigm case of joint action, requiring agents to be coordinated in attention, movement, as well as thought and imagination. Nevertheless, social play seems to be largely neglected in discussions of joint action, just like social motivations. My suspicion is that this might be due to social play typically lacking an apparent joint target goal⁹ and that it therefore is regarded as a peripheral case of joint action. But as I have argued previously, it is perfectly consistent with the guiding definition of joint action that much joint action lacks a target goal and occurs as a more competitive or explorative interaction.

Despite the fact that social play typically has no generic target goal, there is clearly a *point* to the activity, given that it is ubiquitous in human

⁸ Humans are generally considered to be a “hyper-social species” (Boyd and Richerson 1988), and the ability form social bonds, although not unique to humans, is on all accounts recognised be important for human social evolution (though different mechanisms have been proposed to account for the evolution of this hyper-sociality, see e.g. Hamilton 1964; Boyd and Richerson 1988)

⁹ When social play resembles more a game, one might want to say that there is a shared target goal, which typically is to “win the game”, but even in this case there clearly also seems to be a social function to the activity (see also section 5).

societies (Fagan 1981). In fact several researchers have argued that social play is crucial in human development in general since it affords an opportunity to train various motor- and cognitive skills, but also for *social development* since it is functions to strengthen social relationships, enhance trust, and promote cooperation at large (Bekoff 2001). This social function of social play is especially emphasised as important in the interactions between parents and infants (Sroufe et al 1999; Pellegrini et al. 2007).

But then how is social play, as a kind, able to serve the formation of social bonds? My suggestion is that it is at this juncture we should turn to social motivations. *It is when social motivations initiate and drive social play that they become the mechanisms enabling social bonds to be formed.* After all playing and engaging with others is typically a fun and enjoyable activity and by association participants are likely to view past or potential “play-mates” in a favorable light (Trezza et al. 2010). This will in turn shape future behavior by (socially) motivating a continued engagement and care for these individuals – in due course generating a social bond. In other words, it is the social motivation that not only initiates and continues to drive social play, but also assists the formation and strengthening of social bonds. Moreover this effect typically relies on the social motivations being *shared*, generating a sense of mutuality and positive feedback-loops between participants.

Not surprisingly, I expect the lesson from social play to generalize to many other types of joint action where the shared social motivation equally promotes the formation of social bonds. But to see this, it is helpful to supplement the hitherto functional characterisation of social motivations with some concrete examples of the mechanisms responsible for motivating and driving different cases of joint action. I will briefly discuss three recognised examples of social motivation mechanisms, but there are probably several other relevant psychological, neurological, and physiological social motivations.

The first example of a social motivation typically affects us unconsciously: Oxytocin. This hormone turns out to be found even in non-social species like molluscs, but in mammals the hormone is presumed to be

co-opted for the specific task of managing maternal nurturing behaviour (Uvnäs-Moberg 2003). Yet it is well established that in humans, Oxytocin can also be released in plasma and in cerebrospinal fluid in those social interactions that are not immediately linked to maternal nurturing. It has for instance been shown to be involved in pair bonding when elicited by stimuli such as touch (Gimpl and Fahrenholz 2001). Consequently, Oxytocin can be hypothesised to drive and reward some joint actions where non-aggressive physical contact is involved.¹⁰ All the same, as Curley and Keverne (2005) have argued, we should be cautious of over-emphasizing the importance of Oxytocin and other hormones in relation to *human* bonds, since higher cognitive-functioning has enabled humans to be socially motivated in many other situations than those where hormonal priming is involved.

This leads us to a second kind of often-conscious social motivations: *social emotions*. Social emotions are often argued to be crucial for forming social relationships (Izard 1978; Griffiths 1997; Keltner and Haidt 1999; Gonzaga et al 2001). The probably most famous account for the social function of emotions is given by Robert Frank who argues that emotional dispositions, such as love and trust, are superior to any practical or prudential reasoning since social emotions motivate us in a unique way so that we are able to accrue the benefits of long-term relationships like friendships and monogamous sexual relationships (1988).

A final related case of social motivation is *empathy*, where we feel or resonate another's emotion. When individuals feel and moreover display each other's emotions, they communicate that they share a common perspective on the situation, which in many cases seems crucial for the formation of social bonds (Anderson & Keltner 2002; Hoffman 2000). Moreover empathy is often signalled through facial expressions and quite difficult to feign. It can therefore be construed as a true test of someone's solidarity, thereby enhancing trust and understanding (Tronick 1989). Finally it has been

¹⁰ In the past sections I have emphasised social motivations as *initiating* and *driving* the joint action; but from what I say here it is also clear that I am concerned with social motivations qua social *rewards, which are elicited within the interaction*.

demonstrated that empathy is more likely to be elicited on occasions when there already is some existing bond between the individuals (Hoffman 2000).¹¹

5. The dual-function approach to joint action

A very natural objection here is that I am cherry-picking my examples of joint action with cases like social play. The objection is that regardless of how we precisely define ‘joint action’, most researchers are concerned with interactions that are either more straightforwardly cooperative and/ or involve the presence of a jointly intended goal. As I argued initially, I think there is good reason *not* to make such assumptions about joint action – but let’s leave this aside for moment. What do I have to say about the more traditional cases of joint action where there indeed seems to be a joint target goal? Is it not sufficient that there is a shared (non-social) intention for the joint action to get off the ground; why would we also need to make reference to a shared *social motivation* in these cases? While I have pointed out that I am not committed to the claim that a social motivation must be present in *all* cases of joint action, I do think that it is necessary to nominate a shared social motivation for driving many joint actions where there is also a target goal. This is simply because the shared social motivation performs *a different role* than shared intentions in joint action, in promoting the formation of social bonds or hierarchies.

Still, it would be nice to appeal to some experimental evidence that demonstrates what the *differential effect* of social motivations are in the cases where there is also a joint target goal. Although there is currently a paucity of research addressing this issue in the context of joint action, there is increasing interest in the role of social motivation in the context of *imitation* (see e.g. Dijksterhuis 2005). For instance Mark Nielsen and colleagues (2006) have tested the differential impact that social engagement has on the child’s imitative behaviour. They found that 24-month-olds persisted in imitating a demonstrator even when it resulted in frequent failure to use the target object

¹¹ If we reject the Humean dictum that “reason alone can never produce any action” we may allow that certain prior knowledge and judgments of others can also socially motivate us and bypass the affective level altogether (Koenig & Harris 2005).

and there were obviously better alternatives available. It was hypothesized that these children persisted in imitating the demonstrator's inefficient object use because they wanted to satisfy social demands. To test this interpretation, Nielsen compared the way 24-month-olds imitated a live vs. a videotaped demonstrator opening a box in order to retrieve a toy (2008). Although the videotaped demonstrator was socially engaging, the medium implied that there was no opportunity for "live" or spontaneous social interaction with the child. The results showed that children were significantly less inclined to imitate a videotaped demonstrator compared to the live version and it was concluded that children's imitative behaviour is affected by the opportunity for genuine socially interaction.¹²

In line with these experimental results, psychologist Ina Uzgiris (1981) claimed that genuine social engagement and motivation was important in explaining children's imitative behaviour and suggested that imitation in fact has two functions: 1) acquiring certain behaviour and skills through social learning, and 2) experiencing a sense of mutuality which promotes further social interaction with the partner. Uzgiris claims that not only are these aspects theoretically compatible as the *dual function of imitation*, but when we focus on the interplay between them we have a much better chance of explaining experimental data.

What I in effect have been claiming so far in this paper is that there typically are two central functions of joint action, analogously with imitation. The first function I take to be implicitly or explicitly accepted by most researchers interested in joint action, namely to gain the benefits of achieving the jointly or individually intended target goal. Here it doesn't really matter if the goal is achieved on one's own or with others; but as we all know it is a brute fact that to achieve some individual ends, one must jointly act with others. The second function of joint action is the one I have been particularly concerned with in this paper; that is, the function of forming, maintaining,

¹² In a second experiment, the children were allowed to interact with the adult on a TV monitor by using a closed-circuit system, and it was found that the amount of imitation children exhibited returned to about the same level as with the live version (Nielsen 2008).

and strengthening social bonds or establishing social hierarchies.¹³ I therefore maintain that even most cases of “problem-solving” joint action also have a social function. Take the joint action in scenario (B): in addition to the function of getting the piano to the street, there is a *social* function, which is roughly to achieve a mutually beneficial employment. This prospect motivates the agents, by generating confidence and trust between them, and is therefore likely to help them achieve not only the social end, but probably the target goal as well.

Some qualifications are in order. The second function of joint action (forming social bonds) does *not* presuppose that this be achieved through cooperative joint action; this result can equally be attained through explorative and competitive joint actions. Just think about how verbal sparring between two individuals becomes a form of flirtation, possibly resulting in a romantic relationship. I’ve also allowed that the social function of joint action might also be less “good-natured” when it results in social hierarchies, e.g. by one person becoming dominant and belittling another. In the past section, I mainly considered social motivations that are congenial like love and empathy. But clearly it is more likely that negative social emotions like resentment and shame are responsible for driving these competitive or antagonistic interactions (Keltner & Haidt 1999). Yet other negative social emotions like jealousy could also strengthen social bonds (Frank 1988). Finally, although the two functions of joint actions are often present and interact, they do not both have to be involved in all cases of joint action (e.g. the moving in (A) does not appear to fill a social function, and the negotiation in (C) and in the case of social play do not function to bring about a joint target goal).

6. Social motivations in existing accounts of joint action?

I hope to have shown that the formation of social bonds is one of two central functions of joint action and that agents’ shared social motivation is largely

¹³ Incidentally I think joint action can have these two functions for some non-human mammals as well as in humans, although it is not my ambition to discuss this possibility presently.

responsible for joint action achieving this end. So why then has the literature on joint action neglected both the shared social motivations and social function of joint action and focused almost solely on explaining joint action in terms of agents achieving target outcomes?

One of the reasons might be that it is not only *social* motivations, but motivations in general, that tend to be overlooked in accounts of joint action. Instead, researchers have focused on candidate cognitive and sometimes perceptual preconditions of joint action such as shared intentions (Bratman 1992; Tomasello et al. 2005; Carpenter 2009), shared task representations (Sebanz & Knoblich 2009), joint attention (Sebanz et al. 2006; Knoblich & Sebanz 2008), action monitoring and prediction processes (Vespar et al. 2010), joint commitments (Gilbert 1992), abilities to communicate (Gergely & Csibra 2005a), and abilities for mind/ intention-reading (Tomasello et al 2006; Carpenter 2009).

The omission of motivations is also evident in the previously mentioned review paper on joint action, where the authors conclude that research into joint action requires attention to the following psychological mechanisms:

First, *joint attention* provides a mechanism for sharing the same perceptual input and directing attention to the same events. Second, a *close link between perception and action* allows individuals to form representations of others' action goals and to predict action outcomes. Third, by forming shared *task representations*, it is possible to *predict* actions based on certain events in the environment, independent of action observation. Fourth, action coordination is achieved by integrating the 'what' and 'when' of others' actions in one's own *action planning*. This affects the perception of object affordances, and permits joint anticipatory *action control*. Finally, the ability to distinguish between effects of one's own and others' actions might be reduced in joint actions where the combined outcome of one's own and others' actions is more important than the results of individual actions. (Sebanz et al 2006: 75, my emphasis)

It is unlikely that these researchers want to deny that (social) motivations are present in many cases of joint action; so the neglect must be due to thinking that they are of little explanatory significance. Perhaps the assumption is that motivation just falls out trivially from existing accounts. But considering the

typical cases of joint action that are traditionally being discussed, this seems tantamount to supposing that agents arrive at joint action with a shared motivation to (jointly) solve a specified coordination problem.

Another thought might be that most joint action basically can be explained by a shared motivation to cooperate. But a mere reflection on the variety of joint actions discussed in this paper shows that this can hardly be the case. A (shared) motivation to cooperate *could* sometimes drive a joint action (conscious or unconsciously), but I have argued that it is far from the only relevant *social* motivation, especially given that joint action can occur in explorative, competitive, and antagonistic contexts.¹⁴

Nevertheless it seems like the *individual* motivation to achieve a target goal of a joint action potentially can be accommodated within an account of intention, or – depending on the nature of the joint action – shared intention. One might therefore be tempted to think that there nevertheless also *is* room for a notion of shared *social* motivation within one of several prominent models of shared intention (see e.g. Bratman 1992; Tuomela 1993; Gilbert 2003; Tomasello et al. 2006; Pettit & Schweikard 2006). I have in effect already ruled out the possibility by arguing that a shared social motivation is not directly reducible to shared intention, since shared intentions are taken to be directed toward the target outcome of a joint action, and shared social motivations are directed toward the benefits which lie beyond the token joint action.¹⁵

There is also a second reason to be sceptical toward the possibility that the notion of a shared intention is open to this kind of revision. At least all philosophical accounts of shared intentions demand that there is some *common propositional content* (e.g. the intention ‘to form a social bond with X’),

¹⁴ In this context it is worth noting how my understanding of social motivation differs from the suggestion given by Tomasello and colleagues who claim that the primary motivation behind collaborative activities is to share intentional mental states with others (Tomasello et al 2005). They claim that this specific motivation is unique to humans *and* is a necessary precondition for the collaboration that is ubiquitous in human cultures. I think they are overstating their case and that (human) evolution of collaboration can be plausibly accounted for without one very specific motivation to share others’ psychological states (Gergely & Csibra 2005b). Still, that is not to exclude that the motivation to share others’ intentional mental states will sometimes be a shared social motivation.

¹⁵ Nor does the shared social motivation typically explain the presence of a shared intention.

which is either instantiated in each individual participant or in the jointly acting group as a whole (Pettit & Schweikard 2006). In contrast, I have *not* demanded that a shared social motivation be explicated by the same propositional content in both agents. In fact, I do not demand that we explicate the social motivations by means of representational or propositional *content at all*. Rather it was suggested in section 4 that the social motivation be explicated in terms of whatever physiological or psychological mechanism is responsible for motivating the agent in a given joint action.

It therefore seems like the concept of a shared social motivation is independent from, and not reducible, to any of the psychological features that are currently hypothesised to drive joint action.

7. Conclusions

There are several positive upshots of acknowledging the importance of social motivations in joint action. First, the appeal to a shared social motivation helps explain **a broad range of phenomenon** subsumed under the definition of joint action. Since social motivations can be regarded as an important driver of joint action in their own right, more attention can legitimately be directed toward more explorative, competitive and even antagonistic joint actions, which can be as highly coordinated as cooperative interactions. I suspect there are many such kinds of joint actions that are important in human development and culture and worthy of further investigation. I have argued that their importance likely resides in these actions' *social* function, in promoting the formation of social bonds. For instance we might be interested in spontaneous game playing amongst children both in relation to how they enhance coordination skills and a sense of belonging. The fact that **there is a** dual function of joint action should also be an advantage, in explaining joint actions like demonstrations, in terms of potentially being driven *both* with the aim of furthering a cause and a sense of solidarity with peers.

An appeal to social motivations moreover allows us to be more inclusive and precise about what the relevant *psychological* (and physiological) prerequisites are for joint action. It is important to stress that investigations

into social motivations do *not* imply a deviation from the aims of finding unitary *mechanistic* explanations of joint action. On the contrary, I have given examples of how we can use insights from research on hormones, social emotions, and empathy to posit several relevant social motivation mechanisms. It is worth mentioning a possibility that has not been sufficiently explored here or in joint action research in general, which is to integrate findings from the burgeoning field of social cognitive neuroscience.¹⁶

Let me finally emphasize that my objective has *not* been to challenge the idea that many of the preconditions recognized in existing literature are crucial in explaining joint action. Of course it is necessary to focus on an account of the cognitive and perceptual abilities that underpin joint action – especially as it typically involves quite complex behavioural coordination between agents. Rather my contention has been that shared social motivations are equally crucial for most (but not all) cases of joint action to occur. By leaving them out of the explanatory framework of joint action, one not only will be unable to account for what drives those joint actions where there is no apparent target goal: one will also have an incomplete account of joint action *in general*.

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¹⁶ For instance our social motivations seem to be correlated with three tightly connected neural structures – the ventral striatum, the orbitofrontal cortex and the amygdala – which are all reciprocally connected and mediate both social judgments and basic reward processing (Kampe et al 2001; Adolphs 2003).

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