Lecture 07 : Joint Action : Origins of Mind

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Contents

1. Joint Action: The Challenge

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Joint action is arguably required to explain the emergence, in evolution or development, of sophisticated forms of human activity including, referential communication and mindreading.

Challenge Explain the emergence of sophisticated human activities including referential communication and mindreading.

Conjecture Joint action plays a role in explaining how sophisticated human activities emerge.

This conjecture is inspired by a range of authors who take different approaches:

> 'humans acquire knowledge at a pace far outstripping that found in any other species. Recent evidence indicates that interpersonal understanding––in particular, skill at inferring others' intentions––plays a pivotal role in this achievement' (Baldwin 2000, p. 40).
>
> 'functions traditionally considered hallmarks of individual cognition originated through the need to interact with others ... perception, action, and cognition are grounded in social interaction' (Knoblich & Sebanz 2006, p. 103).
>
> 'human cognitive abilities ... [are] built upon social interaction' (Sinigaglia & Sparaci 2008).
>
> *Vygotskian Intelligence Hypothesis*: 'the unique aspects of human cognition ... were driven by, or even constituted by, social cooperation' (Moll & Tomasello 2007, p. 1).

2. What Is Joint Action? Bratman's Account

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On the leading, best developed account of joint action (Bratman's), joint action requires shared intention and shared intention requires mindreading abilities, including insight into others' plans and intentions.

2.1. Consensus on Shared Intention

There is a broad consensus that joint action involves shared intention:

> 'I take a collective action to involve a collective [shared] intention.' (Gilbert 2006, p. 5)
>
> 'The sine qua non of collaborative action is a joint goal [shared intention] and a joint commitment' (Tomasello 2008, p. 181)
>
> 'the key property of joint action lies in its internal component [...] in the participants' having a "collective" or "shared" intention.' (Alonso 2009, pp. 444–5)
>
> 'Shared intentionality is the foundation upon which joint action is built.' (Carpenter 2009, p. 381)
>
> 'I will ... adopt Bratman's ... influential formulation of joint action ... each partner needs to intend to perform the joint action together ' 'in accordance with and because of meshing subplans" (p. 338) and this needs to be common knowledge between the participants.' (Carpenter 2009, p. 281)

But what is shared intention?

2.2. Bratman's Account

In characterising shared intention, Bratman first identifies its function. On his account, shared intention serves to coordinate activities, coordinate planning and structure bargaining (Bratman 1993).

If this is what shared intentions are for, what could they be? Bratman argues that the following are collectively sufficient conditions for you and I to have a shared intention that we J:

1. (a) I intend that we J and (b) you intend that we J
2. I intend that we J in accordance with and because of la, lb, and meshing subplans of la and lb; you intend that we J in accordance with and because of la, lb, and meshing subplans of la and lb
3. 1 and 2 are common knowledge between us' (Bratman 1993, View 4).

In more recent work Bratman has added these further conditions:

4. The persistence of each intention in conditions 1 and 2 is interdependent with the persistence of every other such intention (Bratman 1997, p. 153; Bratman 2006, pp. 7–8; Bratman 2009, p. 157; Bratman 2010, p. 12)

5. We will J 'if but only if 1a and 1b' (Bratman 1997, p. 153; Bratman 2009, p. 157).

The common knowledge condition, #3 above, is extended to include these further conditions, #4 and #5.

3. What Joint Action Could Not Be

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On Bratman's account, performing a joint action requires shared intention and shared intention requires mindreading at close to the limits of what human adults are capable of. For this reason we cannot both accept that joint action plays a role in explaining how sophisticated human activities including mindreading emerge in development and that Bratman's account specifies the relevant notion of joint action.

Objection: Meeting the sufficient conditions for joint action given by Bratman's account could not significantly *explain* the development of an understanding of minds because it already *presupposes* too much sophistication in the use of psychological concepts.

The objection arises because not all of the following claims are true (this is the first of two inconsistent triads in this lecture):

(1) joint action fosters an understanding of minds;

(2) all joint action involves shared intention; and

(3) a function of shared intention is to coordinate two or more agents' plans.

These claims are inconsistent because if the second and third were both true, abilities to engage in joint action would presuppose, and so could not significantly foster, an understanding of minds.

What are our options?

4. Development of Joint Action: Planning

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When are humans first able to do what Bratman calls 'interconnected planning'?

4.1. A Target

I interpret Carpenter as responding to the inconsistent triad (see *What Joint Action Could Not Be* (section §3)) by rejecting the conjecture that joint action plays a role in explaining how sophisticated human activities emerge:

> 'Despite the common impression that joint action needs to be dumbed down for infants due to their ' 'lack of a robust theory of mind" ... all the important social-cognitive building blocks for joint action appear to be in place: 1-year-old infants understand quite a bit about others' goals and intentions and what knowledge they share with others' (Carpenter 2009, p. 383).

Carpenter is explicit in adopting Bratman's account (see *What Is Joint Action? Bratman's Account* (section §2)):

> 'I ... adopt Bratman's (1992) influential formulation of joint action or shared cooperative activity. Bratman argued that in order for an activity to be considered shared or joint each partner needs to intend to perform the joint action together ' 'in accordance with and because of meshing subplans" (p. 338) and this needs to be common knowledge between the part icipants' (Carpenter 2009, p. 381).

Should we accept Carpenter's view?

4.2. What Does Carpenter's View Predict?

Bratman is explicit that, on his view, 'shared intentional agency [i.e. 'joint action'] consists, at bottom, in interconnected planning agency of the participants' (Bratman 2011).

The hypothesis that one- and two-year-olds have shared intentions as characterised by Bratman therefore generates a prediction: since a function of shared intention is to coordinate planning, children of this age should be capable, at least in some minimally demanding situations, of coordinating their plans with another's.

4.3. Is the Prediction Correct?

There is good evidence that even 3-year-olds' abilities to coordinate plans are quite limited. For instance:

> '3- and 5-year-old children do not consider another person's actions in their own action planning (while showing action planning when acting alone on the apparatus). Seven-year-old children and adults however, demonstrated evidence for joint action

> planning. … While adult participants demonstrated the presence of joint action planning from the very first trials onward, this was not the case for the 7-year-old children who improved their performance across trials.' (Paulus 2016, p. 1059)

Or:

'by age 3 children are able to learn, under certain circumstances, to take account of what a partner is doing in a collaborative problem-solving context. By age 5 they are already quite skillful at attending to and even anticipating a partner's actions' (Warneken et al. 2014, p. 57).

Or:

'proactive planning for two individuals, even when they share a common goal, is more difficult than planning ahead solely for oneself' (Gerson et al. 2016, p. 128).

We are working on the assumption that a function of shared intention is to coordinate two or more agents' plans. Given this assumption, the hypothesis that one- and two-year-old children have shared intentions leads to the prediction that these children can coordinate their plans with others'. At least, they should be able to do so in minimally demanding situations. But in fact it appears that abilities to coordinate plans develop much later, perhaps between five and seven years of age.

5. Development of Joint Action: Years 1-2

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What (if any) joint actions are humans capable of just at the point they are beginning to communicate referentially (typically around the first birthday)?

5.1. A Second Inconsistent Triad

We can summarise the position we have reached so far in this lecture with another inconsistent triad (the first was in *What Joint Action Could Not Be* (section §3)):

1. One- and two-year-olds are capable of performing joint actions.
2. All joint action involves shared intention.
3. A function of shared intention is to coordinate two or more agents' plans (as Bratman's account implies).

As we saw, Carpenter and others hold that all three claims are true. But these claims lead to the incorrect prediction that one- and two-year-olds are capable of coordinating their plans with others'. For this reason, at least one of the claims should be rejected. But which?

Can we reject the first claim?

5.2. One- and Two-Year-Olds Are Capable of Performing Joint Actions

As we will see in the seminar, a variety of evidence indicates that although they have quite limited capacities to coordinate their actions with others, even fourteen-month-olds will spontaneously initiate joint action with an adult. Children of around this age also demonstrate awareness in the context of joint action that success requires another person's contribution.

Indeed, carpenter makes a strong case for the claim that one- and two-year-olds are capable of performing joint actions:

> 'By 12–18 months, infants are beginning to participate in a variety of joint actions which show many of the characteristics of adult joint action.' (Carpenter 2009, p. 388)

As does Brownell:

> 'infants learn about cooperation by participating in joint action structured by skilled and knowledgeable interactive partners before they can represent, understand, or generate it themselves. Cooperative joint action develops in the context of dyadic interaction with adults in which the adult initially takes responsibility for and actively structures the joint activity and the infant progressively comes to master the structure, timing, and communications involved in the joint action with the support and guidance of the adult. … Eager participants from the beginning, it takes approximately 2 years for infants to become autonomous contributors to sustained, goal-directed joint activity as active, collaborative partners' (Brownell 2011, p. 200).

5.3. Two Problems

The pattern of success and failure in infants' capacities for joint action in the first and second years of life leaves us with two problems:

5.3.1. First Problem

In the first and second years of life, there is joint action (this section), but it does not appear to involve planning agency or shared intention (see *Development of Joint Action: Planning* (section §4)).

Therefore we cannot characterise it using Bratman's account.

What alternative account might characterise joint action in the first and second years of life?

5.3.2. Second Problem

Two-year-olds perform some joint actions but not others. What distinguishes the joint actions they can perform from those they cannot?

6. Collective Goals vs Shared Intentions

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The notion of a collective goal is key to understanding a notion of joint action that does not involve on shared intention. (An outcome is a collective goal of two or more actions involving multiple agents just if the actions are directed to this goal and this is not, or not just, a matter of each action being individually directed to that goal.)

6.1. The Problem

Brownell neatly describes the problem we face in characterising joint actions as performed by one- and two-year-olds:

> 'all sorts of joint activity is possible without conscious goal representations, complex reasoning, and advanced self-other understanding … both in other species and in our own joint behavior as adults, some of which occurs outside of reflective awareness … In studying its development in children the problem is how to characterize and differentiate primitive, lower levels of joint action operationally from more complex and cognitively sophisticated forms' (Brownell 2011, p. 195).

6.2. Collective Goals

An outcome is a *collective goal* of two or more actions involving multiple agents if it is an outcome to which those actions are collectively directed (Butterfill 2016).

For us to have a emphshared goal G is for G to be a collective goal of our present or future actions in virtue of the facts that:

1. We each expect the other(s) to perform an action directed to G.
2. We each expect that if G occurs, it will occur as a common effect of all of our actions (compare Butterfill 2012; Vesper et al. 2010).

6.3. Joint Action

Consider a minimally demanding sufficient condition for joint action:

> Where an event comprises two or more agents' actions and the actions have a collective goal in virtue of the agents' acting on expectations that these actions will have this collective goal, the event is a joint action.

Does the proposed sufficient condition characterise joint actions as performed by children in the first years of life?

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