

# Forms and levels of sharing in joint agency

Elisabeth Pacherie



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# Acknowledgements



John MICHAEL

Michael, J. & Pacherie, E. (2015).  
On Commitments and Other Uncertainty  
Reduction Tools in Joint Action.  
*Journal of Social Ontology*,1(1): 89-120.

# Overview

- Sharing intentions: Michael Bratman vs. Margaret Gilbert on commitments
  - Anatomy and typology of commitments
  - Coordination and predictability in joint action
  - Commitments as uncertainty reduction tools
- Other uncertainty reduction tools
  - Cognitive alignment processes
  - Motivational alignment processes
- Complementarities

# Joint intentional action, shared intention and commitments

- Accounts of shared (or joint) intentions are attempts to cash out what it takes for agents to act in a jointly intentional manner.
- However, there is much philosophical disagreement on how best to construe the notion of shared intentions.
- One important point of disagreement concerns the **nature of the commitments associated with shared intention**: are these commitments different in kind from the commitments already present in the individual case? Are these commitments constitutive of joint actions?



YES!

We-mode  
joint intentions



NO!

I-mode  
joint intentions



# Margaret Gilbert on shared intentions



- Participation to a joint intentional action essentially involves **mutual obligations and entitlements** for the agents to play their parts and act as appropriate to the intended goal.
- To account for the presence of these obligations and entitlements, shared intentions have to be construed in terms of **joint commitments**.
- A **joint commitment** is created when each of two or more people openly expresses their personal readiness jointly with the other to commit them all in a certain way and it is **common knowledge** between them that all have expressed their readiness.
- The entitlements and obligations inherent in a joint commitment cannot be understood as moral in kind; rather their normative force pertains to a *sui generis*, irreducible kind **of social normativity**.

# Michael Bratman on shared intentions



- The commitments characterizing shared intentions are of the same kind as the commitments that already govern individual planning agency.
- Individual intentions are **commitments to act**. As such they are **subject to norms of practical rationality**:
  - An intention is rationally required to resist reconsideration, unless solid reasons to do so come to light (**stability**).
  - An intention is rationally required to be means-end coherent (**means-end coherence**).
  - An intention is rationally required to be consistent with one's beliefs and other intentions (**consistency and agglomeration**)

# Michael Bratman on shared intentions



- We can account for the jointness of shared intentions if we construe them as **complexes of interlocking and interdependent intentions of individual participants**, where these intentions interlock in the sense that each intends that the joint activity go in part by way of the relevant intentions of each of the other participants.
- These intentions of individual participants, in responding to the norms of practical rationality governing individual planning agency, will normally support the norms of social agglomeration and consistency, social coherence and social stability shared intentions are subject to.

# Anatomy of commitments

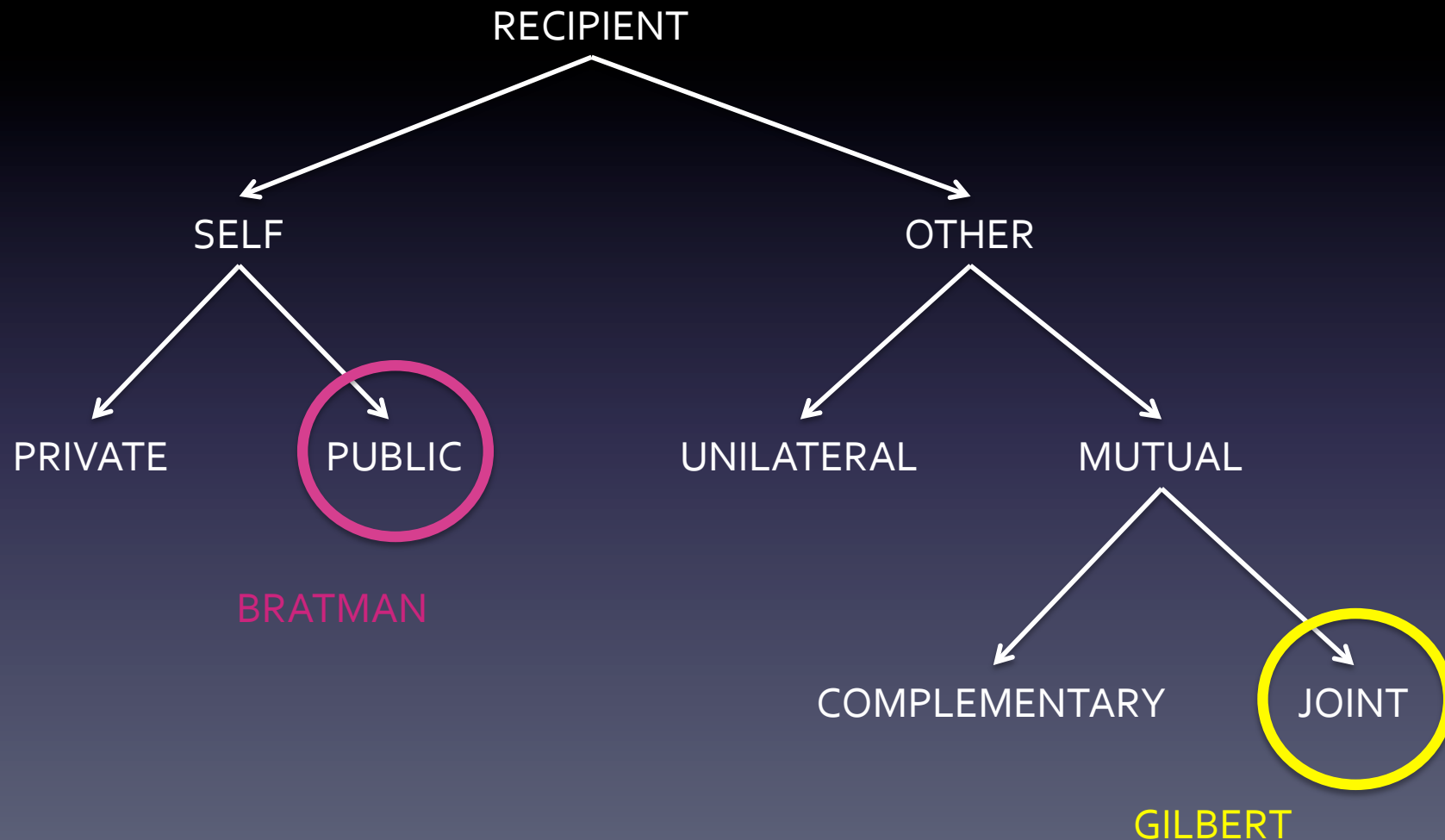
Commitments, in the sense Gilbert and Bratman are interested in, are characterized by Gilbert (2007) as "creatures of the will":

- A commitment is **by the will** in the sense that it is an exercise of a subject's will.
- A commitment is **of the will** in the sense that it binds the will in a certain way.
- Commitments have **content**.
- Commitments have **authors** and **recipients**.



# A taxonomy of commitments

(adapted from H. Clark, 2006)



# Joint action, coordination and predictability

- Successful joint action depends on the efficient coordination of participant agents' goals, intentions, plans, and actions.
- For efficient coordination to be possible, **mutual predictability** must be achieved: agents should be able to form representations not just of their own intentions and actions but also of their partners' and these representations should be aligned (**shared representations**).
- Various forms of uncertainty can undermine predictability, the alignment of representations and hence coordination.

# Uncertainties

These forms of uncertainty fall under three broad categories.

- **Motivational uncertainty:**
  - How convergent are our respective interests?
  - What goals do we share and can we promote together?
- **Instrumental uncertainty:**
  - What should we do to achieve our joint goal?
  - How are roles to be distributed?
  - When and where should we act?
- **Common ground uncertainty:**
  - How much of what is relevant to our deciding on a joint goal, planning for that goal and executing our plan is common ground or mutually manifest to us?

# Commitments and Predictability

- It is plausible that the main function of commitments in joint action is to reduce uncertainty and make agents more predictable to one another.
- But what is it about commitments that allows them to serve this function?
- Shouldn't we tell different stories for Bratman-commitments and for Gilbert-commitments?
- Aren't there other ways to achieve uncertainty reduction in the context of joint action?

# How do commitments reduce uncertainty?

- The accounts proposed by Bratman and Gilbert have two features in common:
  - Agents' commitments are out in the open: in a shared intention the commitments of the agents (individual commitments in Bratman's account; joint commitments in Gilbert's) are common knowledge or mutually manifest among the agents.
  - Commitments generate expectations regarding the future behavior of their authors and these expectations are also out in the open.
- But Bratman and Gilbert give different stories as to what licenses these expectations.
  - For Bratman: practical rationality assumption
  - For Gilbert: normative force of obligations

# How do commitments reduce uncertainty?

- **Bratman's story:** intentions are commitments to act and as such are subject to norms of practical rationality (stability, means-end coherence, consistency, agglomeration)
- The expectations generated by commitments are premised on the assumption that the agent is rational.
- A potential problem: not so stable and cognitively costly
  - Assuming that agents are indeed rational, this very rationality may lead them to renounce their intention if solid reasons to do so come to light.
  - However, since on Bratman's account shared intentions involve a network of interlocking and interdependent intentions of individual participants, an agent's private reasons for reconsidering his/her intentions may easily lead to the unraveling of the whole network of intentions and commitments.
  - Making sure that expectations hold would seem to require each agent to constantly monitor other agents' attitudes and be on the alert for changes in their reasons to act.

# How do commitments reduce uncertainty?

- **Gilbert's story**: a shared intention to do A involves a joint commitment to intend as a body to do A and this joint commitment creates obligations and entitlements.
- The expectations generated by commitments are premised on the social normative assumption that agents act as their obligations dictate (that they are responsive to social norms).
- If Gilbert is right and expectations are thus normatively based, then they may be thought to be more robust than Bratman's rationality-based expectations.
- However, Gilbert's account assumes that people act as their obligations dictate, but does not explain **what motivates** people to act as they are obligated to in the first place.

# Other routes to uncertainty reduction

- In forming public commitments, we create shared expectations conducive to efficient coordination.
- However, empirical research provides evidence that a number of other alignment processes and mechanisms also contribute to the formation of shared expectations or representations.
- What form of complementarity is there between these and commitments given that forming commitments appears to be one kind of alignment process among several others?
- To assess whether Bratman's or Gilbert's commitments are constitutive of joint intentional action, we must ask two questions:
  - Can (joint) commitments help us achieve forms of coordination that could not be achieved by other means?
  - If so, are these forms of coordination necessary in all joint actions?



# Automatic alignment processes

(Bekkering et al., 2009; Knoblich, Butterfill & Sebanz, 2011; Newman-Norlund et al., 2007; Sebanz & Knoblich, 2008, 2009; Pezzulo, 2011)

- Automatic alignment processes can induce the formation of shared representations in several individuals through physical coupling or perception-action coupling and do so independently of whether these agents intend to act jointly.
- These processes include:
  - Interpersonal entrainment mechanisms;
  - Common and joint affordances;
  - Perception-action matching: common action representations;
  - Motor simulation: common predictive models.



# Intentional alignment processes

(Bekkering et al., 2009; Knoblich, Butterfill & Sebanz, 2011; Newman-Norlund et al., 2007; Sebanz & Knoblich, 2008, 2009; Pezzulo, 2011)

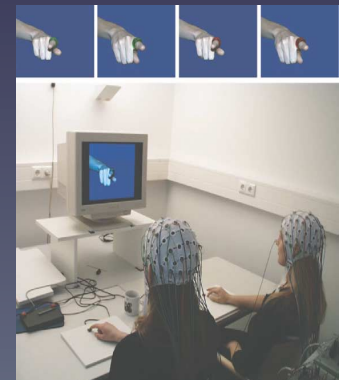
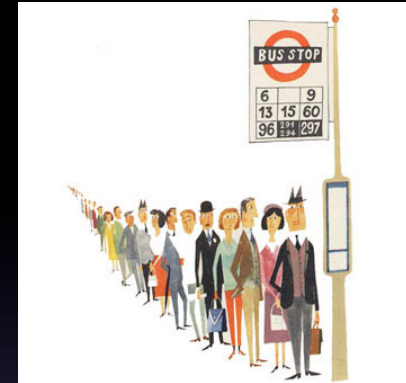
- Agents can implement deliberate strategies for aligning representations, monitoring and fixing what is shared at both the planning and execution stages.
- Intentional alignment processes include linguistic communication, as well as other non linguistic signaling and communicative actions (gestures, declarative pointing, shared attention, etc.)



# Pre-aligned representations

(Bekkering et al., 2009; Knoblich, Butterfill & Sebanz, 2011; Newman-Norlund et al., 2007; Sebanz & Knoblich, 2008, 2009; Pezzulo, 2011)

- In addition, unless a situation is completely new to them, agents will already have a stock of relevant pre-aligned representations they can rely on to facilitate coordination.
- These pre-aligned representations include among other things:
  - Social coordination conventions
  - Pre-established actions scripts and routines
  - Shared task representations acquired through previous practice



# Alignment processes

- Some these alignment processes (e.g., signaling and communicative actions) are akin to commitments. Yet, they are typically unilateral commitments rather than joint commitments.
- Others, however are not commitments (or commitment-like) in either Bratman's or Gilbert's sense:
  - They are involuntary processes and thus not "creatures of the will" .
  - They are sub- or a-rational psychological processes.
  - They have no deontic dimension.
- These alignments can be seen as important tools for reducing instrumental uncertainty and for some (e.g., joint attention) common ground uncertainty.
- But can alignment processes that do not rely on commitments also contribute to the reduction of motivational uncertainty?

# Homo homini lupus?

- Bratman and Gilbert both assume that for shared intentions to get off the ground, each participant must be provided with a kind of guarantee or assurance that each will do his part in the joint activity.
- Bratman takes it that this assurance obtains as long as a relevant set of interdependent intentions is in place and it is common knowledge among the participants that this is the case.
- Gilbert claims that these guarantees can only be provided when participants form joint commitments, thus creating mutual entitlements and obligations to act in certain way.
- Both appear to take mutual distrust as the default: when there is a potential conflict between the safe option of acting individually and social cooperation, the scales will not tip towards social cooperation unless some kind of assurance is in place.

# Variations on the stag hunt



H1 \ H2	Stag	Hare
Stag	2,2	0,1
Hare	1,0	1,1

Gilbert: to engage in the joint activity, each needs assurance that the other will. Hence we must form joint commitments.

# Variations on the stag hunt



H1 \ H2	Stag	Hare
Stag	2,2	0,1
Hare	1,0	1,1

Bratman's public interdependent self-commitments: to remove the uncertainty, each hunter commits publicly to stag hunting.

# Variations on the stag hunt



H1 \ H2	Stag	Hare
Stag	4,4	0,1
Hare	1,0	1,1

**Social emotions:** cooperation may be intrinsically rewarding, thus altering the payoff matrix by adding emotional incentives to material payoffs.



# Variations on the stag hunt



H1 \ H2	Stag	Hare
Stag	$2+2=4$	$0+1=1$
Hare	$1+0=1$	$1+1=2$

Group-identification (Bacharach):  
Under certain conditions, we spontaneously identify as members of a group or team, replacing the question "What should I do?" with the question "What should we do?"

# Group identification: Bacharach's framing approach

- For Bacharach, whether an agent identifies or not as a member of a group or team is a matter of what frame she uses to represent herself and the agents with whom she is interacting.
- What frame one uses is not a matter of choice, but of involuntary psychological processes.
- The adoption of a we-frame involves an agency transformation: the person who self-identifies as a member of a team thinks of his or her agential self as a component part of the team agency.
- The adoption of a we-frame also primes team-reasoning.
- Bacharach takes group identification to be a basic human propensity: "I suggest that group identification is the key proximate mechanism in sustaining cooperative behavior in man" (2006: 111). His concern is with identifying conditions for the production of group identification.

# Group identification

- Bacharach appeal to social psychology research on group identification that has identified a number of conditions that tend to produce group identification, including:(Brewer, 2003; Tajfel, 1981; Turner *et al.*, 1987)
  - belonging to the same social category (e.g., women, academics);
  - Belonging to the same *ad hoc* category (e.g., same birthday),
  - face-to-faced contact;
  - "we" language;
  - shared experience (e.g., being an air crash survivor);
  - competing outside group;
  - having common interests;
  - strong interdependence;
- Whether a situation promotes group identification and to which group depends on whether the situation presents some of these properties and whether they are salient enough to induce the corresponding group frame.

# Moral sentiments

- Moral sentiments (guilt, sympathy, trustworthiness, outrage) are practical devices for solving commitments problems and promoting cooperative behavior (Frank 1988; Sterelny 2003) .
- The general idea is that the anticipation of the emotional outcomes of actions changes the payoff structure for an agent's action options.
- Moral sentiments are useful and effective devices because:
  - Emotional processes are automatic, involuntary processes.
  - Emotions and feelings are intrinsically motivating and are the proximate cause of most behavior.
  - Emotions are often associated to observable physical symptoms that are costly or difficult to fake (e.g. blushing)

# Reducing motivational uncertainty

- These approaches offer us two routes to motivational uncertainty reduction.
- The group identification route achieves uncertainty reduction by raising the salience of group interests compared to self-interests.
- The moral sentiments route achieves this by altering individuals' incentives and using emotions as a counter-weight to narrow self-interest.
- Both approaches propose that cooperation is supported by automatic, intuitive processes.
- Neither approach is naively optimistic:
  - On the group identification route, group identification is a context-dependent framing phenomenon.
  - The various accounts of the emergence of moral sentiments speak of "an equilibrium in which those who have them co-exists with those who do not" (Frank, 1988: 94).

Commitments as voluntary, deliberative, rational processes: binding **of** the will **by** the will

Interdependent individual commitments powered by practical rationality

Joint commitments powered by social normativity: obligations & entitlements

Motivational uncertainty  
Instrumental uncertainty

Cognitive alignment processes: Shared representations of plans and actions

Common Ground uncertainty

Motivational alignment processes: Social emotions; group identification

Automatic alignment processes: involuntary, intuitive, arational

# Concluding remarks

- Most joint actions probably involve some mix of voluntary commitment processes, whether powered by practical rationality or by social normativity, and more basic, intuitive and automatic alignment processes. Commitments couldn't play the roles assigned to them in philosophical accounts unless these more basic processes were in place.
  - Cognitive load: automatic alignment processes take care of many aspects of action coordination, freeing cognitive resources for rational deliberation.
  - Motivation: absent social emotions and/or group-identification, it would remain a puzzle why people honor their commitments when their self-interest dictates otherwise.
- This opens the possibility that at least some of our joint actions can rely entirely on automatic cognitive and motivational alignment processes and be commitment-free.