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<th>A New Analysis of the Structure of Social Reality</th>
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Aim of this talk

- I examine several theses in Searle (1995) and point out some difficulties in his description.
- I clarify some notions and show how to overcome these shortcomings.


Searle’s notion of institutional facts

- According to Searle (1995), *institutional facts* can be explained by means of three notions, i.e. *collective intentionality*, *assignment of function*, and *constitutive rule*.

Problems with Searle’s notion of collective intentionality

- Searle claims *collective intentionality* is primitive and biologically founded.
  - His insistence on the primitiveness of collective intentionality makes it difficult to analyze interactions of intentional states among agents.
Collective Intentionality

Primitiveness of collective intentionality (Searle (1995) p. 25f)
- It is indeed the case that all my mental life is inside my brain, and all your mental life is inside your brain, and so on for everybody else. But it does not follow from that all my mental life must be expressed in the form of a singular noun phrase referring to me.
- The form that my collective intentionality can take is simply "we intend," "we are doing so-and-so," and the like. In such cases I intend only as part of our intending. The intentionality that exists in each individual head has the form "we intend."

Problem with this description
- A problem with this description is that it is unclear what is stated by "I intend only as part of our intending".
- A possible interpretation:
  - We, i.e. group $G$, intend that $p$ iff every member of $G$ believes that we intend that $p$.
  - $I_G p = \forall x \in G (B_x I_G p)$

Problems with Searle’s notions

Collective Intentionality
multi-agent BDI logic
- In this presentation, I use multi-agent BDI logic explained in Meyer and Veltman (2007).
- I slightly modify notations of some modal operators.
  - I write $\Box_G p$ instead of $C_G p$.
  - $\Box_G p$ means: Group $G$ collectively believes that $p$.

Multi-agent BDI formulas
- $B_i p$: $i$ believes that $p$.
- $\Box_E p$: everybody in $G$ believes that $p$.
- $\Box_G p$: Group $G$ collectively believes that $p$.
- $I_i p$: $i$ intends that $p$.
- $\Box_E p$: everybody in $G$ intends that $p$.
- $\Box_M p$: all members in $G$ mutually intend that $p$.
- $\Box_G p$: Group $G$ collectively intends that $p$. 
### Models for n-agent BDI logic

- Models for n-agent BDI logic are Kripke structures of the form $M = \langle W, V, R_1, \ldots, R_n, R_{F,G}, R_{D,G}, S_1, \ldots, S_n, S_{F,G}, S_{D,G} \rangle$ where:
  - $W$ is a non-empty set of states (or worlds);
  - $V$ is a truth assignment function per state;
  - $G$ is a subset of $\{1, \ldots, n\}$.

- The $R$ are accessibility relations on $W$ for interpreting the modal operations $B$, assumed to be serial, transitive and euclidean relations, while the $S$ are accessibility relations on $W$ for interpreting the modal operations $I$, assumed to be serial relations.
- $R_{F,G} = \cup_{i \in G} R_i$ and $S_{F,G} = \cup_{i \in G} S_i$;
- $R_{D,G} = R_{D,G}^*$ and $S_{D,G} = S_{D,G}^*$, the transitive closure of $R_{F,G}$ and $S_{F,G}$ respectively.

### Interpretation of multi-agent BDI formulas

- $M, w \models \varphi$ iff $V(w)(\varphi) = true$, for $\varphi \in \mathcal{P}$.
- The logical connectives are interpreted as usual;
- $M, w \models \Box \varphi$ iff $M, w \models \varphi$ for all $w$ with $R(w, w')$;
- $M, w \models \Diamond \varphi$ iff $M, w \models \varphi$ for all $w$ with $R_{F,G}(w, w')$;
- $M, w \models \Box E_{G} \varphi$ iff $M, w \models \varphi$ for all $w$ with $S_{F,G}(w, w')$;
- $M, w \models \Diamond E_{G} \varphi$ iff $M, w \models \varphi$ for all $w$ with $S_{F,G}(w, w')$;
- $M, w \models \Box M_{G} \varphi$ iff $M, w \models \varphi$ for all $w$ with $S_{F,G}(w, w')$;
- $M, w \models \Diamond M_{G} \varphi$ iff $M, w \models \varphi$ for all $w$ with $S_{F,G}(w, w')$;

### Valid formulas of multi-agent BDI logic (1)

- $\Box E_{G} \varphi \equiv \forall x \in G \ (B \varphi)$
- $\Box C_{G} (\varphi \rightarrow \psi) \rightarrow (\Box C_{G} \varphi \rightarrow \Box C_{G} \psi)$
- $\Box C_{G} \varphi \rightarrow \Box E_{G} \varphi$
- $\Box C_{G} \psi \rightarrow \Box C_{G} \Box C_{G} \psi$
- $\Box C_{G} \varphi \rightarrow \Box C_{G} \Box C_{G} \varphi$
- $\Box C_{G} \psi \rightarrow \Box E_{G} \Box C_{G} \psi$
- $\Box C_{G} (\varphi \rightarrow \Box E_{G} \varphi) \rightarrow (\Box E_{G} \varphi \rightarrow \Box C_{G} \varphi)$

### Valid formulas of multi-agent BDI logic (2)

- $\Box E_{G} \varphi \equiv \forall x \in G \ (I \varphi)$
- $\Box M_{G} (\varphi \rightarrow \psi) \rightarrow (\Box M_{G} \varphi \rightarrow \Box M_{G} \psi)$
- $\Box M_{G} \varphi \rightarrow \Box E_{G} \varphi$
- $\Box M_{G} \psi \rightarrow \Box M_{G} \Box M_{G} \psi$
- $\Box M_{G} (\varphi \rightarrow \Box E_{G} \varphi) \rightarrow (\Box E_{G} \varphi \rightarrow \Box M_{G} \varphi)$

### Definition of collective intention

$\Box C_{G} \varphi = \Box M_{G} \varphi \land \Box C_{G} \Box M_{G} \varphi$

### Clarification

- Multi-agent BDI logic clarify interactions among agents in a group.
- I introduce index $G$ to clarify problems for a person who belongs to different groups.
- If a person $A$ belongs to both $G_A$ and $G_B$, then the union of the collective belief set of $G_A$ and that of $G_B$ must be consistent because of the validity of $\Box C_{G_A} \varphi \rightarrow \Box E_{G_A} \varphi$ and $\Box C_{G_B} \varphi \rightarrow \Box E_{G_B} \varphi$.
- Otherwise, $A$’s belief becomes inconsistent.
Description of a Problem

- If a person A belongs to both $G_1$ and $G_2$, then the collective belief set of $G_1$ and that of $G_2$ must be consistent because of the validity of $C_{i,p} \rightarrow E_{i,p}$ and $C_{j,p} \rightarrow E_{j,p}$.
- In reality, this is sometimes not the case. There can be a person who cannot decide which group he wants to join, where the union of the collective beliefs of the two groups are inconsistent.
- This is a real problem and it should be also describable within Searle’s framework. I doubt if this is possible.

Conditional intention and self-restriction

- A conditional intention “i intends to do A, if i realizes that $p$” can be expressed by $B_i (\rho \rightarrow I, do(i, A))$.
- A conditional self-restriction “i does not intend to do A, if i realizes that $p$” can be expressed by $B_i (\rho \rightarrow \neg I, do(i, A))$.
  - I presuppose here: $B_i (I, do(i, A)) \rightarrow I, do(i, A))$.

Conditional obligation and prohibition

- A conditional obligation ”Do A, if $p$” is accepted by x, if x has a conditional intention expressed by $B_x (\rho \rightarrow I, do(x, A))$.
  - A categorical obligation can be expressed by ”Do A, if T”, where T expresses a tautology.
- A conditional prohibition ”Do not A, if $p$” is accepted by x, x has a conditional intention expressed by $B_x (\rho \rightarrow \neg I, do(x, A))$.
  - A categorical prohibition can be expressed by ”Do not A, if T”, where T expresses a tautology.

Searle’s constitutive rules

- A constitutive rule has the form “$X$ counts as $Y$ in context $C$”.
- The structure of collective rules can be iterated.
- Institutional facts exist only in systems of constitutive rules. (1995, p. 28)

Why can rules create facts?

- Rules work properly only in a rule system.
- An action changes a former state.
- A rule describes what kind of actions are allowed and what kind of actions are prohibited.
- A rule system contains descriptive sentences and rules.
- A rule system introduces a new language based on the given language.
- A rule system provides a new interpretation strategy for actions.
Example: Rules of chess

From Wikipedia

Chess is a two-player game that is played on an 8-by-8 chessboard, with thirty-two pieces (sixteen for each player) of six types; each type of piece moves in a distinct way.

The goal of the game is to protect the most valuable piece, the king, and trap (checkmate) the opposing king.

Rules of chess: Game play

The player controlling the white pieces moves first.

After the initial move by white, players alternate moves.

Play continues until a draw is called, a player resigns or a king is trapped by means of a checkmate.

Chess pieces, from left to right: king, rook, queen, pawn, knight, bishop.

Rules of chess: Movement

Each piece moves in a different way. Generally, a piece cannot pass through squares occupied by other pieces, but it can move to a square occupied by an opposing piece, which is then "captured" (removed from the board). Only one piece can occupy a given square.

- The rook moves orthogonally to the players (forward, backward, left or right) any number of squares.
- The king moves orthogonally or diagonally any number of squares and always stays on one of the two chequered colours.
- The queen moves orthogonally or diagonally any number of squares.
- The bishop moves only on "L", either two spaces in one direction and one space orthogonally or in it. It is the only piece that can jump over other pieces.
- The knight moves one space straight forward (away from the player). On its first move, the knight may move two spaces forward on the chequered square in front of the player and capture the piece in the square. All other knights move like the queen except that they can only move two squares forward on the chequered square in front of the player.
- The pawn moves one space straight forward (away from the player). On its first move it can optionally move two spaces forward. If there is an enemy piece diagonally (either left or right) one space in front of the pawn, the pawn may move diagonally to capture that piece. A pawn cannot capture or jump over a piece directly in front of it.

Rules of chess constitute a rule system

- The rule system of chess enables interpretations of actions in chess.
- These interpretations are shared by the players.

Example for interpretation of actions in chess

- Description of an action (in the standard English):
  - Peter took one of white figures on a board and placed it on a different square of the board.

- Interpretation of this action (described in the chess-language):
  - Peter moved a rook two spaces forward.

Interpretation of Searle’s form for constitutive rules

- Searle’s form for constitutive rules has the form "X counts as Y in context C".

- I interpret this form as follows:
  - C is a rule system.
  - X is described by a language that does not presuppose the rule system.
  - Y describes X from the viewpoint of the rule system.

My interpretation of "X counts as Y in context C":

- My interpretation.
  - C is a rule system.
  - X is described by a language that does not presuppose the rule system.

- Example for interpretation of actions in chess
  - Description of an action (in the standard English):
    - Peter took one of white figures on a board and placed it on a different square of the board.

  - Interpretation of this action (described in the chess-language):
    - Peter moved a rook two spaces forward.
A rule system provides an interpretation system for real actions

Question:

- Why can a rule system create facts?

Answer to:

Why can a rule system create facts?

- A rule system provides a new interpretation system for real actions.
- This interpretation system is collectively believed by the players and they interpret actions (in the game) in the same way.
- A descriptive part in a rule system introduces new notions and describes constraints for these notions.
- In this way, we can explain why a rule system can create facts.
  - This explanation is deeper than Searle’s one.

Form of the assignment of function in Searle (1995)

- The function of $A$ is to $X$.
- Example (p. 14)
  
  That river is good to swim in.
- Objects with a function (p. 14)
  - chairs, tables, houses, cars, lecture halls, pictures, streets, gardens


- Whenever the function of $X$ is to $Y$, $X$ and $Y$ are parts of a system where the system is in part defined by purposes, goals, and values generally.
- Whenever the function of $X$ is to $Y$, then $X$ is supposed to cause or otherwise result in $Y$.

Goal-directed Actions (My view)

- We can use things in order to achieve a certain goal.
- In some rule systems, there are things whose use in it is restricted by its rules.
  - Example in chess:
    - Chess pieces such as king, rook, queen, pawn, knight, and bishop.
- The assignment of function can be explained, when we explain what a rule system is.
Acceptance of a rule system
• A rule system is collectively accepted by $G$ iff all sentences in it are collectively believed or accepted by $G$.
• A normative proposition $p$ is collectively accepted by $G$ iff it is collectively believed by $G$ that proposition $p$ is accepted by all members of $G$.

G-institutional-facts
• The truth conditions of a G-institutional-statement depend on G-collective-beliefs.
• A G-institutional-fact is expressed by a corresponding true G-institutional-statement.
• G-institutional-facts are socially constructed, whereas physical facts are not.

Relations among Institutional Facts
• There are three cases for two groups $G_1$ and $G_2$:
  1. $G_1 \subseteq G_2$ (or $G_2 \subseteq G_1$);
  2. $G_1 \cap G_2 \neq \emptyset$;
  3. $G_1 \cap G_2 = \emptyset$.
Questions
  – $G_1 \subseteq G_2$ : Are all $G_2$-institutional facts also $G_1$-institutional facts?
  – $G_1 \cap G_2 \neq \emptyset$ : Are all $G_1$-institutional facts consistent with $G_2$-institutional facts?
G-declaration according to Nakayama (2004)

- A G-declaration is addressed to G-members and it expresses a speaker's desire for a G-collective-belief.
- A G-declaration can be successful only if it is stated by a person whose authority concerning the declared content is accepted by G.
- A G-declaration can create a G-institutional fact, because it can create G-collective-beliefs.

Importance of G-declaration

- A G-declaration can create G-institutional facts.
  - Introduction of legal systems
  - Nomination of ministers, a chairman, …
  - Control of meetings

Social Organizations

A thesis about the ontological status of social organizations

- Social organizations, such as states, companies, and universities, are four-dimensional fusions of individual objects.


1. A social organization G has a structure.
2. This structure is so formed that it enables the continuation of the existence of the social organization.
3. Any member of G knows that he belongs to G.
4. G collectively believes that G exists.
The requirement of collective belief is sometimes too strong
• Conditions for G-collective-belief are sometimes too strong, so that they are normally not satisfied by real situations.
• We need a more flexible notion for collectivity.
  – G-acceptance based on a (expert) group E

A recursive characterization of G-acceptance based on a (expert) group E
a) A proposition $p$ is accepted by $G$ based on group $E$, if proposition $p$ is collectively believed by $E$ and it is collectively believed by $G$ that $E$ is the expert group for the subject expressed by $p$.
b) A proposition $p$ is accepted by $G$ based on group $E$, if there is a group $F$ such that proposition $p$ is accepted by $E$ based on group $F$.

Putnam’s division of linguistic labor
• Putnam’s division of linguistic labor corresponds to an acceptance based on an expert group.

Putnam’s hypothesis of the division of linguistic labor (Putnam (1975) p. 228)
• Every linguistic community exemplifies the sort of division of linguistic labor just described:
  – that is, possesses at least some terms whose associated 'criteria' are known only to a subset of the speakers who acquire the terms, and whose use by the other speakers depends upon a structured cooperation between them and the speakers in the relevant subsets.
  • The subset of the speaker corresponds to an expert group in my description.

Consistency of G-acceptance
• Let $S(G)$ be the set of G-accepted sentences. Then, $S(G)$ should be consistent.
  – Otherwise, any sentence can be inferred from $S(G)$.
  – Suppose $G_1$ and $G_2$ are expert groups in $G$ ($G_1 \subseteq G$ and $G_2 \subseteq G$). If $G_1$ and $G_2$ have different views, then there is no G-accepted sentence with respect to the controversial issues.

Consistency of G-law-systems
• Law systems that are applicable to the organization $G$ should be consistent each other or it must be written in them how to resolve contradictions.
• In a modern society $G$, the correctness of the official procedure is often crucial for G-acceptance.
Meta-rules for G-acceptance

- In our modern society G, we have meta-rules that define when a proposal of rules is G-accepted.
  - Example for meta-rules for Japan-acceptance
    - Some meta-rules for Japan-acceptance is written in the Japanese constitution.
    - A Japanese law is Japan-accepted, if it is Diet-accepted.

Political Decision Group

- In a democratic system, it is often decided by a G-election, who belongs to a political decision group for G.
  - For example, members of the Diet.

Conclusion

Conclusion 1

- I pointed out some problems of Searle (1995) with respect to description of the social reality.
- I proposed the reason why a rule system can create new facts.
- I proposed a new interpretation of (G-)declaration and explained why a successful G-declaration can create institutional facts.
- I pointed out that we need an appropriate notion of G-acceptance-based-on-a-group, in order to explain the structure of social reality.

Conclusion 2

- I pointed out that it is crucial for an explanation of social reality to make it explicit who is involved in particular institutional facts and in a particular collective intentionality.
- The structure of social reality is far more complex than described in Searle (1995).