ELSEVIER

The cognitive and behavioral mediation of institutions: Towards an account of institutional actions

Action editor: Ron Sun

Luca Tummolini *, Cristiano Castelfranchi

University of Siena, Piazza San Francesco 1, 53100 Siena, Italy
Institute of Cognitive Sciences and Technologies (ISTC-CNR), Via San Martino della Battaglia 44, 00185 Rome, Italy

Abstract

The aim of this paper is to provide an analysis of institutional actions from the standpoint of cognitive science. The notion of *constitutive rules* have been proposed to describe the conceptual nature of institutions. In this paper it is extended to cover specific processes of 'recognition' that provide the agents with additional *artificial powers*. The power of doing an institutional action is considered as a special kind of artificial power. It is argued that institutional actions achieve their effects thanks to a *cognitive* and *behavioral* mediation of a collective of agents. Individual actions are *seen* and *treated as* (count as) institutional actions by the involved participants even if, in fact, institutional actions are collective actions. When human behavior becomes institutionalized, it acquires special *conventional powers* to bring about effects in the social world. A model of such conventional empowerment of an agent is proposed and is identified in a sort of collective permission. Finally it is argued that institutions are a specific kind of coordination artifacts. In particular, the importance of institutional roles as artifacts that assign conventional powers is investigated.
© 2006 Elsevier B.V. All rights reserved.

Keywords: Coordination; Institutions; Institutional actions; Power; Collective behavior; Multi-agent systems; Constitutive rules

1. Introduction

Institutions are usually conceived as normative systems that structure social interactions. It is especially in the economic literature that institutions have been scientifically approached by means of the game-theoretical apparatus to provide models of how institutions can evolve from the independent interactions of individual agents. A general property of economic models is to focus on institutions as the 'rules of the game' (North, 1990), the set of constraints that evolve (or are centrally issued) to regulate agents' interactions. Part of these rules are in the interest of the individual agents themselves (as in the case of coordination games, Lewis,

1969) while others are needed to solve cooperation dilemmas that, if left to individuals, would not be solved (as in the prisoner dilemma or in mixed coordination games).

While different ways of modeling the normative component characterize different disciplines, its centrality in the understanding what institutions are, is undisputed.

However it is part of a renewed interest in the foundations of institutions in social philosophy to stress also their intrinsic conceptual or constitutive nature (Searle, 1969, 1995; Tuomela, 2002). What is specific to institutions (as opposed to mere regulating conventions) is that they are also defined by constitutive rules (Rawls, 1955; Searle, 1969). These rules create a new level of activities by defining that "*X* counts as *Y* in context *C*" as in the case of "this piece of paper *counts as* 'money' in Europe". By regulating this new level, institutions constrain and influence the concrete practical actions of the agents.

* Corresponding author.
E-mail addresses: luca.tummolini@istc.cnr.it (L. Tummolini), cristiano.castelfranchi@istc.cnr.it (C. Castelfranchi).

For example, many economic models have been proposed to explain how the institution of money can evolve (see Hodgson, 2002 for a review). However these models assume that the agents are already acquainted with all the practices that will be regulated by the evolved institutions. In general, what is missing is that the most basic function of considering something as money, is precisely to enable the agents to do something new which is *paying, pricing, and saving* and whatever we *can* do inside the institution of money. Moreover, it is a characteristic of these institutional actions that have normative consequences, viz. if I have paid for this commodity, I have the ''right'' to claim its use (Searle, 1969).

As it is generally acknowledged, an institution is a solution to coordination problems of a collective, but what seems to be special in the case of institutions is that such coordination is obtained thanks to the *constitution* of a new level of actions that can be done. The coordination is mainly achieved with the creation of deontic 'enablements and requirements' that are the opportunities and constraints that influence the agents' interactions. In this paper, we will try to disentangle the cognitive and behavioral mediation of institutions. Institutions will be seen as a specific kind of 'coordination artifacts' that is man made products with the *function* of coordinating a collective of agents. Their peculiarity being that they achieve this result by means of deontic mediators that enable multi-agent actions. While we acknowledge the fundamental role of the deontic dimension, in this paper we are particularly interested in the *conceptual* one (the mediating role of conceptual schemas). Hence the institutionalization process will be considered as a specific kind of conceptualization. In agreement with Searle (1995), we will consider institutional actions (i.e., the action of 'paying') as prior to the institutional objects (i.e., 'money') and so we will provide an account of how this kind of actions are constituted. Our main thesis will be that institutional actions are always multi-agent (or collective) actions. Finally, we will provide an account of how an individual is empowered by the collectivity in executing an action which is a collective action (*conventional power*). Such empowerment, it will be argued, is due to a form of unintentional collective permission.

2. The cognitive nature of constitutive rules

Much of the contemporary philosophical debate on the nature of institutions has a declared ontological aim. It is claimed that institutional facts like 'being the president of Italy' or 'being married to Mary' exist in the world but are different in their ontological status from brute facts like 'being a mountain' or 'being a water molecule' (Smith & Searle, 2003).

Differently, our interest is not so much in the ontology of social reality (how social and institutional facts exist) but in modeling how institutions are constructed and conduct their affairs through the minds and the actions of the involved agents (how institutions work) (Conte &

Castelfranchi, 1995). The seminal work of John Searle is somewhere in the middle and, as a matter of fact, it has inspired authors across many disciplines. We agree with Searle that there is a 'primacy of the micro-level' where the individual agents *constitute* the institution by considering something *as* something else.

2.1. Constitutive rules as triadic relations

Rawls (1955) has been the first to introduce the distinction between two different conceptions of rules. The summative conception of rules refers to rules that emerge or are issued in order to regulate already existing actions. The practice conception, differently, relates to rules that create the possibility for a new action by creating a new description for the action. This second notion of rule has been properly named by Searle *constitutive* (Searle, 1969).

From the perspective of a cognitive scientist, rules of the kind "*X counts as Y* in *C*" seem to regulate a cognitive activity, viz. the proper application of a concept. In other words, a constitutive rule describes, albeit very abstractly, a 'recognition' process. Because such rules are used to describe the constitutive nature of institutions, the institutionalization process turns out to be a specific case of conceptualization of an entity in the world.

The application of a concept in fact can be represented in form of a rule that associates a specific set of stimuli ('something such and such') *X* with a linguistic label *Y*. This model however is too simplistic also for an abstract account because it does not properly identify the underlying cognitive mediation. The *Y* term in the relation collapses two different entities: the Cognitive Type[1] (CT) and its label. A more appropriate formula to express such a relation is that "*X, seen as* a token of a CT, counts as *Y*, in *C*" (see Fig. 1). *Counts as* relations are *triadic relations* where the set of stimuli *S* are interpreted through a conceptual schema or cognitive type CT, and such a schema can also be associated with a linguistic label.[2] The relation between the stimuli and the schema is a *token-type* relation.

2.2. 'Institutionalization' is also a kind of conceptualization

It is a possible mistake to treat counts as relations between two terms as a signification process between two

---

[1] We borrow from Eco (1997) the expression *Cognitive Type* to refer to the set of representations that characterize a specific type. As emphasized already by Johnson-Laird (1983) such representations can be of different formats, from images, to propositions, to sensorimotor ones.

[2] In our account, what really matters is not the *label* but the *concept*. It is the concept that gives meaning to the stimuli and we react to this meaning. One might claim that a label is necessary for building a concept. However this is another issue. The label is also necessary for having the concept more or less shared in a community and for the 'negotiation' process about our coordinated cognition. For a computational model of the reciprocal influence between conceptualization and labeling see Mirolli and Parisi (2005) and for the sharing of categories by means of label use and communication see Steels (2003).