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## **Role, Right and Rationality in the Business Process**

- 1 The Business Process and Bounded Rationality
- 2 Roles in the CSCW Systems and Groupware
- 3 Can Roles be Specified?
- 4 Bounded Rationality and Situated Action
- 5 Rights, Privileges, Powers and Immunities
- 6 References

### **Abstract**

"Role" is a significant theoretical concept for CSCW in general and for Business Process Reengineering in particular; it is closely connected with concepts of rights and duties on the one hand, and on the other hand with implicit and intuitive approaches to situated action. This paper explores some issues and ambiguities associated with the concept of role in CSCW, and applies the Hohfeldian critique of the concept of "right" to elucidate some problems that can arise in collaborative working across organisational boundaries.

### **1 The Business Process and Bounded Rationality**

"Business Process Reengineering" is gaining widespread recognition as the next phase in the application of Information Technology. The use of the term "business" is perhaps misleading in this context, as it has connotations that seem to restrict it to commercial activities; in the present paper we adopt the broader definition of "the business process" as "workflows, roles, acts and the incompleteness they lead to, which constitute expectations for further behaviour by participants." [14]

By this definition the business process embraces a broad range of professional, organisational and inter-organisational transactions.

The business process is enacted within a framework of *bounded rationality* (cf [13]). In other words, persons and organisations have limited attentional resources: they can only process a limited amount of information in a given time, and this leads them to adopt *satisficing* rather than optimising goals. For many organisational participants computer-mediated communication has exacerbated the attentional problem: information overload leads to a demand for systems that will present people selectively with those information objects and tools that they require to carry out their tasks, while protecting them from the complexity of "irrelevant" information. Such protection may take the form of mail filtering, of workflow engines or of the provision of a synchronous or asynchronous meeting space [20]. In designing, acquiring or implementing such systems, managers and information technologists make assumptions, whether explicit or implicit, about social relations in the workgroup and in its wider social context. Such assumptions are frequently embodied in the systems designer's approach to social roles.

## 2 Roles in CSCW Systems and Groupware

A CSCW system may recognise rather general social roles, or roles that are specifically task-related [23]. Task-related roles may be defined in nominal terms which could correspond to an organisational job-title or in activity-terms, as used for example in Role Activity Diagrams for process modelling [24].

General Social Roles	Task-specific Social Roles
<i>Task-leaders</i>	<i>Nominal</i>
Chairperson	Author / Scribe
Moderator	Reviewer / Commenter
Team-leader	Reader
Director	Timescale-watcher
Editor	Absence-coordinator
<i>Socioemotional leaders</i>	<i>Activity</i>
Facilitator	Outpatientting
Coordinator	Urgency assessing
Honest broker	Doctoring
<i>Mixed</i>	
Host	
Convenor	

Table 1: Roles identified in various CSCW studies and systems

Table 1 illustrates the great variety of role-names that have been used in various CSCW contexts hitherto (cf [6], pp. 40-42, 99-100, 103, 111-116, 121, 130-132; [12]; [22], pp. 17-18, 31, 150-152). In designing or selecting a CSCW system one may choose between a system that requires the formal allocation of roles to participants at the outset, or one that recognises that roles may be an emergent property of the social process. This may be illustrated by the contrast between two group editors, Quilt [11] and Grove (ELLIS et al, 1991). Quilt uses role information associated with each user, along with a "style" associated with the document when it is first created, to determine what actions a user can or cannot perform: this forces the explicit definition of roles and style at the beginning of collaboration. Grove on the other hand permits roles to emerge during the collaboration.

In favour of the pre-allocation of roles it may be argued that it helps to ensure that activities are neither neglected nor unnecessarily duplicated [15]. There are also cases where constraints on roles are considered an essential aspect of professional standards. Consider, for example, the field of Software Process Technology (cf [5]). If a Software Process Model is used to ensure conformity to quality standards, it will require that one person cannot be allocated both the role of originator and reviewer/inspector in respect of the same software module. It will therefore be a requirement on the Process Enactment Mechanism that certain roles should be formally assignable according to the defined rules of the quality assurance system (that is, in any valid, executable instantiation of the Process Model, certain roles must exist, there must be explicit binding of these roles to persons and these bindings are constrained by rules that protect the integrity of the process).

Other examples may be found in such fields as auditing and accountancy. SHARPLES [22] argues in favour of explicit allocation of leadership roles, citing evidence that "covert leaders have a negative effect on performance". However, problems arise where the system imposes a need to pre-allocate roles explicitly, in situations where effective business processes require flexibility and scope for implicit understandings: the most celebrated case of this is the user rejection of The Coordinator, in the organisation studied by [3].

### 3 Can Roles be Specified?

The process whereby social roles emerge through interaction may be dependent on the "richness" of the communication facilities provided. ROBINSON [19] argues that collaboration requires "double-level language" - a language for the task level at which the work is done, and a "cultural language" for talk about the process of doing the task. For synchronous collaboration, double-level language can be provided by the combination of audio or video links with textual or graphic communication. For asynchronous collaboration, as is required by many larger-scale business processes, a possible approach is to permit user reconfiguration of roles and structures. The COSMOS structured messaging system was intended to allow user reconfiguration of roles and communication patterns, but does not appear to have met this goal (KIRKWOOD et al., 1993). An apparently more successful approach has been that of the Conversation Builder [10] which combines the insights of Language Action Theory (alias "Speech Act Theory"), on which Coordinator and COSMOS were built, with the insight that all action is "situated" (cf [21]; and for the logical theory of situations, see [1]; [2]). The situated nature of work activities raises the problem how to trade off between active support and flexibility. Several studies have shown the importance of the artefact in situated action ([7]; [9]; [21]). In a CSCW system the concrete artefactual representation can have a significant effect upon the participants' capability to manage their interaction effectively. Thus in one of our studies, a computer-mediated discussion collapsed in large part because one participant adopted a role - seminar leader - to which he was accustomed in face-to-face discussions, without having the artefact - the whiteboard - which would normally support this interactive style, or the rich media of communication available in the face-to-face setting which would have constituted the cultural language for his implicit negotiation of this role [16].

### 4 Bounded Rationality and Situated Action

The difficulty which people have in making roles explicit is in part a function of the *bounded rationality* which we identified above as an important constraint on the enactment of the business process. In the second edition of *Organisations* MARCH & SIMON [13] recognise the distinction between two logics of action which they call "the logic of consequences" and "the logic of appropriateness" They describe this second logic of action as follows:

"Actions are chosen by recognising a situation as being of a familiar, frequently encountered, type, and matching the recognised situation to a set of rules ...

The logic of appropriateness is linked to conceptions of experience, roles, intuition and expert knowledge... ([13], p. 8)"

"Organisations are collections of roles and identities, assemblages of rules by which appropriate behaviour is paired with recognised situations." ([13], p. 12)

The intuitive character of the relationship between situation, role and appropriate action is a source of difficulty when designing systems that will provide a technical implementation of the cultural-level language. It is also a motive for user resistance to systems assuming such a work-directive role (as in the case of The Coordinator cited above). Bounded rationality means that people do not have the cognitive resources necessary to think through all the possible consequences of formal role assignments before initiating a collaboration. However, problems also arise with CSCW systems when the implicitly-appropriate behaviour for the role and situation has unintended consequences that seem to infringe the perceived "rights" of participants.

## **5 Rights, Privileges, Powers and Immunities**

Many CSCW systems approach roles purely in terms of the permitted actions that can be performed on information objects. In this context, various terms are used, such as "rights", "privileges" and "permissions". The possible actions may or may not include the ability to affect the status of other participants. The following case illustrates some of the problems associated with implicit understandings of the rights associated with collaborative roles.

We previously reported a failure in a decision-making VAXNotes conference (cf [13], pp. 39-40; also [18], pp. 34-36), which led to a change of working practice involving more active moderation of this kind of conference. In a subsequent phase of the study, the introduction of email-based remote services linked to the online VAXNotes conference led to new problems. The moderator of a policy conference adopted the active moderation strategy: the policy team worked in phases, reporting to a board. Once the first report had been sent to the board, much ephemeral matter was cleared out of the conference by the moderator and moved to an archive file, so that during the second phase the conference would consist of a structure of issues that remained to be addressed (cf [17]). In VAXNotes, material is organised into the structure: Note > Topic >

Conference. The system allocates each Note a number which associates it with a Topic (e.g. 12.3 is the 3rd reply to the headnote of Topic 12; 12.0 is the headnote itself introducing topic 12). Some members of the policy team participated in the conference by logging in and running VAXNotes. Others opted to use the remote services, whereby notes entered into the VAXNotes conference would automatically be emailed to their mailbox on another machine, and replies sent by email would be automatically entered in the conference under the appropriate Topic as determined from the email Subject-line. A remote user employed mail-filtering software to maintain the Notes in an appropriate structure in his local filestore using these allocated Note-numbers. When the moderator deleted ephemeral and non-current material from the conference, VAXNotes began to reuse note and topic numbers, with awkward consequences for the remote user.

In this case, then, we have a conflict between the rights implicitly understood to inhere in the different roles. The moderator perceived himself as having the right and perhaps even the duty to organise and reorganise the conference material so as to reflect the current state of the group task. The remote user perceived himself as having the right to control his own information store using the tools he selected to do so. The simple concept of "rights" is perhaps inadequate to handle the issues involved here. Some guidance as to relevant distinctions may be gained from the Hohfeldian analysis of legal relations (although it must be emphasised that HOHFELD himself was purely concerned with legal relations and not with the broader social obligations and expectations which come into play within the business process). HOHFELD [8] pointed out the confusions that arise from the use of the term "right" in many different senses. Table 2 displays succinctly what HOHFELD termed the "jural opposites": for example, the opposite of a Right is No-right but the opposite of a Privilege is a Duty. Table 3 displays the same concepts as "jural correlates". If I have a "right", someone else has a corresponding "duty"; but if I have a "privilege" then someone else has "no-right" to prevent me exercising that privilege.

Right	No-right
Privilege	Duty
Power	Disability
Immunity	Liability

*Table 2: HOHFELD's jural opposites*

Right	Duty
Privilege	No-right
Power	Liability
Immunity	Disability

Table 3: HOHFELD's *jural correlates*

Of particular interest for our present purposes is HOHFELD's concept of a "power": this is the capacity to change the status of another person in some way. So, for example, if I make you an offer in the course of business then you have a power (by accepting the offer) to bind me contractually; and I have a correlative liability to be bound by your acceptance. In a conferencing system such as VAXNotes, a moderator is conventionally said to have "privileges" (which is what enables him to add or remove members, extend the same "privileges" to another user, delete or move conference contributions, etc). However, in Hohfeldian terms we can see that these "privileges" are not all of the same type: the ability to add or delete members, or to appoint another moderator, is a "power" to change the status of another, while the ability to delete or move any text in the conference is a privilege, like the privilege of walking through one's own field. Others, including the system, have "no-right" to stop the moderator from deleting or moving conference contents. On the other hand, the moderator cannot alter another member's contributions: he can only delete them or move them, or he could copy them and submit an edited version under his own name. Thus a member has an "immunity" from having his contributions altered, and the system enforces on the moderator a "disability" that protects the member's immunity.

So far so good: the scope of the moderator's powers and privileges is clearly defined within the VAXNotes system. But once we move to remote collaboration the problems arise. The moderator's legitimate exercise of his privileges within the VAXNotes system has unintended consequences for the remote user. The remote user will at least claim a "privilege" to organise his own filestore as he likes.

Consequently to him the moderator has "no-right" to do actions which will cause his filestore to be altered. He might claim more strongly that he has an "immunity" from having his filestore altered against his will, and consequently the moderator is under a "disability" that should constrain him from

reorganising the conference materials. The moderator, on the other hand, can claim that the remote user has "no-right" to prevent his filestore being changed, in virtue of his commitment to participate remotely in the group task which requires the exercise of privileges by the moderator. Clearly the introduction of email-based remote services, while a useful extension of conferencing in many respects, also brings with it problems arising from the lack of a common overall model of deontic relations associated with collaborative roles. While implicit understandings enable much collaborative work to proceed smoothly, they always carry the risk of a mismatch between assumed rights and duties associated with different collaborative roles; there is therefore an inescapable need to provide users with the means to resolve such ambiguities about commitments and expectations, by alerting members to the possibilities of conflict before they arise, and by supporting them in negotiating and implementing solutions. We do not have any magical prescription for resolving this set of issues. The most that we can say, in the light of our analysis, is that designers should be conscious that bounded rationality is a characteristic of human and organizational behaviour, which inevitably limits the extent to which users can predefine roles in fluid and ambiguous task-environments; that in many cases it will be necessary to support provisional or late binding of persons to roles; that roles cannot be reduced to bundles of rights defined in relation to information objects; that "right" is in any case a multifaceted concept (as shown by the Hohfeldian analysis); and that since much of organizational action is driven by the "logic of appropriateness" the "user-model" is often more adequately conceived in terms of situations than in terms of rights and rational consequentialist decision processes.

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