The Organization of Reconciliation in Distributed Work

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ABSTRACT

Highly distributed, loosely organized, independent, informal work organizations sometimes manage both joint efforts and collective welfare at least as well as centralized bureaucracies do. This aligns closely with the view that markets are superior to bureaucracies as ways of organizing both joint efforts and collective welfare. There are other forms of work organization between perfect markets and pure bureaucracies that aggregate and restrict individual commitments into a collective structure, regulate resource flows among participants, and enforce some form of distributive justice, all without centralized authority.

This paper discusses four such intermediates and suggests some of the research needed to bring out their implications for computer support. The four are: common pool resources, cross-cutting ties among networks of affiliation, patronage systems, and participant review.

KEYWORDS

Coordination, reconciliation mechanisms, distributed collective practices, patronage, social networks, common resource pools, peer review.

VISION

Distributed collective tasks face a complex problem. In order to ensure that the work is done properly, the various sub-tasks must be coordinated. As with any kind of complex work, problems of coordination (including procedural disagreements) occasionally arise. Since the coordination takes place across organizational, territorial, and other boundaries, some form of **reconciliation mechanism** (RM) which does not depend upon a centralized management must be available. Such a mechanism must allow for some minimum standard of efficiency in resource consumption, efficacy in achieving goals, and equity in resolving differences among participants. In doing so, the mechanism must be able to: (1) resolve disputes; (2) aggregate individual preferences into collective commitments; and (3) provide some form of distributive justice by regulating resource flows among participants.

Traditionally, models of arrangements for reconciliation have focused on either bureaucracies (which provide a centralized authority) or markets (which provide efficiency but no means of dispute settlement). Recent work in institutional economics, e.g., [6, 7] has explored the trade-offs between markets and bureaucracies as a function of the costs of information. This important and useful tradition is focused on efficiency, and allows for only two kinds of organization, markets and bureaucracies. It does not provide ways for considering the organization of efficacy and fairness. Something more is required.

There are intermediate forms of organization which allow reconciliation without requiring a centralized control system on the one hand, or abandonment by participants on the other. Many such arrangements are possible. Discovering and classifying them is a significant research problem. Here, I mention four kinds of RM: Common resource pools, cross-cutting ties among networks of affiliation, patronage systems, and participant review.

Common resource pools

Common resource pools are associations that regulate access to common goods. Members may help themselves to a common good according to some set of rules, while others may not [3, 4]. Access to exhaustible resources such as fishery stocks is often organized in this fashion. This kind of arrangement is particularly useful when overuse would destroy the common resource, but regulated use will not.

Pools depend on timely and accurate measurement of the resources taken and of remaining extractable stocks. Arrangements which improve these measurements make pools more effective by allowing close comparison of the sustainable and actual extraction rates. They make pools fairer by improving detection of cheating.

Cross-cutting ties among networks of affiliation

People typically participate in several different networks of relationships: they can be simultaneously friends, coworkers, relatives, neighbors, professional colleagues, and so on. These overlapping networks create multiple communication and influence paths among participants. When problems arise, multiple kinds of relationship can be

invoked to address the issue. For example, common friends or kin may be asked to mediate disputes among co-workers.

Such cross-cutting ties provide many opportunities to short circuit the expected course of events in both markets and bureaucracies. For example, friends and relatives may obtain inside information or reduced prices or early access to significant resources such as job postings. The use of such connections also provides a powerful mechanism for containing and quelling disputes, even those that cross organizational boundaries.

Patronage systems

A patronage system is comprised of personal relations between a few relatively powerful people and their relatively weak clients [1]. Clients form a retinue or train which enhances the social position of the patron, and which provides a pool of resources that the patron can draw on. The patron provides access to wealth, glory, or other scarce goods, and perhaps some kind of political protection as well. The prestige hierarchies of the professions are good examples of patronage systems that cut across organizational lines. Raymond [5, p.158] suggests that the open source software movement is organized in part as a patronage system.

Patronage systems work with (and against) other reconciliation mechanisms as well. A market with a patronage system overlaid can be distorted by "insider" trading as participants pass private information to one another, but retain it within the train. A similar kind of "cronyism" works in bureaucracies as well. Someone in the Human Resources Department, for example, can let friends know about a new job listing before it is officially posted. Many patronage systems operate quite legitimately and publicly; personal sponsorship of younger professionals by more established ones is a good example.

Patronage systems may be ineffective or unfair because there's no way to force collaboration among competing patronage systems. They also tend toward secrecy vis-à-vis outsiders. Working with (or in) them is highly dependent on knowledge of particular personal relationships and hence their history.

It isn't clear how increasingly distributed nature of work affects patronage systems; perhaps rapid communication makes it easier to make and enforce threats and punish turncoats.

Participant Review

Participant review is another form of organization which has been receiving increasing attention. Peer review of academic publications is a familiar example. Elections can be conceptualized as a specialized case. The basic procedure is to have people rate performances, policies, or other people on some set of criteria. Ratings can then be aggregated to provide evaluative scores, which are then used to guide further collective action. Many different aggregation rules are possible, such as varying the weights and/or values of the ratings. Participant review seeks to capture some of the benefits of distributed choice provided by market mechanisms without suffering their drawbacks. It differs from markets because it does not use money (or some other store of value) as a medium of exchange. Merit accumulated in one setting cannot, in general, be transferred to other settings in any direct way.

In order to function as a reconciliation mechanism, participant review must guide the actions of a collective, not just the decisions of individuals. Thus, e.g., peer review of scholarly papers and proposals determines whether or not a project is funded or published. Popularity by itself does not create an RM. If one alternative becomes overwhelmingly successful, competitors may be eliminated, or the providers of joint goods and services might support only the most popular formats.

Like markets, participant review models assume independent judgment, and are thus sensitive to the biasing effects of cross-cutting ties and patronage systems.

WORKSHOP ISSUES

Each kind of reconciliation mechanism presents different opportunities for (and constraints on) computing systems to improve the efficiency, efficacy, and fairness of the work supported.

Reconciliation mechanisms have predictable strengths and weaknesses. For example, improved information technology can dramatically reduce costs of coordination, making every kind of arrangement more efficient. But such improvements also enable increased surveillance, and are cheaper and more effective as well. This can lead to problems of privacy and security. Bureaucracies are better able to take advantage (or abuse) this increased capacity than other forms of organization. What's clear is that the changes enabled by any technological innovation may interact with the different reconciliation mechanisms in many complex ways, often improving and reducing capacities in different parts of the system simultaneously.

This difficulty of analysis is worsened because real task organizations are never pure examples of a single RM. Rather, actual organizations are combinations of multiple RMs: e.g., one or more formal organizations, a number of cross-cutting networks, several overlapping patronage systems, and one or more arrangements for participant review.

These problems suggest the themes of two complementary lines of research: (1) How do the RMs use and abuse information? (2) How do new computing capacities enable or retard the use of each of the different RMs, their organization, and their relationships?

The core difficulty for the first theme is that multiple participants define proper use (and hence, abuse) in different ways. This results in disputes over due process, which is turn must be resolved by reconciliation. This

recursive character of information use in reconciliation is one of the most significant and technically challenging aspects of CSCW research.

The modular character of recent computing technologies make important challenges for the second theme. Markup languages, protocols such as RSS, and other innovations support standardized ways of creating special-purpose interfaces among tasks in local situations. The effect is to make it possible to connect almost any kind of activity with any other. This in turn raises many questions about the role of computing in coordinating tasks connected in such a localized, flexible manner [2].

CURRENT RESEARCH DIRECTION

My current research focuses on the organization of distributed work, especially the influences of technical innovation on research traditions and their institutional settings. I'm looking toward integrating conceptual approaches from economics and political science with sociological treatments of work, professions and knowledge. The rapidity and breadth of changes associated with computing makes CSCW an especially good place to do this. Conversations with Kjeld Schmidt and Chris Halverson have encouraged an approach sketched in [2]

BIO

I'm a sociologist interested in the organization of work, the sociology of knowledge, the sociology of research, and related areas (especially history and philosophy of science). I concentrate on the history of evolutionary biology and natural history, on computing work, and on research methods, but I wander into other topics a lot. I'm very much of the Chicago school of sociology, and a Pragmatist philosophically. I became interested in the organization of computing and computing work when I met Rob Kling in 1973.

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REFERENCES

1. Eisenstadt, S. N., and L. Roniger. 1984. Patrons, Clients, and Friends: Interpersonal Relations and the Structure of Trust in Society. New York: Cambridge University Press.

2. Gerson, E.M. In Press. "Reach, bracket, and the limits of rationalized coordination: Some challenges for CSCW". To appear in M. S. Ackerman, C. Halverson, T. Erickson, and W. A. Kellogg (Eds.), *Resources, Co-Evolution, and Artifacts: Theory in CSCW*. Available at http://tremont.typepad.com/technical_work.

3. Ostrom, E. Governing the Commons: The Evolution of Institutions for Collective Action. New York: Cambridge University Press, 1990.

4. Ostrom, E., R. Gardner, and J. Walker. Rules, Games, and Common-Pool Resources. Ann Arbor: University of Michigan Press, 1994.

5. Raymond, E. S. 2001. The Cathedral and the Bazaar: Musings on Linux and Open Source by an Accidental Revolutionary. Cambridge, MA: O'Reilly.

6. Williamson, O. E. 1975. Markets and Hierarchies. New York: Free Press.

7. Williamson, O. E. 1985. The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting. New York: Free Press.