COMPUTER SUPPORTED COOPERATIVE WORK

Steve Easterbrook(Ed.)

CSCW: Cooperation or Conflict?

CSCW：协同与冲突

Springer-Verlag
世界图书出版公司

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69 King's Road
Haslemere, Surrey GU27 2QG, UK

ISBN 3-540-19755-9 Springer-Verlag Berlin Heidelberg New York
ISBN 0-387-19755-9 Springer-Verlag New York Berlin Heidelberg

British Library Cataloguing in Publication Data
CSCW: Cooperation or Conflict?. – (Computer Supported Cooperative Work Series)
I. Easterbrook, Steven Michael
II. Series
004.01
ISBN 3-540-19755-9

Library of Congress Cataloging-in-Publication Data
CSCW : cooperation or conflict? / S.M. Easterbrook, ed.
p. cm.. – (Computer supported cooperative work)
Includes bibliographical references and indexes.
ISBN 3-540-19755-9 (Berlin : acid-free paper). – ISBN 0-387-19755-9 (New York : acid-free paper)
1. Work groups–Data processing. 2. Microcomputer workstations.
I. Easterbrook, S.M. (Steven Michael), 1965– . II. Series.
HD66.C77 1992
306.3'6–dc20 92-202405

Printed in Germany

Preface

The word *cooperative* in computer supported cooperative work (CSCW) is frequently taken for granted. It is assumed that people who use a CSCW system want to cooperate and can actually do so without difficulty. This assumption ignores the possibility of conflict, and hence the management and resolution of conflict are not supported. In some cases, a CSCW environment might not even allow conflicts to be articulated, causing misunderstanding and frustration.

This book is the result of a one-day meeting held at the Department of Trade and Industry (DTI) in London, on 23rd October 1991. The aim of the meeting was to arrive at an understanding of what it is that people actually do when they say they are cooperating, and in particular, an understanding of the role of conflict. A range of views and experiences of the role of conflict in collaborative work were presented at the meeting, covering both examination of conflict in related disciplines and case studies of conflict in real situations. The chapters of this book are fuller accounts of the work presented during the meeting. Each provides a different view of the nature of conflict in collaborative work, and each draws out, to some degree, the implications for the design of CSCW systems.

As the remainder of the book will show, our understanding of conflict is still at an early stage. In general, the designers of the first generation of CSCW systems have assumed that the social conventions that allow us to work together will carry over to a new medium. For many of these systems, this assumption makes sense. It is not yet clear how these systems will affect working practices; it is not even clear how they might be used. Indeed, CSCW is often presented as an enabling technology: like the telephone, it provides a service, which may in turn offer new opportunities for collaborative work where none existed before. In this sense, CSCW is a solution looking for a problem.

As CSCW matures, the driving force is changing. As well as being an investigation into the opportunities offered by the

technology, CSCW is becoming a study of the nature of collaborative work. As with any new technology, success and acceptance will depend on producing systems that address real needs. Hence, those needs must be understood so that the available technologies can be matched to them.

Collaborative work is a complex activity involving an intricate pattern of interactions, governed by social norms and contingencies. Collaboration is not always easy, even between consenting participants, as it requires effort to maintain the relationship between participants, to negotiate the nature of the common task, and to make progress on this task. Conflict seems to be an inevitable part of this activity, sometimes reducing stagnation and promoting change, while at other times disrupting successful cooperation.

This book is the first to examine conflict from a CSCW perspective. As a pioneer in the field, it offers a unique glimpse at current research into the area, and establishes the importance of the issue. The field is still young, and the picture may seem rather fragmented. In many ways this is to be expected: it is hard to pin down a precise meaning for the term "conflict", and it is equally hard to isolate and study the conditions that shape conflict from their social and organizational settings. Rather than providing a single, unified view of conflict, the book presents a number of separate viewpoints. Each sheds light on some particular aspects of the phenomenon, and each adds to our understanding.

This multiplicity of views is itself typical of conflict in collaborative work: there are clearly advantages in the richness offered by these alternative conceptions of the issues, but reconciling these conceptions is hard, if not impossible. A reconciliation that accommodates all the detail and subtlety of each view is likely to get bogged down in the morass of inconsistencies; while any consistent summary may be so generalized as to be vacuous. For this reason, I will not attempt to distil any definitive statements about the nature of conflict: if I liken the viewpoints to pieces of a jigsaw, then there are still many pieces missing, and forcing the existing pieces to fit together would require me to distort them. Instead, I will let each chapter speak for itself.

I have attempted to organize the chapters to form a progression, starting with a literature survey, followed by examinations of conflict situations and analytical techniques, through to experimental work with CSCW systems. Some of the chapters fall into more than one of these categories, and to some extent, all of them provide theoretical frameworks for the study of conflict.

Chapter 1 introduces the book, with an extensive survey of the literature on conflict, drawing on areas such as small group behaviour, organizational psychology, bargaining, negotiation and game theory. The survey is presented using a series of assertions about conflict in collaborative work, to challenge common misconceptions and assumptions. In this way, the chapter provides both a summary of important findings, and pointers to the literature for more information. Although it is a rather long chapter, the assertions can be read in isolation from one another, and the cross-referencing makes it more of a hypertext to explore, rather than a straight read. The chapter ends with an analysis of assumptions made about conflict in existing CSCW systems.

The next three chapters focus on conflict in specific areas: in the systems design process, in scientific research and in small group planning. Chapter 2 treats user resistance as symptomatic of conflicts in the process of information system design. In surveying a number of research paradigms in information systems research, Wastell concludes that systems design is a complex, "protean" process, in which conflict is endemic. The common prescription for user resistance, that of participative design, fails as a panacea, as it is too simplistic.

In Chapter 3, Susan Leigh Star discusses how the scientific community manages to cooperate, even in the absence of common perspectives and common languages. Scientific work is by its very nature heterogeneous: scientists use different methods of analysis and abstraction, have different goals, and have different audiences to satisfy. One way in which cooperation is achieved is through what Star terms "boundary objects". These are objects that are both plastic enough to be adaptable to local contingencies, and coherent enough not to lose their identity through such adaption. A typology of such objects is presented.

The use of conflict as a mechanism for cognitive change is the subject of Chapter 4. Joiner presents a model of inter-individual conflict based on discourse analysis, identifying focus as a major issue. Differences in focus lead to conflict, and the model distinguishes three areas in which conflict may occur: dialogue focus, task focus and task representation. The latter two may lead to learning, as the participants attempt to resolve their differences. The model has implications for the role of conflict in computer supported cooperative learning (CSCL) environments.

Chapters 5 and 6 offer two different analytic techniques for identifying conflict in organizations, both based on concepts from organization theory. Chapter 5, by Hutchison and Rosenberg, begins with observations of conflicts arising from the

introduction of expert system technology into organizations, and provides an analysis of these conflicts. They examine the overt and covert structures of organizations, and use systemic nets as an analytical tool. These nets can be annotated to expose the covert structure, and hence reveal possible conflicts.

An alternative analysis of organizations is offered in Chapter 6, which uses stratified systems theory to examine design work in the construction industry. By dividing the work into a number of levels according to the conceptual sophistication of the tasks, conflicts can be identified in the interactions between the levels. Thomas and Riddick make the important point that conflict should not be topicalized, but is part of the nature of work. A fuller understanding of the nature of work and the nature of organizations is needed before we can build better CSCW systems.

The final two chapters discuss experimental CSCW systems, through which conflicts in collaborative work are explored. In Chapter 7, Hughes describes an experiment with shared workspaces, identifying mutual awareness as a necessity for coordinated actions and coordinated views. In Chapter 8, Condon points out that without clear cues about such matters as ownership of information, attempts to resolve conflicts between participants only lead to conflicts between people and the system. Hence the frustrated cry: "The computer won't let me!"

Finally, although the work presented in this book is of great importance to CSCW, the implications for the design of CSCW systems are still emerging. This book is only the beginning: a first step towards understanding how conflict arises and is handled in collaborative work. Although we may further this study with experimental systems, the design of real systems based on sound principles is some way off. At a subsequent workshop we plan to sketch out some of those principles; in the meantime, this book provides many clues about what those principles would have to cover.

Brighton
January 1992

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Chapter 1

A Survey of Empirical Studies of Conflict

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1.1 Introduction

Conflict is a common phenomenon in interactions both between individuals, and between groups of individuals. As computer-supported cooperative work (CSCW) is concerned with the design of systems to support such interactions, an examination of conflict, and the various ways of dealing with it, would clearly be of benefit. This chapter surveys the literature that is most relevant to the CSCW community, covering many disciplines that have addressed particular aspects of conflict.

The chapter is organized around a series of assertions, representing both commonly held beliefs about conflict, and hypotheses and theories drawn from the literature. In many cases no definitive statement can be made about the truth or falsity of an assertion: the empirical evidence – both supporting and opposing – is examined, and pointers are provided to further discussion in the literature. One advantage of organizing the survey in this way is that it need not be read in order. Each assertion forms a self-contained essay, with cross-references to related assertions.

Hence, treat the chapter as a resource to be dipped into rather than read in sequence. This introduction sets the scene by defining conflict, and providing a rationale for studying conflict in relation to CSCW. The assertions are presented in Section 1.2, and form the main body of the chapter. Finally, Section 1.3 relates the assertions to current work on CSCW systems.

1.1.1 Relevance to CSCW

Research in CSCW embraces disciplines such as human psychology and social science. Unfortunately, there may be good reasons why the results of

work in these areas cannot be applied to CSCW: they might not provide appropriate answers; they might not even tackle the kinds of question asked by designers of CSCW systems. These problems are compounded because researchers in CSCW are unlikely to have a background in all the fields that might provide relevant results, making access to the literature difficult.

This chapter attempts to bridge the gap for one particular topic, by providing a guide to the literature on conflict. Rather than simply surveying the relevant disciplines, the literature is presented in relation to a series of assertions representing beliefs about conflict. This format serves both as a pointer into the literature, and to provide (partial) answers to questions which may arise in the development of CSCW. We also hope to challenge some myths which otherwise may become embedded in implemented systems, as underlying assumptions about the nature of conflict in collaborative work.

In attempting to justify the relevance to CSCW of an examination of conflict, one could equally well ask why it should not be relevant. CSCW is concerned with enabling people to work together. Whether or not conflict is inherent in collaborative work, and whether or not conflict is detrimental to collaboration, it is indisputable that conflicts sometimes develop between people engaged in collaborative activities. If CSCW is about facilitating working together, it must be built on an understanding of collaborative work. This must include an understanding of how collaboration may break down, and how collaborative work can continue even in the presence of conflict. Handling conflict is one of the factors that determines whether a group of people can work together successfully.

We believe that the question of conflict between members of a group is highly relevant to any organization of group work. To assume absence of conflicts is naive. Inherent differences between individuals' experiences, personalities and commitment make the *potential* for conflict inherent to any group of people.

A CSCW system or other such technology necessarily influences styles of cooperation, by making some things easier and other things harder to do, or by changing or reinforcing power relationships and patterns of interaction between collaborators. This is the case even if the designers did not deliberately set out to influence styles of cooperation. If designers ignore issues of conflict in the explicit part of the design, then their underlying assumptions about conflict, or its absence, become embedded in the system. These assumptions may influence the style of cooperation in unplanned ways, for instance by restricting the means that collaborators have of dealing with conflict.

It is clear then, that any assumptions made about conflict in the design of CSCW systems need to be made explicit. Once made explicit, the assumptions can be validated against an understanding of the nature of conflict, including the causes and development of conflict, the expression

(or lack of expression) of conflict, and the potential for resolution. We suggest that such an understanding can best be gained by building on work already done on the subject, as described in the literature.

1.1.2 Perspectives on Conflict

1.1.2.1 Definitions of Conflict

A fundamental aspect of collaborative work is that individuals are not identical, and will approach the same task with differences in their expectations, goals and preferred styles of working. They will have different amounts of time to commit to the resolution of a problem, and even different notions of what the problem is. These differences will at times lead to conflict.

It is easy to cite situations in which most people would agree that there is a conflict (for example, a strike, a lawsuit, a war). It is not so easy to define conflict. When it comes to what exactly constitutes conflict in the general sense, there are many different views. Pondy (1967) points out that the word "conflict" has been used in the literature to describe variously antecedent conditions of conflictual behaviour, affective states of individuals, cognitive states of individuals, and various types of conflictful behaviour. Fink (1968) notes that the many different uses of the term "conflict" in the literature reflect the many different conceptual frameworks for studying conflict. Much of Fink's paper is devoted to the terminological and conceptual confusion surrounding the study of social conflict, from which he concludes that "scientific knowledge about social conflict has not yet moved to a level of analytical precision superior to that of common sense" (p. 430). A plethora of terms in common usage are cited in support of this point, none of which have precise definitions: conflict, competition, tensions, disputes, opposition, antagonism, quarrel, disagreement, controversy, violence, conflict resolution, mode of resolution.

In the past, some authors have used the term "conflict" in specific ways, for example as the opposite to "cooperation" (cf. the title of this book), as the opposite to "competition" (Mack 1965), or even as a particular species of struggle (Coser 1956). In contrast, others advocate use of the term "conflict" in a more general sense: according to Dahrendorf (1959) "All relations between sets of individuals that involve an incompatible difference of objective [are] relations of social conflict" (p. 135).

More recent views seem to agree that a broad definition has the advantage of subsuming a range of phenomena from psychological antagonism through to overt struggle. For example, Putnam and Poole (1987) give the following definition: "the interaction of interdependent people who perceive opposition of goals, aims, and values, and who see

the other party as potentially interfering with the realization of these goals ... [This] definition highlights three general characteristics of conflict: interaction, interdependence, and incompatible goals" (p. 552). Thus, although there is no consensus on the definition of conflict, the preferred view seems to be that conflict should be defined as broadly as possible.

In this chapter, we adopt this broader definition of conflict. This avoids the problem of imposing an arbitrary division, in that any interference or potential interference is treated as conflict, no matter how the parties deal with it. Using this definition, conflict is not the opposite of cooperation, but a phenomenon that may arise whether people are cooperating or not. Successful cooperation depends on how the conflicts are handled.

1.1.2.2 Classifications of Conflict

Given such a broad view of what may constitute conflict, it is useful to distinguish different types of conflict, so that analytical study becomes tractable. A number of different survey papers have been published, each providing its own classification scheme. Some concentrate on the stages of a conflict, others on structural or affective aspects, or on the outcome.

Pondy (1967) identifies three conceptual models to deal with the major classes of conflict in formal organizations:

1. Bargaining model: conflict among interest groups which are in competition for scarce resources.
2. Bureaucratic model: conflicts between a superior and a subordinate, or along any vertical dimension in the organizational hierarchy.
3. Systems model: conflict among parties in a lateral or functional relationship, and in particular, the problems of coordination.

Pondy's model of the development of conflict episodes is described further under Assertion L (see p. 30).

Fink's survey provides a number of different classifications used in the study of social conflict (Fink 1968). For example, he cites an eighteen-level classification derived from Chase (1951), which begins with personal quarrels, family versus family, and feuds between clans, passes through racial and religious conflicts, and culminates with cultural conflicts, cold war, and East versus West. He compares this with similar classifications, which distinguish fewer levels, and also with Dahrendorf (1959), who provides a two-dimensional classification, with the social unit (roles, groups, sectors, societies and nations) on one axis and structural relationship (equal versus equal, superordinate versus subordinate, whole versus part) on the other (see Fig. 1.1). Fink populates this scheme with examples of each of the fifteen combinations, and then groups these fifteen into six main types: role conflicts, competition (between equal groups or equal sectors), proportion struggle (between equal societies), class conflicts (between