Changing forms of organizing:

Dualities in using remote collaboration technologies in film production *

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1. Ian Palmer
University of Technology, Sydney
School of Management
PO Box 123
Broadway, NSW 2007
Australia
+61-2-95143606 (ph)
+61-2-95143602 (fax)
ian.palmer@uts.edu.au

2. Richard Dunford
Macquarie University
Macquarie Graduate School of Management
Sydney, NSW 2109
Australia

+61-2-98509016 (ph)
+61-2-98509022 (fax)
richard.dunford@mq.edu.au

3. Thekla Rura-Polley
University of Technology, Sydney
School of Management
PO Box 123
Broadway, NSW 2007
Australia
+61-2-95143193 (ph)
+61-2-95143602 (fax)
thekla.rura.polley@uts.edu.au

4. Ellen Baker
University of Technology, Sydney
School of Management
PO Box 123
Broadway, NSW 2007
Australia
+61-2-95143191 (ph)
+61-2-95143602 (fax)
ellen.baker@uts.edu.au

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Abstract

A common argument is that organizations should adopt new organizational practices, such as collaboration, in order to respond to the hyper-competitive business environment. We take issue with an assumption underlying this argument that such adoption generally entails the replacement of traditional practices. We suggest, instead, that managers are more likely to be managing simultaneously both new *and* old organizational practices. We explore our position through an investigation of the use of remote collaboration technologies in film production. In our study of US, UK and Australian film production houses we identify seven organizational dualities which characterize remote collaborations: creative work/routines, freedom/constraint, trust/control, artistic excellence/cost effectiveness, collaboration/competition, emotional/rational and closeness/remoteness. One side of each relationship represents organizational practices commonly associated with traditional forms of organizing, while the other represents those practices commonly associated with new forms of organizing. The coexistence of these dualities adds support to our position that new organizational forms are not replacing traditional forms but rather co-exist with, and become incorporated into, remolded traditional forms.

Key Words: *Changing Organizational Forms, Technology, Collaboration, Film Production*

A common argument in the organization theory literature is that organizations need to change by adopting new organizational practices in order to respond to the hyper-competitive business environment (Daft & Lewin, 1993; D'Aveni, 1994). This argument portrays the business environment as having moved away from being a relatively stable set of conditions to one characterized by fast changing, highly competitive conditions (e.g. D'Aveni, 1994). Labels such as discontinuous (Nadler, Shaw, Walton & Associates, 1995), postbureaucratic (Quinn, 1992; Thompson, 1993), and chaotic (Jenner, 1994) have been used to describe the current period which for some is associated with the emergence of a postmodern organizational paradigm (Jenner, 1994; Clegg, 1994).

Organization structure is treated as a key strategic mechanism for responding to such changes (Daft & Lewin, 1993). Traditional structures have been characterized as ones that emphasized issues such as size, role clarity, formalization, and specialization. As such they are seen to stifle flexibility and innovation (e.g. see Dess, Rasheed, McLaughlin & Priem, 1995) and, as a result, reduce effective organizational performance (Dimancescu, 1992). This is because the new environmental conditions mean that in order to be successful organizations need practices which emphasize speed, flexibility, innovation and "boundaryless" integration (Ashkenas, Ulrich, Jick & Kerr, 1995). Such practices, which can be associated with the introduction of new technologies (Fulk & DeSanctis, 1995; Zenger & Hesterly, 1997), include delayering, disaggregation, empowerment, flexible work groups, short-term staffing, reducing internal and external boundaries, outsourcing and collaboration (Palmer & Dunford, 1997).

Organizations which will succeed in the new, hyper-competitive environment are portrayed as those which replace traditional practices with new organizational practices

(Fulk & Desanctis, 1995: 338). For example, hierarchy is presented as being replaced by a variety of new structures and market-like devices (Zenger & Hesterly, 1997: 211), with traditional concepts no longer being adequate to describing new, emerging forms (Ciborra, 1996: 116). Bartlett & Ghoshal argue that the classic authoritarian "strategy-structure-systems management doctrine is fast becoming irrelevant" and is unsuited to the new "postindustrial environment" (1995: 141). Kanter maintains that "(t)he old bases of managerial authority are eroding, and new tools of leadership are taking their place" (1989: 92). Hence, in many companies "horizontal ties between peers are replacing vertical ties as channels of activity and communication" (Kanter, 1989: 85; see also Hirschhorn & Gilmore, 1992: 104). Peters points to the need for "the wholesale smashing of traditional barriers and functional walls, both up and down and from side to side" (1988: 107). Handy argues that "(t)rust based organizations are pulling back from the old reductionist models of organization, in which everything was divided into its component parts or functions" (1995: 46). Wills (1994: 19) maintains that networked organizations reject hierarchical and functional models of organizing. Formalized practices specifying well-defined job roles are replaced by “fluid, ambiguous and deliberately ill-defined tasks and roles” (Dess et al., 1995: 7). Likewise, centralization with its emphasis on hierarchy, central decision-making and lack of discretion is replaced by flat, decentralized structures. For example, Bartlett & Ghoshal (1993: 27) argue that “radical decentralization” of both assets and responsibilities is a key aspect that differentiates new forms from traditional forms such as the M-form. This replacement of traditional practices is portrayed as a fundamental transition (Jacob, 1995: 58) or a natural evolution

(e.g. see Mills, 1993: 189; Pedler, Burgoyne & Boydell, 1991: 16) in the way in which organizations are structured.

We accept the argument that organizations which are successful in hyper-competitive environments are likely to use new organizational practices to assist their flexibility and responsiveness. However, we take issue with the assumption underlying the above arguments that the use of new organizational practices entails the replacement of traditional practices. We suggest, instead, that managers are more likely to be managing simultaneously both new *and* old organizational practices. For example, we suggest that rules, systems, processes and centralized procedures are still necessary parts of an organization's operations – especially in managing system integration of those parts of the organization which are not in immediate contact with the external environment (Lawrence & Lorsch, 1967). Similarly, the sedimentation of traditional organizational practices and processes over time will mean that organizations will rarely be clean sheets upon which new practices can be over-written.

Support for our position can be found in recent writings in the field. For example, a "high reliability" argument holds that organizational controls continue to be important in organizations engaged in high-risk activities (Roberts & Libuser, 1993). A "rules are enabling" argument points out that rules and formalized activities can enable responsive behavior in turbulent environments by helping people to reduce role stress through clarifying their responsibilities and providing them with guidance in their work (Adler & Borys, 1996). A "large, centralized organizations can facilitate innovative behavior" argument maintains that most innovations are systemic and in need of strategic coordination to enable them to be achieved successfully, something which is more

difficult in a decentralized, virtual organizational setting (Chesbrough & Teece, 1996). Such arguments provide support for our position that both new and old practices coexist in organizations. We expect that such coexistence of old and new practices does not always occur in a tension-free space; on the contrary we think that the coexistence of old and new practices represents a set of dualities. By dualities we mean two characteristics which are in tension with each other but which may nevertheless coexist. They present challenges for managers who have to manage them effectively.

In order to explore our position we have chosen to focus upon one new organizational practice, that of collaboration, specifically in the film industry. Whilst debates exist about what exactly defines collaboration (Gray, 1989; Huxham 1996; Pasquero, 1991; Roberts & Bradley, 1991) there is, nevertheless, broad agreement that organizations foster internal and external collaborative relations "to reduce the complexity of their environments and to gain more control over environmental factors" (Wood & Gray, 1991: 158). In this study, we particularly focus on remote collaboration, an advanced form of collaboration that entails collaboration through the use of electronic networks (Mizer, 1994).

Remote collaboration frequently occurs in project-based work where professionals or organizations get together to work on one project for a set time period. In film production projects, for example, filming may be going on in more than one location at the same time, or the post-production processing on the film may be carried out in separate organizations that are in different geographical locations. The coordination and approval requirements of the project may thus entail remote collaboration. Also, projects generally involve a set-up period during which some members may not be formally on

board yet, while they are finishing a different project. Nonetheless, they are already in contact with the new project and may be involved in project-determining decisions. Moreover, there often is a closing-down period as well, when some participants have already left the project to become involved in their next project, while still completing the current one. Given the set-up and closing-down periods and the limitations of projects by time and space, not all members will be physically on-site for the entire duration of a project. Remote collaboration helps to link members of a project through space and time - even before and after the project's duration - and helps them to overcome difficulties arising from location constraints.

Although project work has been part of film production since at least the 1950s (Birkmaier, 1994; Faulkner & Anderson, 1987; Miller & Shamsie, 1996) it was not until the early 1990s that remote collaboration took on an important role in organizing film production. Project work, collaboration in general and remote collaboration in particular characterize the film industry as being "an exemplar of the boundaryless network organization" (Jones & DeFillippi, 1996, p. 90; see also DeFillippi & Arthur, 1998). Studying such remote collaboration provides an opportunity to "look into the future" in order to identify issues associated with the management of leading edge, technology-enabled, new forms of organizing.

In the following section, we outline the form that remote collaboration takes in film production. After outlining our methodology we then focus on the details of seven organizational dualities which the study identified as characterizing remote collaborations. These dualities were - creative work/routines, freedom/constraint, trust/control, artistic excellence/cost effectiveness, collaboration/competition,

emotional/rational and closeness/remoteness. We conclude by examining how uncovering the existence of these dualities enables greater understanding of the relationship between traditional and technology-enabled new forms of organizing. Our findings challenge theories of organizational change which propose the replacement of old practices with new practices. Instead, the organizations studied in this paper incorporated new forms of organizing alongside existing, traditional practices.

SETTING THE SCENE: HIGH TECHNOLOGY FILM PRODUCTION

In this section we set the scene for the study which follows by outlining the characteristics of film production and its use of remote collaboration technologies. Film production is a project-based activity which often involves the establishment of a new organization for the life of the project with its own legal entity, funding and contracts. It requires the input of producers, investors, creative talents, and technical personnel (Faulkner & Anderson, 1987; Jones & DeFillippi, 1996).

Film production generally involves three key phases: pre-production, production and post-production (Birkmaier, 1994). Pre-production describes the period before the actual filming starts, during which producers make the major financial and creative decisions, including the selection of script, cast, crew and locations. Production encompasses the actual filming, both "on location" and at studio-type premises. Post-production involves the compilation and editing of the filmed material. This involves the production of special and visual effects sequences and the compositing - the combination of a number of different media elements, such as computer graphics or animation effects - with live footage.

Computers are used in film production so that it can now be organized in parallel rather than in linear fashion, that is, pre-production, production, and post-production can occur

simultaneously (Baker et al., 1996b; Francett, 1994). At the same time film production has become organized more globally because of the availability of low-cost facilities and crews outside the major film production areas and because of a scarcity in local skills and talents (Wasko, 1994). Simultaneously, producers rely more and more on outsourcing of specific tasks. For example, much of the post-production work is outsourced to small companies which have specialized equipment and highly trained personnel (Aksoy & Robins, 1992).

We study remote film production collaboration, that is, collaboration carried out at a distance via electronic networks. An individual or organization involved in remote collaboration might, for example, use a fiber cable to transmit a movie frame or film clip for approval to a director in another country, or to provide material for special-effects processing to a post-production company. Remote collaboration is most likely to be used during the pre- and post-production periods (Chandler & Gidney, 1994). However, remote collaboration may occur at any stage: within pre-production (e.g., joint decisions on casting, selecting locations), production (e.g., transmitting dailies or rushes from production sites to decision-makers, coordinating animation work), post-production (approving of editing and special effects work), or related publicity (trailers, advertisements). Remote collaboration technologies enable the following three activities: electronic delivery, accessing resources and materials, and joint real-time remote decision-making.

Electronic Delivery

Electronic networks replace the use of physical transport systems which have been traditionally used to courier visual materials from one location to another. Because digital nonlinear editing within post-production is now standard in much of the film industry (Ohanian, 1993) and post-production processing often entails numerous transfers, the

transfer of digital versions for post-production processing is particularly widespread. Some companies even have permanently leased network lines which connect them to their major clients (Kaufman, 1995).

Electronic delivery systems, such as the Videofax, have been specifically designed for the film industry. It transmits motion video via ISDN lines, analogous to an ordinary fax transmission, but with modified VCRs at both ends of the line (Liebman, 1996b). In one application an Australian production house transmitted, to a British agency, visual material which featured a large number of skilled roller-bladers who were difficult to cast in the U.K. but were more readily available in Australia. Hence, the U.K. agency collaborated with an Australian production house and, during the collaboration, relied on electronic networks for delivery of visual samples (Baker et al., 1996a).

Accessing Resources and Materials

In the past, existing materials to supplement ongoing film production could be obtained in paper or tape format from archives, libraries or studios. Nowadays, catalogues as well as the materials themselves are available on websites. That is, a film-maker looking for a specific image can browse websites to determine whether the image already exists. A company may sell digitized images and video clip files. Potential purchasers can interactively explore the still images and clips online and have the visual materials delivered electronically to the desktop or a non-linear editing suite.

Organizations have also joined together in wide-area or limited-access user group networks to create common-access areas. This practice not only enables access to files and images located on a collaborator's site, but also the sharing of computer resources and

computer power. Sohonet (UK) is an example of a user-group-owned network and Sprint Drums (US) is an example of a limited-access service (Liebman, 1996a).

Joint Real-time Remote Decision-making

In traditional film production, decision-makers frequently met face-to-face. For instance, a director and a producer would meet together to watch footage of potential candidates in order to select cast members. Or, during post-production, a director and an editor would jointly review some edited material. Remote collaboration technologies enable participants to make joint decisions while being in different locations, and allow creative staff to be involved in multiple projects that are being worked on in different locations (Mills, 1995). For example, Spielberg used remote decision-making during the post-production of *Jurassic Park* in California while he was in Krakow shooting *Schindler's List* (Mizer, 1994). Joint real-time remote decision-making occurs when participants simultaneously view the same visual material on screens in different locations, discuss this material and come to a decision. It is particularly advantageous where asynchronous (that is, not real time) accessing of such material would not support the level of interaction that is required to solve creative problems.

Currently, joint real-time remote decision-making is available in the form of desktop multimedia conferencing systems such as IBM's *Person to Person* (Dustar, 1995) or by attaching cameras to linked computers. For film industry applications, the system needs to provide easy-to-use access to video data (Whittaker, 1995) as well as some form of real-time conferencing. Systems such as Sprint Drums have been specifically designed for the film production industry for this purpose (Liebman, 1996a).

In the previous paragraphs we have described remote collaboration technologies as enabling three separate activities. In reality, many companies are designing collaborative work practices that combine these activities. This trend is likely to be encouraged by increasing bandwidths and decreasing telecommunications costs.

CHOOSING THE CAST: METHODOLOGY

The foregoing serves as the backdrop to the study reported in this paper which is set in the US, UK and Australian film production industries. It is part of a larger investigation by the researchers into technological innovations in film production.

We used purposive sampling (Cooper & Schindler, 1998) with organizations that are forefront users of remote collaboration in the film production industry. More specifically, we used a variant of purposive sampling called intensity sampling. This entails the selection of "participants who are experiential experts and who are authorities about a particular experience" (Morse, 1994, p. 228). This sampling procedure is appropriate when the research design calls for "information rich" data (Morse, 1994; Patton, 1990). Organizations were invited to participate in a study on new communication technologies in film production. To locate organizations that collaborate remotely via electronic networks, companies publicizing their use of new collaboration technologies were contacted. The main sources were trade publications, conference and exhibition handouts from telecommunications companies, and production company web sites.

We contacted a total of fifteen organizations of which eleven participated. The sample comprised large as well as small companies and was spread across pre-production, production and post-production work. The sample was diverse, and included a major

Hollywood studio, a small U.S. company that produces promotional material and utilizes a dedicated fiber-optic link to a different Hollywood studio, a UK company which does post-production work for UK-based and US-based projects, and one which provides 3D graphics and animation work. Anonymity was offered to participating organizations.

When contacting the organizations, we asked to meet with the highest ranked persons involved in making decisions on, or using, remote collaboration technologies. This entailed meeting with people such as the chief executive officer (if it was a small company), the director of technology, and the creative director. In total we interviewed thirty-six people.

Interviews were standardized by using an interview guide (Patton, 1990), but were conducted as free-flowing conversations. The focus was on trying to understand the experiences of these forefront users, rather than on the technologies themselves. Opportunities to probe answers were used as fully as possible. The topics were grouped into six areas. Interviewees were asked:

1) about their use of a remote collaboration technology - how and why they started using it, changes in the way they use it, typical situations for which they use it.
2) whether they use it for local, long-distance, or international collaboration
3) about the roles or positions of those who actually use the technology
4) about the expected benefits, actual benefits, disadvantages, problems encountered
5) about costs and business issues
6) to give a recent specific application and details of exactly how it was used.

Interviews lasted approximately one hour. The tape-recorded interviews were transcribed by a professional transcription service.

Two researchers independently read transcript data to identify recurring themes in the managers' descriptions of their use of electronic-network technology for remote collaboration. This search produced a number of themes which formed the basis of discussion between the researchers and which resulted in inter-subjective agreement as to the pre-eminence of seven specific themes. Each theme was composed of a duality, i.e. two elements which are commonly assumed to be in tension with each other but which nevertheless coexist.

SHOOTING THE SCRIPT: LESSONS FROM REMOTE COLLABORATION

In this section we briefly describe the tensions between the old and new practices as they are seen in the management literature. We then illustrate these tensions with examples from our data and show how these dualities are played out in remote collaborations. In some cases remote collaboration technologies allow integrated management of the tension, for instance in the trust/control duality; in others they add a new dimension to the duality, e.g. the competition/control duality.

Scene 1: The Creativity/Routine Duality

In the innovation literature, creativity is often seen to be in tension with routine (Dougherty, 1996) where routines are viewed as habituated actions (eg. March & Simon, 1958; Gersick & Hackman, 1990). Innovative organizations, however, are more likely to be successful when routines and creative bursts are balanced, when exploitative and exploratory learning occur together (March, 1991; Weick & Westley, 1996). Remote collaboration allows directors or editors to be more creative, to change scenes more frequently at very low cost and independently from them being in the same place as the

editors. At the same time, remote collaboration encourages the routinization of this form of creativity which involves playing with a variety of shots, angles, etc. - and which would have been prohibitively expensive or physically impossible without the new technology.

Routinization in this context refers to a normalizing process, where it becomes normal within an organization to take a certain action. This view of routinization is based upon the work by Tyre and Orlikowski (1993: 18) who found that "successful implementation means that, over time, the technology becomes increasingly integrated into the production process. The new technology gets physically interconnected with the rest of production process, and users learn to rely on it for production needs." Similarly, Rogers (1995: 399) notes that "routinization occurs when the innovation has become incorporated into the regular activities of the organization, and the innovation loses its separate identity." Remote collaboration encourages directors to incorporate frequent passes at a scene before settling on a final product into their normal work repertoire, to integrate this practice of frequent passes into the general production process, and thereby leads to the routinization of this creative playfulness.

For example, directors who are not in the vicinity of the editing location but may already be involved in a new film, can now remotely experiment with scenes and make multiple changes in collaboration with editors and producers. In fact, for many of them creative experimenting with scenes has become a routine part of the production process. Directors are becoming more involved with film editing and - similar to word processing - more cuts are done. That is, more "what ifs" are explored. As one executive pointed out:

> "I [as director] had an approval process that took hours of which I got to see one tape and I got to make one change. Now I can do it five

> times. They [directors in general] will take all five times. It still gets done in the same amount of time but the collaboration now has changed the output of what would have been. Non-linear editing went through the same process."

This excerpt illustrates how a new form of being creative, of trial-and-error editing, became part of the normal production process and thereby routinized. While creativity and routine existed beforehand, remote collaboration facilitates the routinization of one form of creativity over other forms. Thus, a certain type of creativity may be favored and lead to tensions between creativity and routine.

Scene 2: The Freedom/Constraint Duality

Freedom and constraint are often seen as anathema to each other. Either people are free to do whatever they want or they are constrained. Technology is often seen as a means to overcome constraints and to increase freedom. Groupware applications researchers suggest that technology can increase individual freedom by providing 'anytime/anyplace' communication. Such technologies are widely used by mobile employees, such as field staff, in a range of industries such as insurance and telecommunications (Khoshhafian & Buckiewicz, 1995). At the same time, such technologies may also increase the freedom that organizations have when deciding on the location of call support centers or customer service facilities (The Economist, 1998). In a similar way, remote collaboration enables executives to gain the freedom to supervise work being carried out elsewhere or to move about geographically and still maintain tight control over the creative output. However, these new remote collaboration technologies also constrain the executives. In particular, we found two limits to this freedom. The first concerns new expectations that executives confront and the second concerns the effects of coordination on freedom.

Expectations Constrain Freedom. The use of advanced networks gives staff in the production facilities and post-production houses greater control over the timing of feedback, but increases pressure on them to make more changes, make changes as soon as requested, and make changes up until the last possible minute. At the same time, executives face the expectation of being responsive to the demands of staff and clients, and of making decisions instantaneously. For example, one production company provides movie trailers to major studios and needs to obtain the approvals for these productions from certain studio executives, which is done through remote collaboration with the studios. During the real-time session, they are on the phone together while both are looking at a trailer ready for release. We observed a real-time approval session during which a change to one of the frames was made by the production company staff while a studio executive was looking at the material and then approved it. We were told that if it were not approved during that initial call, the production company would sometimes call the studio executive back only fifteen minutes later and expect to get approval.

Coordination Constrains Freedom. Whilst remote collaboration technically facilitates geographic mobility, in practice this is also constrained by the need to coordinate the work of collaborative participants. For instance, two companies did animation work in two locations for a film that contained both human and animated characters. One supervisor had to monitor the work in both locations. The successful completion of this project required extensive use of many technologies such as electronic mail, voice mail, video-conferencing, telephones and faxes. Thus geographic mobility is constrained by the need to utilize such technologies to coordinate the work of people in different locations. This degree of coordination is evident in a UK technical director's description of this project:

> "There's all these [existing cartoon] characters and for starters, they've all got to look the same, old shots and new shots, you know… Some of the things like the shadows and highlights and how they look, the colors, all that, have to be exactly the same throughout the film and continuity is very, very, very important. So that was the first thing, you know, transferring images across the network, what we call hero shots, which basically give us a reference to say that that's what [Character 1] is going to look like, this is how big he is relative to [Character 2] and the other characters, so when you position it in the frame, that has to happen, so that was transferred across the network. Secondly, approvals of basic animations would go through as a compressed file and send it across the network. Thirdly, models - our C[omputer] G[raphics] team would build models for LA and some of that would happen the other way around and they'd have to be transferred."

Thus remote collaboration is contributing to freedom and to constraints on freedom.

Scene 3: The Trust/Control Duality

Trust and control are often seen as in tension with each other, where either one party trusts the other or it puts control mechanisms in place (Ring & Van de Ven, 1994). Trust is a "willingness to rely on an exchange partner in whom one has confidence" (Moorman et al., 1992: 315; see also Blau, 1964; Coleman, 1990; Rotter, 1967). It contains two distinct dimensions: a belief in an exchange partner's trustworthiness, and an intention to rely on that exchange partner. It has been argued that trust is crucial where there is uncertainty, but that it is "unnecessary if the trustor can control an exchange partner's actions or has complete knowledge about those actions" (Moorman et al., 1992: 315). A similar distinction can be found in the discussion by Ring and Van de Ven (1994) on the substitutive relationship between formal legal contracts (control) and psychological or social contracts (trust) in inter-organizational collaborations. Similarly, Madhok (1995) argues that managing opportunism and relying on trust are two alternative approaches in managing collaborations.

Safeguards such as contracts are needed where trust alone is not sufficient as a mechanism of ensuring appropriate business behavior. Blois (1999) elaborates that contracts are merely a way of creating assurance in another's reliability and, because they reduce vulnerability, come close to an artificial creation of trust. Thus, while it may not be possible for organizations to trust each other, they can be legally obliged to one another (Blois, 1999). When these obligations are made explicit in contracts, they demonstrate that trust does not exist between the parties as codes and regulations monitor conduct. When it is possible to trust a partner, there should be no need to control the behavior. Control only comes into play when adequate trust is not present (Sitkin & Roth, 1993). Thus, the literature highlights the dichotomy between trust and control; where there is one, the other does not exist.

However, the film companies in our study display an interesting phenomenon. Remote collaboration technologies allow collaborators to back up their trust with control via technological defenses. Thus, trust and control are seen not as mutually exclusive but interdependent. In many cases, security, i.e. control, is a key factor influencing the degree of implementing of remote collaboration technologies. For example, one Hollywood planning group mentioned great concern about the risk perceived to be inherent in computer networks. When asked if security continued to be a major issue for those trying to establish a Hollywood network, they said: "Number one. If you had a totally high band, free-of-cost network out there, it would not be used if it wasn't secure." At the same time, companies are aware that no absolute security can ever exist and that, therefore, trust has to be an inherent feature of the remote collaboration.

During our interviews we heard a number of stories that illustrated the control concerns of people in this industry. In one instance, someone wanting to use the Sprint Drums system for a short meeting avoided going to post-production companies where it was available because they feared being overheard; instead, they found a neutral location, that of a content provider. This illustrates that executives tend to trust their collaborators where they have put strong control mechanisms in place. As one post-production company chief executive outlined:

> "We can have all of the image data in our computers and say to Company A, right, we would like you to do shots 104, 105 and 106, and they can instantly access that image data, go away and do their work, submit the results back to us. At the moment security is not a big issue because we trust reasonably well the people that are on the current smallish network. Even though some of them are our deadly competitors, I don't think that they're going to try and use the network in any underhand way, but there are passwords, there is protection, there is some supervision and we believe that it is adequately secure for our purposes. We have subjected the network to external threat testing."

This quote illustrates that the executive trusted the collaborators not to misuse the system while at the same time protecting their intellectual property through password, supervision and other control mechanisms. His company had even subjected the network to external threat testing. Thus, it seems that the companies only trust those whom they can also control.

Scene 4: The Artistic Excellence/Cost Effectiveness Duality

As DiMaggio (1987) has argued, within cultural industries an aesthetic discourse can be contrasted to that of a managerialist discourse. Arts managers who display an orientation toward an aesthetic discourse tend to talk of the importance or excellence of the artistic product. Arts managers who have a managerialist orientation are more likely to

emphasize issues such as efficiency, income and a preference for what are seen as private sector financial practices. Given these two different orientations, artistic excellence is usually associated with a discourse which is quite separate from one associated with notions of economic cost/benefit analysis. The two discourses might even be seen as anathema to each other. One Hollywood interviewee said that managerial discourse "has been totally resisted in entertainment because it is not manufacturing: and it's not going to be manufacturing, the product is of human creation." Nevertheless, Turbide and Hoskin (1993) argue that managerialism has spread to a range of cultural management practices and activities. Rather than one discourse displacing the other, our studies suggest that both can co-exist and are inter-related. For example, the extent to which new technology will be implemented in order to facilitate an excellent or creative product is often couched in the language of cost/benefit analysis. As one Hollywood post-production executive pointed out when describing the problems he faced in getting other companies to participate in remote collaboration:

> "We have to cost-justify this [implementing technologies for remote collaboration] to certain people within the companies, and at this point I think it is very difficult to justify that because they're just looking at saving time or saving money and those kinds of things. I don't think it is necessarily going to save time. I think there will be some time-savings going on but in general I don't think it is going to save time. But I think it is going to enable other things and other work practices that we don't do now which will maybe enable creativity, maybe enable who knows what? I mean, there are things that we probably haven't envisioned yet that it will make it easier to do."

We encountered an example of how artistic excellence and cost effectiveness considerations become intertwined over time as the organizations gain experience with the use of remote collaboration technologies, and how this might lead to enabling creative

activities not originally envisioned. For a recent animation feature film, an electronic network was set up between the studio's main animation location and a post-production company with expertise in composition. The studio found the input of the post-production company very useful during the camera shoots, as they found out about problems while the shoot setup was still available for reshooting, which resulted in cost savings and also in higher quality output. The studio then invited the post-production company to situate some of their staff and equipment on the studio's premises. This was agreed to as it was now cost-effective for the post-production company. This was because the network that was in place also permitted them to use their staff's time on other projects when there was a slow period on the animation project. For their part, the studio reported that they not only saved much of the usual cost of 'fixing up' poor shots afterward but also speeded up the entire production which resulted in the film being released on time.

These examples show that artistic excellence and cost effectiveness cannot be separated from each other in these remote film production collaborations. It is not an either/or, but a both. Potential increases in artistic excellence are not sufficient to justify engaging in new technologies; these new technologies also have to save time or money. Old practice (artistic excellence) and new practice (cost effectiveness) are intricately linked and co-exist.

Scene 5: The Collaboration/Competition Duality

Traditional corporate strategy viewed collaboration as the opposite of competitive strategy (e.g., Porter, 1980). More recently it has become common to cite collaboration as “competition by other means”, although its specific standing as a competitive strategy is a matter of some dispute. For Kanter (1994), collaborative arrangements work best where

they are part of the long-term goals of both parties, while for D'Aveni (1994: 333), they are "inherently unsustainable" due to the erosion of competitive advantages in a hyper-competitive environment. Nonetheless, even within the latter position, collaboration is treated as an effective part of a comprehensive competitive strategy. This is because collaboration may be used to compete against other companies that have banded together, to limit the domain of competition, to build resources, to buy time, to gain access to new markets or to gain access to knowledge (D'Aveni, 1994). As an illustration of this general position, one network provider pointed out:

> "The smaller production companies in London may be able to compete with the larger film businesses. We found that some of the companies in London might only be able to work on a couple of sections of the film at one time and nobody could actually provide the facilities to do the whole of the film with the special effects, and that. So, it allowed them to work together, which is an interesting change, because they normally compete. So that team collaborates for three days and they don't scratch their eyes out."

Further analysis of our data, however, revealed two different variations of this "collaborate to compete" relationship. The first involves companies that collaborate substantively, but compete procedurally. The second involves companies that collaborate procedurally, but compete substantively.

Substantive Collaboration and Procedural Competition. In this situation companies bring together different expertise and technologies in order to create a joint production. In contributing to this joint production all collaborators use their own procedures and technologies, but do not share these with others. That is, collaborators retain their core procedural and technological competencies while they utilize them for collaborative endeavors. This approach is evidenced among Australian production companies when a

company engages collaboratively with another to produce a commercial jointly. One company has a proprietary stake in the technology that is used and is unwilling to share its expertise in that collaborative setting. A similar situation was found in a US company which provided access to its digitized image and video clip files via the Sprint Drums network, the Internet, and CompuServe. As mentioned earlier, potential purchasers can explore interactively the still images and clips on-line, then order the image or clip from the company's library. Purchasers can also use this file access for creative brainstorming, possibly serendipitously finding an image that they had not anticipated. At no time does the provider company allow access to its core competency, the production procedures for creating image libraries. The company only provides access to the substance, the content of the library, but not the underlying technology. Another example involved a company that offers film-scanning and recording services as well as digital special-effects processing. It was a prime mover behind the use of remote collaboration technologies which it had been using actively for delivering images to and from its clients, as well as for sharing work loads with similar companies. Its CEO mentioned:

> "The first time we used [remote collaboration technology] to load-share with another … digital effects company was a job for a Hollywood studio. We accepted 12 shots for our LA subsidiary and 55 for London, but sub-contracted 6 of them to the other UK company. Our digital effects supervisor was responsible for the quality of the work being done, both our own and theirs. That whole job proceeded extremely smoothly, even though it was done on a very tight schedule … The ability to load-share does change the way we do business because it means you can bid on work with more confidence that, if it all comes in at the wrong time, you are not going to let the clients down, that you will be able to find some way of sub-contracting surplus and get it done."

Procedural Collaboration and Substantive Competition. In this situation organizations engage in the use of networks and other collaborative resources, but they do not collaborate on the content of the product. For example, one remote collaboration technology in London permits the use of specialized resources in another company (e.g., for scanning into or out of film) or the sharing of computer processing capacity. Small post-production companies can now work together as if they were actually one company. This technology was argued by one executive to "open up the London resources and make them more attractive to the Los Angeles fraternity; the combined resources could be harnessed and therefore would not be a barrier to putting work into London." Executives of user companies also referred to their ability to purchase access to a networked bank of high-powered computers. They argued that this procedural collaboration would not lead to substantive collaboration. As one director of technology noted, "it is unlikely that the creative sides of projects will be shared between rival companies. People will hold the creative side in-house and use external services as and when they need them."

As these examples show, remote collaboration adds a deeper dimension to the collaboration/competition duality. Companies do not collaborate to compete in general, but carefully choose on which dimension they collaborate and on which they compete - even within their relationship. In contrast to a traditional collaborative joint venture or alliance or network, which is formed to compete against companies outside the collaboration, these remote collaborations entail collaboration and competition within the one relationship. Companies collaborate remotely on substance, while competing on procedure, and others collaborate on procedure but compete on substance. It is no longer an either/or relationship, it is an intricate web of complex collaboration and competition. Managing this complex

relationship is facilitated through the advanced technologies where content and processes can be linked together or separated into clearly bounded parts.

Scene 6: The Emotional/Rational Duality

Traditional organization theory depicts rationality and emotionality as opposite ends of a spectrum. As Fineman (1996: 545) states, "organizational order and manager/worker efficiency are matters of rational, that is non-emotional activity" (see also Lakoff & Johnson, 1980; Putnam & Mumby, 1993). Since the beginning of organizational theory, an underlying assumption has been that emotions are to be controlled (Fineman, 1996: 545). Technology often plays an important role in controlling emotions. It allows the de-personalization of work conduct by divorcing people from sustained interactions with others. From this perspective rational technology de-emotionalizes work.

Advanced remote collaboration technologies, however, have re-introduced emotionality into the workplace. For example, one director of technology said that, "we have weekly conference telephone calls and then every two months or so we have a video-conference just so that we can *feel* much more like we're a part of the same team" [emphasis added]. In this sense, the rational also becomes inextricably implicated with feelings and emotions in organizational life. Remote collaboration technologies can provide the richness needed to express and communicate emotions. Technologies such as video-conferencing can give visual information about another person's reactions and feelings. Thus the use of greater bandwidth in collaborative technologies increases the amount of emotional expression in those settings. Executives especially like the ability to gauge emotional reactions of clients. As one mentioned:

> "I think there is an advantage to certainly seeing the face. Right now it's still kind of crude but it's sort of interesting but, you know, … in a customer relationship being able to see somebody's face can reveal a tremendous amount… Somebody says, "Do you like it?", and they go "Yeah". Well, you know, that's hard to interpret on the phone. When you see someone's face, you can really get a better idea whether they're really [as it were] happy or they're not happy about something. So that's where I think video-conferencing could be very good but still at least on Drums and some of the ones I've seen it's still pretty funky."

Thus, remote collaboration technologies facilitate the co-existence of rationality and emotion within organizations.

Scene 7: The Closeness/Remoteness Duality

Distance apart usually implies lack of involvement, as in 'out of sight, out of mind'. However, people who are not co-located can work together closely through communication technologies that help to overcome distance. In the literature on groupware, applications are commonly divided into synchronous (real-time) and asynchronous (O'Hara-Devereaux & Johansen, 1994). Asynchronous technologies can "help to cut down on 16-hour days," as one interviewee pointed out, especially when finding time to work simultaneously with others in different time zones proves difficult. Passing work over to another group at the end of the workday takes advantage of time zone differences and allows work to go on 'round the clock'. Thus, three groups located 8 time zones apart could keep the work going all the time. However, more typically in the film production industry at present, each of two locations would work 12-hour days for 5 or 6 days a week, passing the work back and forth. One example of this occurred when a firm on the West Coast of the US worked with a firm in the UK (eight hours ahead). The UK staff passed on their work in the evening which was then worked on by the Los Angeles staff during the Californian daytime, who then passed it back to the UK at the end of their

workday. The firm reported that when a film was on a tight deadline, twice as much could be accomplished in a day.

Remote technologies also bring closer together skills and talents that in the past were difficult to access due to geographic remoteness. In particular, suitable artist-technologists are often difficult to find in the primary work locations, so that organizations set up work groups “where the talent is”. For instance, one project involved a lot of model work on spacecraft. Part of the work was done in London, part in Ardmore in Ireland, and part in Los Angeles. Compression techniques were used to send information regarding rushes and model work to the different locations. As one UK post-production company executive noted, “it’s a question of being able to work where the talent is rather than being frustrated by the physical limitations.” A UK network provider also noted that remote collaboration technologies were one way of avoiding the brain drain from the UK to Hollywood and New York. This was achieved by providing the specific skills in editing and post-production available in London through the remote collaboration technologies. This avoided people having to move physically to the US in order to practice their skills.

At the same time, some executives argue that physical co-location of companies and talent negates the advantages of remote collaboration technologies. This situation was nicely demonstrated by one Hollywood executive who was describing their company's experiences with using a point-to-point analog network link. Because of the enormous size of film files and the need to have uncompressed images on which to do their processing, this link was the only one they could use that was high enough in quality and

low enough in cost. Unfortunately, (unlike email attachments) it required immediate handling of the incoming signal, as explained in the following:

> "Let's say we had this link through Hollywood, which some people have proposed. We need to get some D1 quality elements over to X. Now if we use a link, we got to get a machine and an operator standing by for the transfer. We've got to somehow co-ordinate with them over a phone to get set up on their side and then, you know, with appropriate hand shaking and queuing, get them to lay it off. That's one way of doing it… The other way is we send a runner to walk up the street and hand them the tape and then they use that tape whenever they need it, which may be a couple of hours from now. So, to me it just doesn't make sense to send the stuff over a fiber link. It is far more cost effective to send a runner, that's fresh out of school, a graduate working his way up in the company. Just send them up there, hand them the tape… Or flip it around, if it was us that needed the material, we use that tape whenever we need it. Suppose we thought we needed it right now but now something else happens, so we're not going to need it for another hour but if it's coming to us via a link we have to stop it and lay it off. We tie up a machine. They tie up a machine. They already have the tape. So logistically it is far easier for them just to give us the tape."

REVIEWING THE CUT: LESSONS FOR ORGANIZING

In the previous section, we identified seven organizational dualities associated with the use of remote collaboration technologies in the film industry. These were the relationships between creativity and routine, freedom and constraint, trust and control, artistic excellence and cost effectiveness, collaboration and competition, the emotional and the rational, and closeness and remoteness. What is intriguing about these dualities which were present in the data, is that one side of each relationship represents organizational practices commonly associated with traditional forms of organizing, while the other represents those practices commonly associated with new forms of organizing. For example, the practices of routines, constraints, control, cost effectiveness, competition, rationality and closeness (centralization) have been characterized as part of the "old paradigm" of organizing and are considered to be inappropriate in organizations which operate in hyper-competitive environments (Ashkenas

et al., 1995; Clegg, 1994; Jenner, 1994). Such authors argue that these practices should change and be replaced by “new paradigm” practices such as creativity, freedom, trust, excellence (quality), collaboration, emotionality and remoteness (decentralization).

Our analysis of remote collaboration in the film industry does not support this position. This new form of organizing, based on the use of high technology, exhibited practices common to both paradigms contemporaneously. While film production used remote collaboration technologies to achieve creative outcomes, this form of creativity was incorporated into the traditional standard operating procedures as a new routine. Our findings therefore add support to emerging arguments which suggest that new organizational practices are not replacing traditional practices, as suggested by a number of authors (Fulk & DeSanctis, 1995; Zenger & Hesterly, 1997). Rather, new organizational practices co-exist with, and become incorporated into, remolded traditional practices (Hilmer & Donaldson, 1996; Palmer & Dunford, 1997). Along these lines Bahrami (1992) describes high-tech organizations as having two organizing components, one a relatively stable bedrock, and the other a series of temporary arrangements such as project teams which change regularly as required. Similarly, Ciborra (1996) describes a design which is characterized as a platform organization which contains both stable and unstable network forms. The arguments of Holland & Lockett (1997) are representative of this "mixed mode" view which depicts organizations as being composed of combinations of traditional (hierarchical) and new (market-based) practices.

Our study also has implications for organizational change models such as punctuated equilibrium theory. Punctuated equilibrium theory suggest that "organizations evolve

through alternating periods of convergence and reorientation" (Tushman and Rosenkopf, 1996: 940). Instability and reorientation punctuate stable, convergent periods (Tushman and Romanelli, 1985; Tushman and Rosenkopf, 1996; Romanelli and Tushman, 1994). According to this theory, technological breakthrough innovations disrupt stable patterns of interaction and power relations (Tushman and Romanelli, 1985), and thereby lead to reorientation and divergence (Tushman and Rosenkopf, 1996). Thus, introducing an advanced breakthrough technology such as remote collaboration may see traditional and new practices co-existing for a short time, but by challenging existing paradigms, this introduction will ultimately lead to reorientation of the organization.

In contrast to punctuated equilibrium theory, the dualities found in our study seemed to be stable, at least so far. The introduction of remote collaboration neither saw the new practices converge into the existing ones, nor led to reorientation and divergence. Instead, old and new forms of organizing were both important elements of organizing film production work. Our findings would suggest a third way in which organizations may deal with organizational change: by creatively managing dualities arising from traditional and new forms of organizing. However, our insights rely on cross-sectional data. Further longitudinal research should investigate whether the co-existence of old and new practices leads to a stable integrated form of organizing or to reorientation and divergence in the long run.

EXIT, STAGE LEFT

This research makes several contributions. First, we have provided descriptive material on the high technology practices associated with remote collaboration. This in itself constitutes a contribution to knowledge of how organizational change is occurring through the interaction between high technology and collaboration, albeit in a context of ambiguity and uncertainty. Second, we have identified seven dualities central to high technology remote collaboration. Third, our research findings suggest that rather than changing and replacing "old" organizational practices with new practices, the complexity of the hyper-competitive environment appears to require their mutual co-existence.

Further studies would allow us to be more confident of the pervasiveness of the findings of the current study – and the extent to which managing co-existence is likely to be a key challenge facing 21st century managers. For example, further study of high technology remote collaboration is needed to investigate the spread of each of the identified dualities and the extent to which specific dualities tend to cluster together. It would also be valuable to investigate the existence of these or equivalent dualities within other hyper-competitive business settings and over longer time spans in order to evaluate stability and long-term dynamics.

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