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Complementarity, Influence Cost, and Equity

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Complementarity, Influence Cost, and Equity

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I. Introduction

This paper points to the trade-offs between the value added by complementarities and the influence costs incurred by equity considerations. When a firm changes its business strategy, attendant changes must necessarily take place. The firm must ensure that all components in its entrepreneurial project fit with one another and with its business strategy. This may demand modifications or rearrangement of old technology, or implementation of entirely new technology. New organization around this technology will create new types of tasks, skills, and professionals. The new organizational landscape will necessitate updated incentive systems of pay and promotion: sales personnel need commission, while engineers need stock options. A change in strategy means that some degree of organizational change is inevitable to keep the components of the firm *complementary*.

Anyone who has tried to change a system knows intuitively that organizational changes incur *influence costs.* Whether it's a small change in the pay system of a unit in an organization or a large-scale switch from a functional organizational design to a matrix projects oriented scheme, the change will be met by resistance among individuals and groups in the work force. This resistance can range in ferocity from politicking and rent seeking within the organization to strikes on a large scale. It can be as subtle as reduction of individual or group coordinated productive inputs or as harsh as key personnel quitting. All these effects harm productivity and hence create very real costs for the firm.

In a firm whose strategy has changed, organizational changes must take place, and these changes will incur influence costs. Hence there is a fundamental trade-off between the benefits of complementarities and influence costs. The transition from the old system to the new can go wrong precisely because of failure to take influence cost into account.

This paper treats the problem of getting a fit between different parts of the new system without incurring too much influence cost along the way. We will derive predictions about the scale and scope of resistance in changing organizations from the social sciences of economics, social psychology, and sociology. More precisely we will analyze how degree of competition, degree of centralization, and degree of social cohesion at the workplace interact and whether they are complements or substitutes with respect to the firm's ability to resist changes.

The four sections of the paper correspond to four statements: (I) Complementarities and the optimal fit between components in a system are important for productivity. (II) Organizational changes in a firm cannot be planned and executed without consideration of influence activities based on the new changes and the social structure of the workplace. (III) Devices mitigating influence costs include aspects of fairness, social structure enabling mobilization for the new strategy, degree of centralization, and pay system. (IV) For a successful change, the different components of the new system must be analyzed jointly to determine whether they are complements, reinforce the value of each other and how they affect influence activities.

II. Complementarities and Business Strategy Changes

Milgrom and Roberts (1990) define complementary activities in two useful ways. The first is this: Several activities are complementary if doing more of any one activity increases or at least does not decrease the marginal profitability of each other activity in the group. (p.) Since a firm's decision to increase the level of a given activity raises the profitability of an increase in any complementary activities, *high levels for all the elements of a group of complementarities go together*.

The second definition is this: two activities are complementary if the profit or value created by doing one is greater than the sum of the individual profits from doing just one or the other (p.543). For instance, the use of flexible manufacturing technologies is complementary with the use of r telecommunications and transportation capabilities. Without the ability to process orders quickly and to ship them expeditiously, the ability to shift production from one model to another in seconds would be much less valuable.

This second definition hints at another important aspect of organizational design not logically implied by the conditions of complementarity alone: *the high cost of failure to match or fit the parts together.* The Swiss-Swedish multinational ABB neglected the importance of complementarity within an organization when the management decided to introduce the matrix global organization form, which is based on cross-professional teamwork, and at the same time introduced individual performance based pay. These two organizational features were substitutes. The choice of matrix organization already set the controlling parameter for what each manager could do with respect to choices of organizational design. Furthermore, introducing an individual pay-for-performance component in the compensation together with the highly centralized organizational design sent mixed messages to the managers: is individual performance rewarded, or team work? The pay system and the organization design were incompat , and the firm suffered for it: large number of key professionals left the organization.

Employees' discretion and incentives provide another example of complementarity. Assigning financial responsibility for outcomes and then granting decision making authority to the same person are complementary actions, since intensity in incentives makes delegated authority more valuable. (Milgrom and Roberts p. 549). And since complementarity is a symmetric relation we might also expect to find cases where it is the increase in discretion that is fundamental and the intensity of incentives that is the response. (Milgrom and Roberts p. 412)

Complementarity and Change

In order to realize productivity gains from reorganization, firms may need to adopt new work practices and incentives in a bundle rather than implementing them piecemeal. This idea has been developed theoretically in the economics of organization (Milgrom and Roberts 1990, Holmstrom and Milgrom 1994) and in empirical studies (Ichniowski, Shaw, and Prennushi 1997).

Internet technology provides a near-universal modern case study. Brynjolfsson and Hitt show that a significant component of the value of IT is that it enables

complementary investment in new business practices. (Brynjolfsson and Hitt p.4)[1]. Their extensive empirical research revealed strong complementarities among IT investments, related intangible assets, and organizational design.

So successful firms must typically adopt new technology as part of a system or cluster of mutually reinforcing organizational changes (Milgrom and Roberts 1990). *Changing incrementally, either by making computer investments without organizational change or only partially implementing some organizational changes, can create significant productivity losses as any benefits of computerization are more than outweighed by negative intersections with existing organizational practices*. (Brynjolfsson, Renshaw, and Van Alstyne 1997).

Many of the past century's most successful and popular organizational practices reflect the historically high cost of information processing. *Hierarchical organizational structures reduce communications costs, because they minimize the number of communication links required to connect multiple economic actors as compared with more decentralized structures* (Malone 1987, Radner 1993). But IT has reduced the costs of coordination, communications and information processing, actuating the value of less centralized work practices. (Brunjolfsson and Hitt p.19)

Bresnahan, Brynjolfsson, and Hitt 2000 surveyed approximately 400 large firms to obtain information on aspects of organizational structure: allocation of decision rights, workforce composition, and investment in human capital. They found that *greater levels of IT are associated with increased delegation of authority to individuals and teams, greater levels of skill and education in the work force, and greater emphasis on preemployment screening for education and training,* and further that these work practices are correlated with each other, suggesting that they are part of a complementary work system. Two studies by Bresnahan, Brynjolfsson, and Hitt 2000 show that firms more decentralized than the median firm have on average a 13 % greater IT elasticity and a 10% greater investment in IT than the median firm. And more decentralized firms are more productive when economic performance is measured as stock market valuation: firms in the top third of decentralization have a 6 percent higher market value after controlling for all other measured assets. This is consistent with the theory that organizational decentralization is one of many important intangible assets. (Brynjolfsson and Hitt p.23).

This was an examination the effects of IT on productivity growth rather than productivity levels, which had been the emphasis in most of the previous work using data that

[1] Bresnahan 1999 and Bresnahan, Brynjolfsson, and Hitt 2000 show how changes in IT costs and capabilities lead to a *cluster of changes in work organization and firm strategy* that increases the demand for skilled labor.

included more than 600 firms over the period 1987 – 1994. The interpretation was that short-term returns (productivity levels) represent the direct effects of IT investment, whereas long-term returns (productivity growth) represent the effects of IT combined with accompanying hidden investments in organizational change. (Brynjolfsson and Hitt p.200) Firms' specific human capital and organizational capital are two examples of such omitted inputs (see earlier results by Schankermann 1981).

But in the end Brynjolfsson and Hitt go on to say that the correlation between high performance and combined IT and organizational change is not sufficient to prove that these practices are complements. Unless a full structural model specifies the production relationships and demand drivers for each factor. And establishment level research has found that complementarities between existing technology infrastructure and firm work practices are a key determinant of firms' ability to incorporate new technologies (Bresnahan and Greenstein 1997), suggesting a pattern of mutual causation between computer investment and reorganization.

The firm level evidence shows that a combination of investment in technology and changes in organization and work practices facilitated by these technologies contributes to firms productivity growth and market value, but *much work remains to be done in categorizing and measuring the relevant changes in organizations and work practices and relating them IT and productivity.*

For a long time, there were great variations in the empirical testing of the effects of IT investment on productivity, even when using firm level data analysis. (For an overview of the evidence see Brynjolfsson and Hitt 1995.) Brunjolfsson et al 1995 point to the fact that scholars studying firm performance variation have neglected the role of unmeasured complementary investments. Brynjolfsson and Hitt 1995 found that unmeasured and slowly changing organizational practices significantly affect the returns to IT investment. *Hidden assets* play an important role in the relationship between IT and productivity.

Restrictions - hidden and non hidden

While the average effects of the complementarity between IT investment and organization design are clear from the data, the variations in performance among firms are still large. Aside from hidden assets, recent work in economics has identified some processes that often go unobserved in firms but that work against them as hidden restrictions.

First are external institutional restrictions on how an organization may change. Not all institutions have legal permission to hire and fire at will. But firms in some countries can easily adapt to new external circumstance by changing the internal design: some Silicon Valley firms, when they change business strategy, can easily fire 50 % of their work force and then hire new, more experienced workers the day after. (This is not a hidden asset but a restriction seldom accounted for in comparisons of states and nations.)

Add the example of Lincoln Electric here?

Organizations can harm themselves by failing to acknowledge the interdependence of seemingly separate work practices. Athey and Stern (1998) argue that decentralized decision-making can fail to incorporate all of the externalities of practice adoption decisions.

Finally, one of the most important hidden factors affecting organizational change is work force resistance. A bundle of new work practices-decentralized organization, IT devices, pay systems-may not seem to be in the interest of all parts of the work force. Even though management may have identified all the complementarities between work practices and a new business strategy they may encounter resistance from within the organization; even an efficient set of work practices may be perceived as inequitable or unfair by the workforce and therefore may generate high influence costs. As we shall see below both plans and execution must take into account the alignment of interest between the work force and the firm.

III. Influence Activities

When an organization is changing, individuals and groups within the work force tend to devote energy and resources to an attempt to influence the process in favor of their own interests. These *influence activities* and resultant *influence costs* are a major cause of variation in the performance of changing firms. Influence activities are manifestations in the work force of resistance to change. A work force may perceive the organizational changes accompanying a new business plan as unfair or counter to their interests. In all cases, the work force's attempts to influence or prevent change create real costs for the firm. [3]

Resistance among workers to change or what they perceive as unfair systems can have many reasons and take many forms: active sabotage, passivity and demotivation, or energy devoted to finding ways around the system to survive. Individuals may seek to influence their superiors to their own advantage through rent-seeking, groups within the

[2] Bresnahan 1999 Bresnahan Brunjolfsson and Hitt 2000 show how changes in IT costs and capabilities lead to a *cluster of changes in work organization* and *firm strategy* that increases the demand for skilled labor.

[3] The most institutionalized of collective resistance are organized by the labor unions. Arsenals of resistance instruments exist and they differ from country to country: strikes, law and political policy-making. In European and especially Scandinavian countries, the back up of the union for the workers interest and the actual alignment of workers' interest with the labor union's is a topic by it self. Worth stating is that countries differ in the way they handle equity issues and how people feel about fairness. Depending on the institutional structure and the opportunity structure inequality will be reacted to in different ways (see Alesina et al. 2001). Instead we focus on the mechanisms fostering informal resistance groups in organizations.

workforce may organize or unionize in an effort to gain more control, and workers with no ability to influence the system directly may simply undermine it.

The latter is illustrated by the case of the SKF ball bearing company in Australia. In 1974 the company was in the process of downsizing and laying workers off, in Melbourne alone cutting down from 450 to 270 people during a year. Workers did not know exactly who was going to be laid off or when, so they started a joint scam by deliberately switching 'O' and '0' when filling out storage request forms. This went on for many months until management found out and was left with a clerical disaster.

The Mayo researchers observed that the bank wiring group at Western Electric limited output to a quota (see Fritz Roetlisberger and J. Dicson, Management and the Worker: Harvard University Press, Cambridge, 1939). Mayo attributed this restriction of production to the workers' lack of understanding as follows: insistence by management on purely economic logic plus frequent changes in such logic in adaptation to technological change results in lack of understanding on the part of the workers. Since the latter cannot understand the situation they are unable to develop a non-logical social code of a type that brought social cohesion to work groups prior to the industrial revolution. This inability to develop a Grade-A social code brings feelings of frustration which result in the development of a lower social code among the workers in opposition to the economic logistics of management. And one of the symptoms of this lower social code is restriction of output (see Elton Mayo, Human Problems of an Industrial Civilization: Macmillan Co., New York, 1938. pp. 119-21.) Mayo seems to consider the "economic man" a fallacious conception.

But Roy (1952) showed in his seminal work on quota restriction and goldbricking that a machine shop group working on a piece-rate was restricting production day in and day and that adherence to bogey was but one of several kinds of output restriction in their repertoire:

> Now the operators in my shop made noises like economic men. Their talk indicated that they were canny calculators and that the dollars sign fluttered at the masthead of every machine… It might be inferred from their talk that they did not turn in excess earnings because they felt that to do so would result in piecework price cuts hence the consequences would be either reduced earnings from the same amount of effort expended or increased effort to maintain the take-home level.

When Roy discussed the possibility of earning more than the average hourly rate by harder-than-average work, he received the following response from a senior radial-drill operator:

> Don't you know, cried Starkey angrily, that $1.25 is the *most* we can make, even when we *can* make more! And most of the time we can't even make that! What do you suppose would happen if I turned in $1.25 an hour on these pump bodies? They'd pay me- once! Don't you know that if I turned in $1.50 an hour on these pump bodies tonight, the whole God-damned Methods Department would be down here tomorrow? And they'd retime this job so quick it would make your

> head swim! And when they retimed it they'd cut the price in half! And I'd be working for 85 cents and hour instead of $1.25! (p.430)

It was found that machine operatives of one shop received surreptitious assistance from five service groups in a subversion of formally instituted rules and procedures. The informally organized intergroup ring was able to frustrate a series of managerial attempts to effect new designs of production control over work groups (p. 255 1954 Roy).

Krueger and Mas (2002) found that labor strife in a tire plant closely coincided with lower product quality. Tires produced during the labor dispute had significantly higher failure rates than those produced before or after the dispute, or those produced simultaneously at other plants with no disputes. Monthly data suggested that the production of defective tires was particularly high at the time the team's wage concessions were demanded by Firestone in early 1994 and also when large numbers of replacement workers and permanent workers worked side by side in 1996.

But influence activities may occur at any level within an organization. It is important to recognize that the interests of lower level decision makers may not coincide with those of top management. A factory manger who is compensated on the basis of factory costs may not be eager to advocate a new technology that leads to higher costs this year even though it may reduce the costs at other factories in other years. Conversely, divisional managers, who commonly find their salaries tied to the size of the division units they manage, are likely to spend more time thinking about the advantages of large investments in their own units than about the associated risks. Technology managers may brainstorm reasons to adopt new technologies that do nothing but justify their own jobs. (see Milgrom and Roberts for more illustrations)

Power is usually socially determined. Powerful people are those who hold positions of power or who are generally perceived as higher in status. Real power may also be held by key personnel: Crozier 1964 reports that maintenance workers in a large factory possessed virtual immunity from supervisory pressures because they were the only ones who could keep the plant running. This claim of key personnel to power is something of a departure from a simple hierarchical structure (Cyert and March 1963).

The relative power position of one key group has implications for influence activities. Pfeffer and Salancik (1974), showed that power comes from the ability to provide resources for the system and to "help" the system cope with sources of uncertainty. However key positions crucial for the firm can create dissent not always benefiting the firm. And hence increase influence costs.

Merged organizations for instance suffer from influence cost. When United airlines took over a smaller airline the United pilots threatened to strike and tried in different ways to prevent the take over. They were afraid that the new lower paid pilots were going to press down the wages for the United pilots. The Daimler and Chrysler merger is another case

where the pay system was one of the major obstacles for the merger but also for a successful aftermath of the merger.[4]

Influence activities in the public sector have long been debated. There may not be perfect analogy between the clearly costly politicking and unprofitable rent seeking activities in the public sector and influence activities in the private sector.[5] A central government deciding, for example, about taxes, quotas, franchises or standards may create or redistribute rents and hence, induce private parties to spend valuable resources to influence the decision. (Influence costs are the largest problem with large government). Rent seeking activities can be found unions and as well as in the private profit sector.

Influence Costs

Resistance and influence activities occur in firms where the distribution of costs and benefits affects efficiency. Costs are incurred in trying to shift organizational decisions so that they favor one group or another within the firm to no direct aggregate benefit (Milgrom and Roberts 1990, p. 249).

A pair of conditions makes influence activities likely. First, there must be a group of decisions to be made that can influence how the benefits and costs within an organization are distributed and shared. Second, the affected parties must have open channels of communication to the decision makers and the means to influence them. (Milgrom and Roberts, p. 272)

Influence costs result from every step in the decision making process, including the decision maker's salary and the cost of providing information to support the decision-making system. *But most important is that individuals and units within the organization may have selfish reasons to seek unproductive interventions, in which case they expend resources in influencing the decision maker.*

Even a failed attempt to influence the decision process expends resources on the influence activities; a successful attempt can incur the additional cost of a wrong decision. And further costs are incurred by the organization in trying to control and govern these influence activities. Since larger organizations have more scope and scale for influence activities, influence costs limit the scope of the organizations.

An effective system of capital allocation then must meet a diverse set of challenges: it must ensure that major investment decisions are consonant with the company strategy, that they are financially well justified, that the evaluation of investment projects is not

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[4] Porter shows that 60% of all the acquisitions failed 1950-1986. M Porter 1987, Harvard Business Review 43-59 From competitive Advantage to Corporate strategy

[5] Unproductive profit seeking or rent seeking activities all creates influence cost. (Krueger 1974 rents seeking activities in the public sphere and directly unproductive profit seeking Baghvati 1982 also introduced as applied to the public sector.)

excessively tainted by the personal and career interests of the managers involved, and that the process taps the knowledge of those who are best informed[6].

Minimizing Influence Costs: Allocation of Decision Rights

Several aspects of the work place rules affect the opportunities that members have to spend resources trying to alter the distribution of rents. One of the most important is *degree of centralization*. In a more centralized organization, task assignment and processes of information sharing are very clear, and employees have limited means to influence the system above them. More *open* decision processes have more opportunities and incentives for costly rent seeking (see Milgrom and Roberts 1994, Saloner and R, Holmstrom and Hart 2002). The openness of a decision process depends on the answers questions such as these: Can the parties propose new initiatives at any time? Can they give volumes of testimony in a form of their own choosing? Are decision makers obliged to respond to the parties' initiatives?

Measures that insulate the decision process from rent seeking include *limits on the provision of information by interested parties* or restrictions on the range of options considered. But these may degrade the quality of decisions, especially by blocking the flow of valuable information. Cognitive flexibility in an organization increases its adaptability to change and openness to novel information. (Coser 1975, and Granovetter 1982 and Simmel). And though openness increases the incentives to distort information, competition among many different interests increases the likelihood of getting correct and relevant information.

The very elements that make a process open to rent seeking may also add flexibility and responsiveness helping to ensure that important ideas and proposals are fully considered, leaving organizations with a trade-off. *Optimal decision processes balance the costs of rent seeking against the value of information obtained.*

An illustration of the need for information is found in Freeland's (1996) description of the GM organization during the second World War. It was clear that the management needed input from the shop floor and the managers in order to redesign and reorient the organizational activities for war production. So in an emergency situation a type of decentralization under extreme circumstances took place when the solidarity among the population as a whole but probably also among the GM workers was strong.

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[6] As noted below in the section on influence cost and equity, these are often the very same individuals whose personal interests are most affected by the decision (Milgrom and Roberts 1992).

[7] Porter shows that 60% of all the acquisitions failed 1950-1986. M Porter 1987, Harvard Business Review 43-59 From competitive Advantage to Corporate strategy

[8] Unproductive profit seeking or rent seeking activities all creates influence cost. (Krueger 1974 rents seeking activities in the public sphere and directly unproductive profit seeking Baghvati 1982 also introduced as applied to the public sector.)

Silicon Valley start-ups provide a contrasting example. At their inception, these firms comprised a diverse group of people: young engineers and scientists with novel approaches to new problems. The organizational form best suited to their creative entrepreneurial project was almost chaotically open: everybody talked with everyone and there were often big meetings where information was exchanged. These firms fostered valuable and often radical new solutions in hardware, software, and service provision.

But once these new products and services were developed, the business strategies of these companies changed. The organizational focus shifted from developing products to selling them. With the new technologies in place, the open organizational designs with their immense flow of novel suggestions became cumbersome. Changing strategy and organizational structure affected the needs not for technology, but for a new type of key personnel: salespeople. Today, these organizations are still small-sized, but centralized, demographically homogenous, and sales-focused.

According Milgrom and Roberts (1990), the most desirable processes differ for decisions with large or small redistributive consequences. It would then seem to follow that organizations will try to separate efficiency and redistributive issues and to settle the latter issues first so that they won't interfere with decisions about how best to create value.

This is illustrated in the organization of many airlines, where pilots bid for routes according to seniority. The distributional issue is treated mechanically by lottery or seniority rules and the remaining efficiency aspect is delegated to the parties with the relevant information. Sometimes this is not safe or possible: in this case the airlines risk uneven distribution of experience of teams.

In certain cases, intractable redistributive issues call for extreme reorganizational measures. Brynjolfsson, Renshaw, and Van Alstyne 1997 illustrate the challenges of changing organizational structure to match new technological capabilities with the case study of MacroMed (HBS case)..

As mentioned above, opportunities to influence decisions and colleagues are greater when there is a central authority with the ability to affect the distribution of costs and benefits between individuals or units. One way to combat these costly influence activities is to remove that authority by creating *spin-offs* (see Milgrom and Roberts p.275). New ideas and innovations must sometimes be relocated to new plants, *Greenfield sites*, and even new ownership constellations in order to be developed in a productive way. Part of the reason for moving new entrepreneurial projects out of the old organization is the resistance among the work force.

General Dynamics is a case in point. In order to give the managers the assumed appropriate compensation contracts they had to construct a separate company for some of the business (HBS case). An in order to provide shareholder value they could not expect the in-house organization to provide sufficient incentive for the appropriate actions.

Influence Cost and Incentive Systems

The more of a firm's resources an employee or group can access, the more costly that employee's or group's influence activities can be. When a manager tries to influence his or her superior in the manager's rather than the firm's interest, the manager can use up others time, give incorrect information, withhold information, or make commitments that may prove very costly to the firm only because the manger's interest is not properly aligned with the firm's. Likewise, a group of lower-level employees with a low level of internal competition or a strong informal organization can access a great deal of a firm's resources and thereby present the potential for major influence costs. These cases are best mitigated with incentives systems.

Reward systems differ from firm to firm[9], but they are an important aspect of organizational design, since they influence workers by directly affecting their wealth. Some pay systems enhance cooperation whereas others create competition. Compressed time rates decrease influence activities: there is little potential for redistribution when everyone gets almost the same. (See Ronald Gilson and Robert Mnookin 1985 on different pay structures in different types of organizations, for instance equal pay in law firms with no central figure to try to influence, Pfeffer and Langton 1988 on wage inequality and the organization of work in academic departments, and Milgrom and Roberts 1992 p. 274)

Piece rates, by contrast, increase influence activities: in the case of the steel-mill workers (Roy 1952, 1954), if the pay system had been based on a tournament system where the best worker was to get opportunities that the others did not then the possibility to reach solidarity or joint actions among the workers would have been restricted. So increased competition and decreased solidarity within the work force limit the potential for collective action and thereby lower influence costs.

Several incentives other than regular pay can affect influence activities. Stock options can increase employees' wealth without increasing influence activities. However, the employees of today may want options with a shorter duration and easier renegotiation. Pay systems based on administrative, bureaucratic rules create less influence costs (see Milgrom and Robert p. 370). Subjective performance evaluations are more than anything else subject to influence activities (Milgrom and Roberts p. 406). Job assignment matters as well: the difference between fast track or dead end jobs affects the employee's future welfare. Jobs that hold promise for growth decrease the incentive for detrimental influence activities, whereas dead-end jobs increase it.

A compensation contract is often constructed with a mix of different types of incentives: bonus, stock options, team- or firm-based bonuses, and salary and promotion systems. The contract ultimately places a certain amount of risk on the individual. The risk profile of the contract depends on the category of professional: managers carry more risk than secretaries, since they have more control over the output.

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[9] Exceptions include the Scandinavian countries, which regulate exactly what types of contracts white and blue collar workers should have given their occupational positions (see Meyersson-Milgrom, et al. 2001, 2002).

Pay system can also be used in conjunction with other systems in organization. We say that these joint devices are complements. For example, decentralization of decision rights, financial responsibility, and pay for performance are complements. Together they support each other in enhancing value.

Influence Cost and Equity

Some fifteen years ago, sociologist Robert Eccles argued that transfer pricing practices affect economic decisions, which in turn affect corporate performance. But *transfer pricing also affects performance measurement, evaluation and rewards that in turn affect perceptions of fairness by individual managers*. *The fundamental difference in managing transfer pricing involves establishing practices that will lead to decisions that enhance corporate performance while at the same time measuring, evaluating, and rewarding performance in light of these practices in a way that managers perceive as fair.* (Eccles pp. 8). **[10]**

Business strategy and administrative process each directly influence economic decisions, corporate performance, performance measurement evaluation, rewards, and individual fairness. Although transfer pricing can affect corporate performance, Eccles' results suggest that managing this relationship is less difficult than managing the relationship between transfer pricing practices and performance evaluation. The most problematic criterion in evaluating transfer pricing practices is whether managers feel that they are being fairly rewarded for their contributions to the company. *Administrative processes play an important role in creating the perception of fairness through their effects on transfer pricing practices, on how performance is measured, evaluated, and rewarded, and on other variables that affect an individual's perception of how he or she is being treated.*

The transfer pricing story illustrates a more general phenomenon: a trade off between administrative/organizational best practice and perception of fairness and consequent influence activities.

In the context of a firm changing its business strategy workers can cooperate or they can resist the change. Resisting can be costly to the firm. When United Airlines bought a smaller airline company the pilots at United resisted the takeover, thinking that they would lose their competitive pay since the pilots from the overtaken airline were less prestigious and lower-paid that the United pilots. The French State-owned Renault was plagued with strikes… The Swedish newspaper industry had to delay introduction of a new cost-saving printing technology because resistance among the typesetters threatened

[10] Eccels describes the process (p10): 1. how the transfer price is set from programmed to unprogrammed decision making, 2. the individuals involved different levels of general managers financial managers and other managers, 3. what information is used on costs, other external transactions, and other internal transactions they are changed and 5, how conflict is managed what conflict resolution mechanisms are used and who is involved].

to disrupt work. Eventually the journalists took over the printing and setting of the newspaper and the typesetters became less of a threat. [11]

Firms must often manage decisions that have some significant distributional effects. Milgrom and Roberts (1990) focus on a situation where a separation between efficiency and distributional issues cannot be achieved and where the main providers of proposals, information, and analyses are the very same parties who are affected by the decisions. Under these circumstances, they claim, it is often optimal for the decision maker to commit to a policy of assessing alternatives according to their distributional impact or equity as well as to their contribution to the organizational overall objective. Requiring some fairness in the distribution mitigates the incentives for rent seeking and also may lead to better overall proposals being generated. However, Milgrom and Roberts 1990 warns that the decision maker must not pursue this concern with equity too far, because to do so risks destroying the incentives for those who propose projects to do their jobs well. This is a manifestation of the above-mentioned trade-off between rent-seeking and value of information obtained.

The distributional effects on clusters of individuals can take a life of their own into collective resistance as in the case of Roy's steel mill factory workers. Any change sought by management was resisted by the workers. See for instance the case of the steel mill workers' goldbricking and setting quotas in Roy (1952) above and their even reacting to not only their own interest but on a more general basis such as reactions to sometimes bureaucratic rulings This involved mobilizations of a whole cadre of employees, even groups outside the production workers.

Furthermore the distributional effects may take on a form little understood by scholars as well as managers. Employees tend to value not only the absolute level fairness but also relative positional of access to resources. Individuals and members of work groups compare with reference individuals and groups inside and outside the firm. Any new work practice that also implies redistribution can create resistance not well anticipated by managers.

IV. Influence Activities: Predictions From Social Behavioral Theories

As shown above a group of workers can be mobilized both for a change and against. Actors must perceive themselves as members of an identifiable group or collectivity in

[11] Resistance at different levels is sometime good and sometimes not, for instance in the r case . Ebner one of the controlling owners started asking questions in the board room that had not earlier been asked, and increased monitoring by one of the new controlling owner lead to more information about CEO compensation contracts that was important information to the shareholders in general. Another case when Investors as principals of the firm resist such as the case in Hewlett Packard merger with Compaq and where one of the founder family heirs resist the merger. See literature on take overs and mergers and resistance Ref). Roy (1952,1954) claims that some of the resistance within the Steel Mill was based on new decrees from the top levels not making sense.

order to act or react jointly. The characteristics of this group shape intra-group relations as well as determining how the group will react to organizational change. The prevalence of conditions of integration and cohesion is necessary for mobilization of the workforce, whether in compliance or resistance. We will look at demography, comparison theories, network theory, and social status theory, among others and see what bearing they have on the group dynamics that determine influence costs in a changing organization.

Social Reality and Comparison Theories

Festinger (1957) observed that individuals depend on social reality and the opinions of others to maintain confidence in the positions they hold. He noted that while some beliefs can be validated by physical reality, some beliefs depend on others for social validation.

The *comparison theory* is the idea that humans compare themselves to others or to previous or envisioned selves and use this comparison as a basis for a variety of judgments and sentiments: happiness, well being, self-esteem, and the *sense of justice*. Individuals evaluate their social position or access to resources not only from an absolute level but also from a relative positioning. A change that adversely affects a person's relative position triggers the perception of unfairness. Comparison theory ideas focus on the individuals' sentiments about their own situations as well as on individuals' ideas of the just reward for others and evaluations about how justly others are being treated, though the measurements may differ (Tyler 1997. See also Jasso on social norms). The justice evaluation is a special case within comparison theory. *Distributive justice theory* predicts that a larger disparity between the average justice evaluations of two groups increases the probability of conflict.

Gould's work (ref for my own recollection collective action and network structure paper) on Paris Communes suggests that people's decisions to contribute to a movement or collective action depend on two factors: norms of fairness that encourage individuals to match the contributions of others and the desire to avoid making contributions that will be wasted. Attention to social network structure provides considerable leverage in making predictions about mobilization outcomes (see also Oliver, Marwell, and Teixeira 1985, Marwell, Oliver, and Prahl 1988, Oliver and Marwell 1988). A free-riding rational actor will abstain from contributing to public good if his or her contribution is likely to have a negligible impact. But if one actor's contribution makes another actor's contribution more likely, then the total benefit resulting from an individual's decision to contribute may be considerably greater than his or her cost of contributing. Interdependent decisions play a part in motivating individuals to participate in collective actions in the absence of selective incentives.

Gould assumes that the decision to contribute is informed by individual expectations of efficacy. Most people are perfectly willing to contribute to a collective good but they always consider a free ride: unless they are reasonably sure their contributions will not be wasted, they will wait to see how others act. Once the first few individuals contribute, the decision framework for everyone else changes. Others will be more inclined to contribute because of the marginal returns to the group that would accrue from further contributions.

If the group has a social norm of fairness everyone now has a reason to match the initial contribution: nobody wants to be perceived and potentially ostracized as exploitative. Thus, in general, more visible contributions, make non-contributors subject to normative social pressures to alter their behavior (see Gold 1990). Gould further reports that in the Paris Commune the pressure from neighbors in the Paris National Guard made it difficult to avoid serving in the neighborhood-based insurgent militia organization.

Pressures to Conform … Demographic and Interest Diversity and Social integration
A second mechanism to joint action takes the form of social pressure toward uniformity. One such situation, called 'group locomotion,' arises from the desire or need for the group to move toward some goal. Groups can be immobilized by dissent or disagreement, but when there is consensus on both the goal and the ways to achieve it there is an impetus to move toward the goal. (see Kruglanski 19, Nemeth and Staw 1989).

Other type of situation with pressure to conform, some scholars argue, is stronger the higher up in a hierarchy you get (bad news from the standpoint of cognitive flexibility, good news in terms of reducing influence activities). The higher up one is in a hierarchical organization, the more open-ended and amorphous the tasks become and hence the more difficult the criteria for evaluating performance. (1961, in Nemeth and Staw 1989, Pfeffer 1977). Those seeking upward advancement in ambiguous settings can therefore be expected to attend closely to any cues indicating social approval as well as to the more visible norms of organizational behavior.

In contrast, *Social Status Theory* predicts that people at the low and high ends of the hierarchical status distribution are less likely to conform than the ones in the middle (see Philipps and Zuckerman 2002). The idea is that those in the middle value their positions relatively highly but also have relatively high uncertainty about their security, giving them the maximum incentive to conform. Those at the top who are more secure in their positions, or those at the bottom who are not accepted and hence don't value their positions highly will be less likely to conform.

When people do not belong to a particular group, they often believe members of that group are less trustworthy than members of their own group (Brewer and Brown 1998, Kramer 1994, Kramer and Messick 1998). But depending on the social structure of groups and individuals, or the embeddeness structure of a group the inclusion and exclusion or them and us perception may be mitigated.

How do we define as our in group and who do we compare with?Social influence is a strategic concept in social network analysis. Social Influence does not require face to face interaction. Accroding to Marsden and Freidkin 1994 the only precondition for social influence is information which allows *social comparison* about the attitudes or behaviors of other actors. Influence does not required deliberate or conscious attempts to modify actors attitudes or behavior. It encompasses what Lippitt, Polansky and Rosen (1952) term behavioral contagion involving the spontaneous pick-up or imitation by other actors of a behavior initiated by one member of the group where the initiator did not display any intention of getting the others to do what he did as well as direct influence in which the

actor initiates behavior which has the manifest objective of affecting the behavior of another member of the group. (from Marsden and Freidkin 1994, and p.4)

Majority effects on others, conformity pressures are much stronger when a subject is confronted by a unanimous social environment than when there is even a single dissenter. Majority influence seems to rise as the majority grows but the increase is slower once there are three others. These observations suggest that the appropriate specification for influence models might be nonlinear (see Marsden p 21). Simmel 1950 and Merton 1968 among others have acknowledged the key importance of interpersonal visibility as a condition *of reference group* behavior and *social control.* Obviously this informational basis of influence may exist in the absence of face to face communication. (P5 Marsden) The point here is that people compare with each other and they compare to other individuals in other groups. How individuals chose is a classical question.

Cohesion compliance or resistance. The Social Structure of a work organization
In work groups norms of fairness play a central part in the joint production (see above discussion and Elster 1989). Effective norms and rules at work places take on a life of their own when they are supported by informal social network systems. Once a norm has been established various mechanisms support its longevity. One is called exit and entry, where newcomers tend to adhere to the norm and workers who do not like it quit. (See Sherif 1935, Weick Gilfillan 1971, Zucker, 1977 Staw et al)

The formal organization of a firm is supported by the informal networks, the functional "glue" of the organization. This is especially true in knowledge-intense sectors where people use personal relationships to find the information necessary to their jobs: scholars have found that engineers and scientists were roughly five times as likely to turn to friends or colleague for information as to impersonal sources (References). To get things done you need to establish the links to a supportive network where access to resources such as information or computer assistance flows freely. When organizations change, individuals may have to make personal investments in new supportive informal networks.

The informal networks can of course assist or obstruct change, can work for the employer or against it. Under certain conditions, the informal social network system that serves as the glue of the formal system can grow disruptive by taking on a life of its own. Group members losing confidence in their leaders turning to informal leaders, such as in the case of the steel mill (Roy), may have detrimental effects on the future of the company. In instances where some of the workers perceive that new rules or systems are counter to their interest they may work less hard and they may try to convince others not to work hard or not to align with the new business strategy. A cohesive group, a dense social informal network, is a two-edged sword: it can work against the interest of the principals and it can work for them.

Norms within the informal and the formal group may collide.
So what makes up a cohesive social informal network?
And when does cohesive groups comply when do they resist.?
And what are their reference groups?

What makes up cohesiveness?
Demographic similarity across individuals is one of many prerequisites for the emergence of social integration, cohesion, and the building blocks for consensus. Integration or cohesion is important for mobilization for action. The actual mechanism linking social integration and action in a collective way will be described. And indicator of the probability of any kind of mobilization can be derived from social network theory. The social structure of social networks at a work unit can tell us something about the potential for resistance or mobilization of its members. Identifying different types of social structures, such as coupled, fragmented or mass structure is important for strategizing about how to cope with resistance and dissention.

Homogeneity with respect to individual demographic characteristics is often found to be highly correlated with degree of social integration within a group: individuals within a group sharing core values and where the social structure of the group exhibits a strong density in ties across individuals, indicating frequent communication not only between diads but between everyone in the network.

Recruitment tend to be based on *similarity*, not diversity, (Mcperhson and Smith –Lovin 1987, Feld 1981, Kandel 1978, Cohen 1977, Lauman and Pappi 1976, Berscheid and Walster 1969, Rogers and Bhowmik 1969, Homans 1965, Lazarsfeld and Merton 1954). The term similarity is given various meanings by different scholars. Some use similarity to describe individuals thinking in the same way or sharing the same goals (Lazarsfeldt, Berelson and Gaudet 1944, Simon 1976). Others understand similarity in the sense of observable attributes such as similarity in education age and other typical demographic aspects Wagner, Pfeffer and O'Reilly 1984, see on overview of Demography and Diversity in Organization Williams and O'Reilly 1998).

Homophily is a related **concept** that refers to the tendency of people in friendship paris to be similar in various respects such as beliefs values education and social status McPherson and Smit-Lovin 1987, Rogers and Bhowmik 1969.) see also Cook et al in survey article JAS.

In the present discussion a constellation of individuals is defined as a homogenous unit if it consists of members with similar observable attributes such as age social background marital status and education. Members of a homogenous unit thus defined do not automatically share the same values and do not necessarily reach unanimous decisions.

Similarity in attributes such as age and socioeconomic status is argued to be conducive to group cohesion or integration (Hoffman 1985, Ward,La Gory and Sherman 1985, Tsui and O'Reilly 1989, Wagenr, Pfeffer and O'Reilly 1984) As mentioned above relationships formed at the workplace are likely to be homogeneous in socioeconomic status Fisher et al 1977, McPherson and Smith Lovin 1987). Individuals whom are similar with respect to age and other demographic characteristics tend to communicate and understand each other better than dissimilar individuals (Rogers and Bhowmik 1969). And integrated social grouping is defined as a unit characterized by strong consensus. Members of an integrated group share the same goals and the values and the group has an

important influence on it members' values and actions. In contrast a differentiated group members do not share common goals and therefore the group is not "cohesive".
The more demographically alike people are the more they tend to interact and the more they tend to come to share similar values.

Integrated groups are characterized by a high degree of interpersonal trust . Trust can facilitate cooperation and enable coordinated social interactions (Blau 1964, Coleman, 1988: Zucker 1986). It reduces the need to monitor others' behavior, formalized procedures and create contracts (Macauley 1963: Powell 1990).

It is difficult to developed trust and cooperation across groups because people frequently perceive individuals from other groups as potential adversaries with conflicting goals beliefs or styles of interaction (Fiske and Ruscher 1993, Karmer 1991, Kramer and Messick 1998, Sitkin and roth 1993 see Williams 2001)

When people do not belong to a particular group, they often believe members of that group are less trustworthy than members of their own group But depending on the social structure of groups and individuals, exclusionary behavior can be more or less serious. One way of coupling a decentralized and fragmented organization is by coupling. Coupling through key personnel membership in many of these groups. These bridge actors will then carry over information and hence mitigate misunderstandings between the groups.

Adversaries, hostility and distrust can come about by many different means. Homogeneity with respect to demographic variables, is not the only aspect that creates cohesion or loyalty. Diversity, can come about by many different means. Diversity is partly a socially constructed concept that has implications for social actions. Diversity is often thought of as biological differences such as gender, race, or age others less visible aspect are diversity in interest due to classmembership, education, tenure, functional background such as profession, rewards such as promotion and pay systems in a firm. The way people chose their group belonging and hence their susceptibility to social pressure or similarity in interest and hence therefore taking joining in actions such as resisting business strategy changes is not straight forward.

Depending on the social structuring of these categories different value systems, and decision rules will emerge. There are interactions effects on the choices of decisions and actions taken by individuals since you seldom are a one dimensional social being, you belong to a church but you also work at a company you have a certain gender, race, education, and these different aspects gives you a belonging to many different groups. Membership in many different groups and belonging to different arenas creates criss-cross groups. Work groups may comprise both by engineers, sales people and researchers creating multiple belongings, matrix organization. This will increase the communication over professional cleavages and enhance sharing information and understanding.

Or you belong to only one group but you are different from the rest of the members but you are dependent on the others for the outcome of the entrepreneurial project and hence

your reward or return on investments. That may actually create a homogenizing effect with respect to interest and values on the group members over time through different types of mechanisms. Ex.

Scholars in the Structural and institutional research tradition argues even more explicitly that standard dimensions of social categorization such as class, gender, race nationality are best seen as contingent outcomes rather than autonomous or primordial bases of difference. It seems nearly certain that in light of the vast array of possible lines of social cleavage that the relative importance of alternatives schema for social categorization depends on numerous and also highly variable factors. Nonetheless a growing body of research point to the wide utility of focusing on the patterns in systems of social relationships when trying to account for the placement of lines of conflict, coalitions and consensus. Scholars like Gould and Granovetter all suggest that the structure of the concrete social ties in which individuals find themselves embedded is intimately linked to the abstract group categories by which they interpret and orient their actions.

Competition was built in the new global organization of Eli Lilly by creating new diversities. In this case new social cleavages or structures of diversity was build based on the country groups competing with each others for the attention of the therapy groups trying to expand the market for their pill as quick as possible. The new organization and supported by the reward system created competing between the country groups and where the evaluator of performance between the country groups were the pill groups that have their own very strong incentives not to be easily susceptible to influence activities from the country groups but to make sure their pills becomes a global success. (See HBS Ely Lilly).

So what makes up cohesion is a complicated social and economic selection process. Given that a cohesive group have been established will it comply or resist changes?? It depends on the influence the group has on the individuals and how the group is structurally linked to the larger picture.

Compliance or Resistance, decoupled or coupled social structures
Snow Zucher and Ekland Olson 1980 pointed to the importance of social networks for understanding the compliance or resistance to decisions. Social ties influence mobilization but not only at the individuals level but also at the structural and multiplexity level. So depending on how the networks and the informal social networks are structured they may provide a bases or an opportunity for mobilization to resistance.

According the network analysis the more linkages between two work group the more information will be shared and the less likely there will be conflicts hence a decoupled organization with fragmented groups will be more likely to resist in a case with changes distribution of resources than coupled working groups through their inter-linkages.

Criss cross groups such as the case with matrix organizations reduces conflicts (Simmel 1950, Gluckmans and Flap). In the case where for instance engineers and sales personnel work together and if they also depend on each other for the output and hence are paid

based on performance the group members will start liking each other or leave the group, hence over time we will see homogenization of the group and integration based on joint utility.(see as illustration Ely Lilly)

In the HBS Star Case there was a lot of diversity in the work force. But there were no criss-cross groups based on race. Black people were not working with White people and the organization was fragmented and decoupled. The two leaders took on the management of the trucking respectively the sales function. The trucking manager was black and recruited blacks and the manager of the sales was white and recruited whites. The two owners, mr Black and Mr White responsible for different functions in the organization, recruited based on similarity. Perception of unfairness between the two groups grew to a stage where it was no longer possible to kept the production going. In combination of a general down turn and financial distress. Things got worse.
And a Viscous circle was established with blaming as a general content of crisis meetings.

This example show a total decoupling between the two diverse groups, the blacks and the whites, no in between mediator.

Cooptation strategies
One of the most common and best known tools early state builders used was patronage political system the consisted of offering offices privileges and honorific titles in return for allegiance (see Gould 1996, 401 for an overview). Another closely related tool practiced most widely in France was the sale of offices and a noble titles a revenue extracting scheme that also helped to co-opt bourgeois social climbers. Monarchs and other political entrepreneurs figures as diverse as Mazrin, Henry VIII and Fredrick the Great forestalled potentially violent conflict with elites by promising selected members advantageous positions in the regimes they were attempting to construct. The creating of reciprocal bonds with potential adversaries reinforced by the inducement of a stake in the success of the emerging state apparatus, was an immensely useful method of eroding the unity of actors threatened by state centralization (Gould 401-402 1996). Co-optation strategies through forms of patronage is taken seriously as a basis for opposition to centralizing agents not only in state centered analysis but also in organizations.

See for instance the case of GM again where Sloan, the CEO, used to make sure that managers were in consent with the strategy by being members of discussion groups, later on institutionalized advisory and decision making group (Freeland 1996). All with the sole intention to build consent in order to motivate and prevent any influence or resistance activities. When business strategy was complex consent and decentralization or participation in the planningthat were the words of the day. However, when business strategy changed and became more simple such as cost reduction strategy centralization was back in fashion. (see Freeland for a description of GM between 1924- 1960s)

SAS the Scandinavian airline CEO Janne Carlsson, noticed that consent building was not enough, cooptation was not enough when trying to change work practices with a change in business strategy The firing of managers serving lip services at the executive team

meetings and then doing the posit resisting any change led to drastic techniques such as firing.

V. Interaction Effects

How do you change a culture as CEO Gestner IBM thinks he has to do in order to implement his new business strategy in the beginning of the 90s? Mobilization of a workforce is not easy. The success of the whole project depends on the clarity of the new system, the social structure of the work force, the content of the informal network and its interaction with the new formal organization and the pay system.

If there is lot of tension between groups with respect to fairness perception, and norms in general and there is little interaction, formally or informally between these group members, a decoupled system, through leadership or key personnel, then strong conflicts will likely emerge between these groups. If the groups are competing for resources or if their pay is based on tournament and other types of relative performance the conflict between groups and individuals will be even stronger. They will reinforce each other.

A group or a firm with dense informal networks will easily be mobilized for change However if the groups within the firm are fragmented units with no linkage to the top management they may be mobilized for resistance instead. Finally at the absence of group identity or the existence of multiplex group identity and that often goes together will be less likely to produce collective resistance or for that matter enthusiastic compliance. If anything, a so called totally coupled system may or may not be mobilized for change depending on the identity of the members. If as in the Lincoln electric members have been well taken care of before they may stay loyal, let themselves be mobilized, even though it may hurt them in the short run. In other cases this type of firm may lead to individual resistance rather than group resistance.

Cohesiveness potentially has two different roles in organizational change. On the one hand, a cohesive group may be very effective at *supporting* change. People usually hold positive perceptions of fellow groups members ‘s trustworthiness and exhibit cooperative behavior toward them (see Brewer and Kramer 1979, 1985 Kramer and Brewer 1984 , Employees who are learning new technologies and procedures can help one another and promote learning, deal with exceptions, etc.. The group can resist change by withholding cooperation in terms of these factors.

Even if these factors are unimportant, for example because the group of workers involved in the new processes are not the same ones as used in the old process, there may still be opportunities for resistance to change. For example, workers may join together to conceal information about bottlenecks, possibilities for automation, etc Degree of Cohesion matters to the mobilization for change in an organization.

Other component in a system such as the allocation of decision rights, the degree of decentralization and centralization also matters. Going from a decentralized system to a

centralized system where individual members as well as teams will lose a lot of discretion will surely create a lot of dissent and resistance.

Rewards systems, allocation of decision rights and social network structure, degree of cohesion, degree of overlapping links between workgroups and management, all interact in restricting influence activities and/or give opportunities for mobilizing the work force for change. The question is how do these components reinforce, complement each others and how and when do they work against each others.?

High degree of cohesion within the work groups, high degree of decoupled (fragmented groups), high degree of decentralized organization and high degree of competition (eg promotion based on tournaments) between groups by competition for resources will generate high probability of individual and collective resistance.

Low degree of cohesion, the mass organization if you will, coupled network(rotating matrix organization), low degree of competition between groups, high degree of decentralization generate high probability of individual but low collective resistance.

High degree of competition for resources and reward systems based on tournaments, low degree of cohesion and strong degree of centralization generates a high probability of low degree of resistance. See table 1 below.

Table *1 Interaction effects between degree of centralization, degree of cohesion and degree of competition between teams and team members*

	a .Degree of Cohesion	b. Degree of Coupled system	c. Degree of Competition	d. Degree of Decentralization
a. Degree of Cohesion		High Mobilization for Change	Low Mobilization for Change	low mobilization
b. Degree of Coupled System			Low Mobilization	High mobilization
c. Degree of Competition				Low Mobilization
d. Degree of Decentralization				

Dual comparisons of the different components

a x b means that the more *cohesion* within the work force the more likely there will be social pressure to conform to a certain action if the system is combined with high degree of *coupling* of group members and management.

Axc degree of *competitio*n between individuals and groups for scarce resources or pay and strong *cohesion* then there will be a high degree of competition between work groups and work force members, easy to mobilize teams with members not competing within the group and low mobilization between the groups.

Axd if high degree of *cohesion* and high *decentralization* will tend to reinforce each others and often go together this will lead to a fragmented organization and with a high mobilization within the group but difficulty mobilizing the whole work force of the firm.

Triple comparisons of interaction effects
Axbxc: High degree of cohesion, of coupled system, of competition can lead to individual resistance rather then group resistance. There will be difficulties to mobilize a work group for resistance since coupled and linked. Hence, the system will be coherent on a group bases but there still can be pockets of individual resistance.

Axbxd: High degree of cohesion, high degree of coupled work groups and management, high degree of decentralization makes mobilization for change possible. However if the management group is decoupled or the management and the workforce groups are decoupled then mobilization of the workforce will be difficult and resistance will be high.

Bxcxd: High degree of coupled system and high degree of competition and decentralization will lead to low mobilization of group for change but high individuals. The system is not coherent.

VII. Conclusions

Previous research on the empirical assessment of complementarities between crucial components of an organization exhibits paucity on three issues:

1, that perceptions of fairness among employees can have an effect not only on individuals' tendencies to resist change but also on collective resistance to change.

2. a paucity of studies if systems of components are coherent or not such as if there are complementarities between work practices, social structure of the informal and formal components and the pay systems at work and their joint effects on collective and individual resistance to change,

3. and the need to account for the dynamics of change. So even when there is a plan for an coherent system of complementarities between components such as technology, pay system and work practices, going from one system to another may change the relative distribution of resources and hence create not only individual but also collective resistance to change.

This study points to important strategic questions when firms have to change their organization due to business strategy change. In order to create as little resistance as possible to change do you need to to fire and hire, retrain, reshuffle, use incentives systems to mitigate discontent? This has implication for the process of change, incrementally, radical and disruptive changes.

Future research could addressed the trade offs between other aspects of complementarities of components within a system such as the choice of work practices and its effect on degree of cohesion can in turn its effect on the organization's access to novel information. A highly coupled and cohesive work force will be restricted to access to novel information by group dynamic processes.

References

Alesina, Alberto, Raphael Di Tella, and Robert MacCulloch 2001 Inequality and Happiness: Are Europeans and Americans Different? February Harvard Mimeo.

Athey Susan, and Scott Stern, 1998 An empirical Framework for Testing Theories About Complementarity in Organization Design MIT mimeo.

Baghvati, Jagdish 1982, Directly Unproductive Profit-Seeking (DUP) Activities, Journal of Political Economy October 90: 988-1002.

Berscheid, E. and E. H. Walster, 1969, Interpersonal Attraction*, Massachusetts: Maddison-Wesley Publishing Company.*
Blau, Peter M. 1964*, Exchange and Power in Social Life* New York : Wiley

Bresnahan, Timothy, and Shane Greenstein, 1997, technical progress and co-invention in computing and in the uses of computers brookings papers on economic activity micro pp. 1-83

Bresnahan 1999, Computerization and Wage Dispersion: An Analytic Reinterpretation *Economic Journal* 109 (7): 390-415

Bresnahan Timothy F., Erik Brynjolfsson, and Lorin M. Hitt, 2000, Information Technology, Workplace Organization, and the Demand for Skilled Labor: Firm-Level Evidence. Draft

Brynjolfsson, Erik and Lorin M. Hitt, 1995 Information Technology as a Factor of Production: The Role of Differences Among Firms. *Economics of Innovation and New Technology* 3 (4): 183-200.

Brunjolfsson, Erik and Lorin M. Hitt 1998 Information Technology and High Performance Work Practices: Are there Complementarities Mimeo MIT Sloan School.

Brynjolfsson, Erik and Lorin, M. Hitt, 2000, Beyond Computation: Information Technology, Organization Transformation and Business Performance. *Journal of Economic Perspectives*

Brynjolfsson, Erik, Amy Renshaw and Marshall Van Alstyne 1997, the Matrix of Change *Sloan Management Review* 1997 28 (2): 37-54

Brewer and Brown 1998

Cock et al JAS

Cohen, J. M. 1977, "Sources of Peer Group Homogeneity", *Sociology of Education* 50 (4) (October): 227-241.

Coleman 1988
Crozier, Maurice 1964, *The bureaucratic phenomenon*. Chicago: University of Chicago Press.

Cyert, Richard.M. and James G. March, 1963, A behavioral theory of the firm Englewood Cliffs NJ Prentice-Hall.

Eccles , Robert G., 1985, *The Transfer Pricing Problem A Theory for Practice*, Mass:Lexington Books.

Elster, Jon, 1989, *The Center of Society*. Cambridge England Cambridge: University Press.
Feld, S. L., 1981, "The Focused Organization of Social Ties" *American Journal of Sociology,* 86: 1015-1035

Fischer, C. S., R. M. Jackson, C. A. Srueve, K. Gerson, and L.M. Jones, 1977, Networks and Places*, New York: Free Press.*
Fiske and Ruscher 1993

Flap, Hendrik Derk, 1988, Conflict, loyalty, and violence. The effects of social networks on behavior. Verlag Peter Lang, Franfurt am Main

Festinger, Leon A., 1957, A Theory of Cognitve DisonancePalo Alto Stanford University Press.
Freeland, Robert F. , 1996, The Myth of the M-Form? Governance, Consent, And Organizational Change. *American Journal of Sociology* 102 2 (September) 483-526.

Gilson and Mnookin 1985

Gluckman and Flap

Granovetter, Mark, 1982, The Strength of Weak Ties. A network theory revisited. in P Marsden and N Lin Eds *Social Structure and Network Analysis* pp 105-130 Beverly Hills CA:Sage.

Gould 1990, *Social Structure and Insurgency in the Paris Commune* 1871. Ph.D Dissertation, Department of Sociology Harvard University Cambridge MA.

Gould, Roger 1995, Political Networks and the local national boundary in the whiskey rebellion. *In the Past and Future of Collective Action. Essays in honor of Charels Tilly* ed Leslie Page Moch, Michael Hanagan and Wayne te Brake. New York: Russel Sage.

Gould, Roger 1996, Patron Client Ties, State Centralization, and The Whiskey Rebellion *American Journal of Sociology* 102 2 (September) 400-429.

Ely Lilly HBS case
General Dynamic HBS case

Hitt Lorin M. and Erik Brynjolfsson 1997 Information Technology and Internal Firm Organization: An Exploratory Analysis. *Journal of Management Information Systems*. 14 (2): 77-99

Hoffman, E., 1985, "The Effect of Race-ratio Composition on the Frequency of Organizational Communication", Social Psychology Quarterly, *48: 17-26.*
Homans, G. C., 1961, Social Behavior: Its Elementary Forms. New York: Harcourt and Brace.
Homans, G. C., 1965, The Human Group*, London: Routledge & Kegan Paul Ltd.*
Ichinowski, Casey, Katherine Shaw and Giovanna Prennushi 1997, The Effects of Human Resource Management Practices on Productivity *American Economic Review* 87 3 pp. 291-313

Jasso on norms

Kandel, D.B., 1978, "Homophily, Selection, and Socialization in Adolescent Friendships", American Journal of Sociology*, 84(2): 427-36.*
Kramer 1991

Kramer 1994,

Kramer and Messick 1998

Krueger, Anne 1974, The Political Economy of the Rent-Seeking Society. *American Economic Review* June 64 291-303.

Krueger, Alan B. and Alexander Mas 2002, Strikes. Scabs and Tread Separations: Labor Strife and the Production of Defective Bridgestone/Firestone Tires 2002. Mimeo Princeton University.

Laumann, E. O. and F. U. Pappi, 1976, Networks of Collective Action: A Perspective on Community Influence Systems. New York: Academic Press.
Lazarsfeld, P. F. and R. K. Merton, 1954, "Friendship as Social Process: A Substantive and Methodological Analysis" pp. 18-66 in Berger, M., T. Abel and C. H. Page (Eds.), Freedom and Control in Modern Society*, New York: Octagon Books.*

Larzarsfeld, P. F., B. Berelson and H. Gaudet, 1944, The People's Choice, *New York: Columbia University Press.*
Lippitt, Polansky and Rosen 1952

Malone, Thomas 1987, Modeling Coordination in Organizations and Markets *Management Science* 33(10): 1317-1332

Marsden Peter, V. Noah E. Friedkin 1994, Network Studies of Social Influence pp 3-25 in Advances in Social Network Analysis. Research in the Social and Behavioral Sciences Eds. Stanley Wasserman and Joseph Galskiewicz. A Sage Focus Edition

Marwell,Gerald, Pamela Oliver and Ralph Prahl 1988, Social Networks and Collective Action: A Theory of the Critical Mass. III. *American Journal of Sociology* 94:502-34.

Mayo, Elton 1938, Human Problems of an Industrial Civilization New York: Macmillan Co.

Macauley 1963

McPherson, J. M. and L. Smith-Lovin, 1987, "Homophily in Voluntary Organizations: Status Distance and the Composition of Face-to-Face Groups", American Sociological Review*, 52 (June): 370-379.*
Merton, Robert K. 1968, *Social Theory and Social Structure*. New York :Free Press
Meyersson Milgrom et al 2001

Milgrom and Roberts 1990a, The Economics of Modern Manufacturing: Technology, Strategy, and Organization, *American Economic Review* 80 (6) 511-528

Milgrom and Roberts 1990b, The Efficiency of Equity in Organizational Decision Processes. *The American Economic Review,* 80 (2). Papers and Proceedings of the Hundred and Second Annual Meeting of the American Economic Association May 1990 154-159.

Milgrom, Paul R. and John Roberts, 1992, *Economics, Organization & Management*. Prentice Hall In NJ: Englewood Cliff.

Nemeth, Charlan Jeanne and Barry M. Staw, 1989, The Tradeoffs of Social Control and Innovation in Groups and Organizations. *Advances in Experimental Social Psychology* vol 22 pp.175-210.

Oliver, Pamela, Gerald Marwell and Ruy Teixeira 1985, A Theory of the Critical Mass. I. Interdependence, Group Heterogeneity and the Production of Collective Action. *American Journal of Sociology* 91, pp. 522-56

Oliver and Marwell 1988, The Paradox of Group Size in Collective Action: A Theory of the Critical Mass. II. *American Sociological Review* 53, pp. 1-8.

Salancik, Gerald R and Pfeffer, Jeffrey, 1974, The bases and use of power in organizational decision making: The case of a university. *Administrative Science Quarterly* 19 453-473.

Pfeffer, Jeffrey, 1977, The ambiguity of leadership, *Academy of Management Review* 2 104-112

Pfeffer, Jeffrey and N. Langton, 1988, Wage inequality and the organization of work: The case of academic departments. *Administrative Science Quarterly* 33 588-606.

Philipps, Damon J. and Ezra, W Zuckerman 2001, Middle-Status Conformity: Theoretical Restatement and Empirical Demonstration in Two Markets. *American Journal of Sociology* 107 2 September 379-429.

Powell, Walter, 1990, Neither Market Nor Hierarchy: Network Organization and the Management of Interdependence. *The Corporations of the 1990s*. Ed Michael Schott Morton 1991 pp. 189-216.

Porter, Michael, 1987, From Competitive Advantage to Corporate Strategy. Harvard Business Review 43-59

Radner, Roy 1993, The Organization of Decentralized Information Processing *Econometrica* 62 1109-1146.

Rogers, E. M. and D. K. Bhowmik, 1969, Homophily - Heterophily: Relational Concepts for Communication Research, paper presented at the Association for Education in Journalism, Berkeley, California, August.

Roy, Donald, 1952, "Quota Restriction and Goldbricking in a Machine Shop, *American Journal of Sociology*, LVII March pp. 427-42.

Roy, Donald 1953 Work Satisfaction and Social Reward in Quota Achievement: An Analysis of Piecework Incentive, *American Sociological Review* XVIII October 507-14.

Roy, Donald, 1954, Efficiency and "The Fix": Informal Intergroup Relations in a Piecework Machine Shop, *American Journal of Sociology*. Vol 60 Issue 3 Nov pp. 255-266.

Schankerman, M. 1981, The Effects of Double-Counting and Expensing on the Measured Returns to R&D. *Review of Economics and Statistics* 63: 454-458
Sheriff 1935

Simon 1976, *Administrative Behavior*. New York: The Free Press third edition

Simmel 1950, *Conflict and The Web of Group Affiliations*, Kurt Wolff transl. Reinhard Bendix, Free Press New York.

Sitkin and Roth 1993

Staw et al 1961

Tsui, A.S. and Charles, A O'Reilly 1989, Beyond simple demographic effects: The importance of relational demography in superior-subordinate dyads. *Academy of Management Journal* 32 402-423

Tyler 1997

Wagner, W. G. , Pfeffer, Jeffery and Charles A. O'Reilly, 1998,

Wagner W, G. Pfeffer , Jeffrey and Charles A O'Reilly 1984 Organizational demography and turnover in top management groups, *Administrative Science Quarterly* 29 74-92

Ward laGory and Sherman 1985

Weick karl E. and D.P. Gilfillan 1971, Fate of arbitrary traditions in a laboratory microculture. *Journal of Personality and Social Psychology* 17 179-191

Williams Michelle 2001

Zucker, I.G. 1977, The role of institutionalization in cultural persistence *American Sociological Review* 42 726-743.

Zucker, 1986

Zucker and Ekland Olson 1980

Appendix

Roy (1952, 1954) in his steel mill workers study show how the workers collaborated around rules or norms that lead to very costly resistance against the firm in the form of wasted time by setting targets for output depending on the type of jobs (Gold bricking and quotas). Distrust between management and workers involving practically no communication (decoupling in the network structure) but a one-way ordering of decrees and strong information asymmetry between labor and management to lot of wasted non productive time and profit for the firm. There were no attempts and hence no routes to *mitigat*e the problem of aligning both managers and workers incentives and where the firm would earn more profit. In this context the interesting part of these studies are that the workers all had to be in on it else the resistance would not have worked out. The piece rate systems was constructed in such a way that if the workers were working as hard as they could the management would have changed the piece rate to the disadvantage of the workers, they would have had to work as hard as they could but for

less pay. They the workers have no rational interest in showing the management what they could do if they had any pay off from it. This is an old study but a classic and still very relevant

It is clear from these studies that 1. workers have a joint interest: they are all exposed to the piece rates, 2. they are all exposed to the same risk of being betrayed by the system, and 3. they all are connected and can communicate the “rules” through informal networks and a leadership based on seniority and experience. They can monitor each other and by social pressure enforced the rule.

I argue that this was possible partly to the face to face interaction, and partly due to the incentive system, such as the pay system in place, piece-rate. There was very little competition between workers. For instance if devices such as tournament as reward system were in place competition would have been introduced between workers that would have been detrimental to cooperation.