Proactive Versus Passive Leader Behaviour and Style Influences on the Group Level Context-for-Learning

JANICE A. BLACK* AND
RICHARD L. OLIVER**

ABSTRACT

This paper considers the leader, the work group and the development of a strategic resource as a complex adaptive system. It examines the emergence of a socially created strategic resource, Context-for-Learning, over time for various workgroup and leader combinations. Virtual experiments are conducted using an agent-based model implemented via computer simulation. From our virtual experiments, we found that the composition of a group and the particular leader profile, and the leader's proactive-passive orientation results in different developmental paths. The specific set of followers, the particular perceptions of a leader and the proactive or passive orientation of a leader are all critical in determining the developmental paths of the Context-for-Learning.

INTRODUCTION

Leaders are evaluated on both their skill levels and the 'results' of their leading (Gilmore and Shea, 1997; Howell and Costley, 2005). However, when we consider that many strategic resources may be socially constructed and tacit (Barney, 1991; Blyler and Coff, 2003), identifying appropriate leader behaviour when facilitating the development of such resources is difficult (Blyler and Coff, 2003). This paper studies the factors that influence the development of a socially constructed resource. It also studies proactive or passive leadership

*Department of Management, New Mexico State University
**Department of Accounting and Information Systems, New Mexico State University

behaviour (in conjunction with ineffective or effective leadership styles) and ascertains when each type of leader behaviour is appropriate. Such interrelated and dynamic conditions mirror those found in complex adaptive systems (Anderson, 1999).

We begin by detailing what it means to be part of a complex adaptive system and an appropriate way to investigate such systems. After specifying the areas to be defined, we choose a particular socially constructed strategic resource of interest. The development of this resource will be the goal of the system. After choosing the resource, the specifications of the system, the development of our hypotheses, our virtual experiment follows. We end with the results of the experiment, discussion and the conclusions, which include limitations and applications for practising managers.

Complex Adaptive Systems and the Generation of Strategic Resources

Strategic resources are often comprised of competences that are tacit and/or dependent upon being socially constructed (Collis and Montgomery, 1995). Tacit socially constructed competences are notoriously difficult to manage and research (Barney, 1991; Blyler and Coff, 2003). Such resources typically emerge from the interactions of the individuals involved as they go about their daily tasks. Emergence implies that both human capital and social capital are involved in the creation of these strategic resources. They are also often path dependent and dynamic. Organisational researchers typically research their use (Florin, Lubatkin and Schulze, 2003) and rarely research their creation (Reagans and McEvily, 2003). Part of the problem in researching their creation is that these resources are often very sensitive to initial and ongoing conditions.

Researchers in organisational studies have found understanding complex systems is of value as a theoretical orientation (Anderson, 1999; Rivkin and Siggelkow, 2003). Anderson (1999) presented the criteria that need to be explained when considering a complex adaptive system in organisational research. He called for agents to be identified as well as the relationships between those agents along with the energy importation and co-evolution of both the agents and their relationships. Because of the contextual sensitivities involved, one of the ways that complex adaptive systems have been examined is through computational modelling (Carley and Svoboda, 1996). While there are various ways that computers can model the complex adaptive systems found in organisations, the one most suited for the emergence of a group-level phenomena from the interactions of individuals is agent-based modelling (ABM) (Anderson, 1999).

The critical elements of ABM include the goal of the complex adaptive system, the agents involved and the relationships between the agents (Anderson, 1999). Once the ABM has been specified, virtual experiments can be run where certain elements are held constant while others are changed. Virtual experiments allow for the running of the simulation either across varying

conditions or model components. Various hypotheses can then be tested using either synthetic or field data. The results of the model reveal both the results of the logic used to develop the model and the system results of operating as a complex adaptive system. These features also enable a sensitivity analysis to be performed to determine the relative sensitivity of the outcome to changes in any of the input or relationships.

A major contribution of this article is that we choose to use an agent-based model to examine our complex adaptive system. Within the next section we describe the goal of the complex adaptive system, the agents involved and conclude with the relationships between the agents.

Specification of Agent-Based Model

The specification entails detailing each critical element of an agent-based model. We start with the goals. Our complex adaptive system consists of the leader, a set of followers and a socially constructed strategic resource (the Context-for-Learning). The system has two goals: maximising the leader's leadership skills and maximising the emergent Group Context-for-Learning Index.

Goal 1: Leadership Skills

A wide range of leadership skills has been researched (Howell and Costley, 2005). For the purpose of this study we needed to choose one framework which while comprehensive was also bounded. We therefore selected a set of leadership behaviours in the Competing Values Framework (CVF) (Denison, Hooijberg and Quinn, 1995; Quinn, 1984; 1988; Quinn and Cameron, 1983; Quinn, Faerman, Thompson and McGrath, 2003.) The framework allows for various leadership roles, emphasising different aspects of focus and control (see Table 5.1). Each leader then has a profile of skill levels for each role ($CVF_{PROFILE}$). Each leader would experience a conflict when trying to learn behaviours associated with the opposing roles (for example Mentor behaviours versus Director behaviours).

The goal for this agent-based model on the part of the leader is to develop their leadership behaviours in each of the eight roles. However, because of Quinn's limitations on the use of the leader behaviours we assume that at any one time a leader can only learn in one of two competing sets of behaviours. Quinn and his associates developed questionnaires to assess the skill levels for each leader behaviour identified with a role (Denison et al., 1995).

Goal 2: Context-for-Learning

The Context-for-Learning (CFL) is the strategic resource identified earlier. This strategic resource was first found in Ghoshal and Bartlett's (1994) rich case study of a learning organisation. Black and Boal (1997) operationalised it with questionnaires and found that the CFL was present under conditions of high levels of openness and acceptance to change and when there were high

Table 5.1: Quinn's Competing Values Framework Roles and Embedded Competencies

Role/ Competence	Embedded Competency 1	Embedded Competency 2	Embedded Competency 3	Embedded Competency 4
Innovator	Live with change	Create change	Think creatively	
Broker	Build and maintain power base	Present Ideas	Negotiate agreement and commitment	
Producer	Work productively	Manage time and stress	Foster a productive work environment	
Director	Design and organise the work	Delegate effectively	Envision where the organisation is going	Set goals
Coordinator	Manage projects	Manage cross-functional teams	Design work processes	
Monitor	Manage group performance	Manage organisational performance	Manage individual performance	
Facilitator	Build teams	Use participative decision making	Manage conflict	
Mentor	Understanding self and others	Communicate effectively	Develop your followers	

task performance levels. This CFL is comprised of four embedded resources: discipline, stretch, trust and support (see Table 5.2).

Table 5.2: Context-for-Learning: Discipline, Stretch, Trust and Support

Embedded Resources	Embedded Competencies
Discipline	• Clear performance standards • Fast feedback • Open communication • Management by commitment
Stretch	• Shared ambition for the future across the organisation • Collective identity • Personal link between the individual's work and the company's priorities (hence personal meaning)
Trust	• Perceived equity in decision making (a.k.a. fair decision making) • Involvement of people in decisions that affected their work or collective problem solving • Individual competence
Support	• Access to organisational resources (which was presented as inter-group cooperation and coordination) • Autonomy or the freedom to make decisions • Guidance and help including help from within groups, as well as from management in terms of coaching and support

Collectively, the scales for discipline, stretch, trust and support will be referred to as the Context-for-Learning Profile ($CFL_{PROFILE}$).

The CFL will be involved with one goal but at two different collective levels. The goal at the group level will be to maximise the Group Context-for-Learning Index (group CFL_{INDEX}). This group CFL_{INDEX} is the average across the group $CFL_{PROFILE}$. Maximising this is accomplished through the learning of the individuals involved in the group. Each individual has as their goal learning about each of the embedded resources (each individual's $CFL_{PROFILE}$) through their daily experiences. All individuals will pursue learning about the CFL but only the leaders will pursue learning in each of the leadership roles. Next we specify how each of the agents will be identified in the model.

Agents: Identification of all Agents Involved

Agents are the discrete elements found in the model that interact with others (see below). For this model we define three agents: two at the individual level (leaders and followers) and one at the collective level (the work group).

Agents within the Model

Agent 1: Leader

A leader is identified with a $CVF_{PROFILE}$ and a $CFL_{PROFILE}$. Thus the leader as an agent is identified by their personal responses to the questionnaire items associated with the $CVF_{PROFILE}$ and $CFL_{PROFILE}$. They are also identified by the groups to which they belong.

Agent 2: Follower

A follower is identified with a $CFL_{PROFILE}$ and as above.

Agent 3: Group

The group is identified by the set of individuals involved and the emergent group $CFL_{PROFILE}$. The group $CFL_{PROFILE}$ will be a composite of the individual $CFL_{PROFILE}$ for each group member. The composite will be described in the section detailing the relationships among the agents.

Relationships between Agents: Within Level, Cross Level and Across Time

Each of the relationships between agents needs to be specified. These sets of relationships are critical in the development of strategic resources (Black and Boal, 1994). There are three main categories of relationships: within level, cross level and across time.

Within Level

There are three generic within-level relationships to define: Follower-to-Follower, Follower-to-Leader and Leader-to-Follower.

Follower-to-Follower relationships can be defined as each follower's social network. Adler and Kwon (2002) note that, for organisations, social networks can be based on market, hierarchical or social relations. For this simulation, the Follower-to-Follower relationship will be based on market and hierarchical relationships. As members of the same work group, at the level of the organisation, they are expected to all notice each other and include input from the entire membership as they individually create an understanding of the group $CFL_{PROFILE}$. Thus all will contribute to each other's perception of group $CFL_{PROFILE}$.

The *Follower-to-Leader* relationship while at the same collectivity level (Individual-to-Individual) is not at the same hierarchical level (Cross Hierarchy). Thus this relationship inherently addresses the hierarchical relationships found in organisational social networks. While there may be some instances where followers will directly influence leaders (for example experienced followers and a novice leader in a work group), for this research there will be no direct influence running from the Follower-to-Leader.

The *Leader-to-Follower* relationship is also a hierarchical relationship. For this research the leader will not be providing specific directions that the follower must accomplish, but will be taking action as the leader performs each

leadership role associated with their $CVF_{PROFILE}$. The leader's behaviours will impact the individual's own perception of their $CFL_{PROFILE}$. The relationship between the leader's behaviours in each of the roles from the $CVF_{PROFILE}$ and the embedded competences of the $CFL_{PROFILE}$ is calculated using a theoretical influence matrix (see Table 5.3).

To link the leader's behaviours and the CFL, a panel of nine leadership researchers was asked to indicate whether or not the leader behaviour would impact the embedded competences. The degree of agreement on the identified influence relationship was used to operationalise the amount of times the leader's behaviour would impact the follower's perception. Thus a leader performing facilitator behaviours will influence support at a maximum level of 40 per cent of the time. The skill of the behaviour and the amount of influence will constrain the maximum amount of influence that the leader will have on the follower. Followers will not always pay attention to the leader, which acts as an additional constraint. This intermittent attention is operationalised as a random event in this paper (values uniformly distributed between 0 and 1).

Cross Level

There are two Cross-Level relationships to define. The Individual-to-Group relationship defines for each individual their perceived emergent group $CFL_{PROFILE}$. The Group-to-Individual defines the influence that perceived emergent group $CFL_{PROFILE}$ exerts on the individual as they learn from the experiences of doing the work.

The *Individual-to-Group* relationship is related to the market relationship or work group. As it is a work group, one must take into account the hierarchical relationships. Given the inherent nature of hierarchical relationships in organisations, several authors have suggested that power relationships must be included whenever there are organisational studies (Howell and Costley, 2005; Pfeffer, 1992; Yukl and Falbe, 1991). Indeed, power has been suggested to reside in the individual competencies of the people in those positions, as well as in the very positions found in most organisations (French and Raven, 1959; Howell and Costley, 2005; Pfeffer, 1992; Whetten and Cameron, 1998). Thus the leader, holding a formal position of authority, makes a contribution to the group $CFL_{PROFILE}$ based on position power. However, non-leader individuals also contribute to the group. Followers use personal power in the form of expertise power as the basis for their decision rules for creating the group $CFL_{PROFILE}$. As an individual's influence can vary, we suggest that followers influence the group proportionately with the amount of expertise that they contribute to the total amount of expertise present among the set of followers. Thus the Individual-to-Group relationships are defined as the combined Leader-to-Group position power influences and the Follower-to-Group expertise power influences. We assume that the leader makes a contribution to the group level at 50 per cent of the total contribution (Black et al., 2005) and the remaining 50 per cent will be contributed proportionately by the followers.

Table 5.3: Theoretical Influence Matrix

	Mentor	Innovator	Broker	Producer	Director	Coordinator	Monitor	Facilitator
Discipline	39.3	04.8	35.7	34.5	32.1	30.9	30.9	36.9
Stretch	41.2	25.4	38.0	28.5	50.7	38.1	41.2	57.1
Trust	38.1	25.4	15.8	28.5	26.9	17.4	26.9	23.8
Support	47.6	28.5	31.6	22.7	33.3	36.5	23.8	39.6

The *Group-to-Individual* relationships present the influence of the work group back onto the individual. A group does not have a formal hierarchical position so that leaves market relationships to define the relationships of interest here. The degree of influence we base on social relations between the group and the individual. In particular, the impact of the group $CFL_{PROFILE}$ will be dependent upon the attention choice of the individual, which is dependent upon how similar the individual perceives their own $CFL_{PROFILE}$ to be to the perceived group $CFL_{PROFILE}$. When there is a high degree of similarity, the individual will not make a conscious choice about the level of the effect and thus the effect will be a simple average (50–50) of the group and individual $CFL_{PROFILE}$. If, however, the group is different from the individual, the individual will shift emphasis to their own perceptions and weight the group less (75–25). For this paper, this Group-to-Individual influence process will be the same for both followers and leaders. The mechanics of this influence impact will be addressed in the Cross Time section.

Cross Time: FollowerT_1-to-FollowerT_2 and LeaderT_1-to-LeaderT_2

These relationships detail the learning that occurs within the individual and/or with the relationships between individuals. Because of the ABM orientation, the relationships between the group and the individual are calculated for each period. The relationships between group members will not change across time. This leaves only learning relationships. There are two learning relationships, one for each hierarchical level.

Followers will learn from their experiences based on the traditional experiential learning s-curve. This s-curve will be used to calculate the amount of change that can occur during one period. Since our simulation is based on questionnaire values that use a Likert scale, the amount of change will range from 0 to a maximum of 1.5 of a Likert value. Typically, experiential learning is based on the current level of expertise of an individual; however, this learning amount will be constrained by the individual's perceived CFL_{INDEX}, the influence of the group and the influence of the leader. The average of these factors for each embedded competence in the $CFL_{PROFILE}$ will be the amount that the individual can learn. Remember that the group's influence will be based on the degree of similarity with the individual (50–50 per cent or 75–25 per cent) and that the leader's influence will be based on whether or not the individual was paying attention to the leader (1 or 0). The individual, whether a follower or a leader, will 'learn' in their $CFL_{PROFILE}$ by this adjusted factor. The leader's contribution to their own learning is only at the individual level (leader influences for the leader are set to 0) but the group does impact the leader.

Leaders will also learn in their leadership skill areas. The process is the same in that the leader's learning will be constrained by their previous expertise levels in the leader behaviours and by their personal CFL_{INDEX}. There is the additional competing values constraint included here. The leader is assumed only to be able to learn in one of any two competing values roles for any period.

The choice of which one to learn in is based on the leader's skill level in the associated behaviours. The leader learns in the one with the highest skill level until they reach the maximum skill level in that behaviour. At that point the leader will begin to learn in the opposite behaviour. Our logic is that, once a behaviour is mastered, other behaviours will become the focus of attention. If both behaviour skill levels are equal, then the leader will learn randomly. This process follows Quinn et al.'s (2003) assumptions about the difficulty in learning opposing behaviours and assumes that the leader automatically does what they know how to do and thus learns even more about that one set of behaviours.

Since the goals of the complex adaptive system have been defined (maximise group CFL, learn individually, learn in leadership behaviours), the agents have been identified ($CFL_{PROFILE}$, $CVF_{PROFILE}$, group $CFL_{PROFILE}$) and the relationships between the agents have been identified (social-construction of group level, learning influences across collective and hierarchical levels to individual levels, experiential learning across time), we can now describe the virtual experiments to be run using this agent-based computer model.

Virtual Experiments

Virtual experiments were run where the agent factors were varied to explore exhaustively the experimental space of four conditions: 1) passive or active leaders demonstrating, 2) facilitating or producing behaviours with 3) high or low CFL while leading 4) groups with a high or low CFL. By varying these factors, we can examine a broad range of research questions.

Black et al. (2005) used agent-based models to run virtual experiments. They found that both the group and the leader need to be considered when evaluating a strategic socially constructed resource and the effect of a leader. They found that leaders made more of a difference when in a formal role than when a group member. They also noted that leaders' having a direct influence on followers made a difference in groups with low $CFL_{PROFILES}$ (Black and King, 2001).

Research Question

The focus of this research is on dynamic leader involvement and thus the general research question is:

> Does having a proactive leader differ from having a passive leader on the development of group CFL_{INDEX} under dynamic conditions?

A proactive leader is one that makes conscious choices about when to engage in a behaviour (House, 1996). For this virtual experiment, we decided that the leader needed to base the decision on an understanding of the presence of the

strategic resource, as well as on their own skill level. The decision trigger then depends upon the relative skill of the leader (facilitating versus producing). If the leader is higher in facilitating, then the leader's contribution to the group will be at 25 per cent of the total. If, however, the leader is higher in producing, then the leader's contribution to the group will be at 75 per cent of the total. Finally, if the leader is roughly balanced in skill levels between the facilitating role and the producing role (and at a relatively high level in both), then the leader will take into account the group's previous CFL level. If the group's previous level is relatively high, then the leader will contribute only 25 per cent of the total; if the group is relatively low, then the leader will contribute 75 per cent; otherwise the leader contributes 50 per cent.

Group Profile

For this study the groups included 7 followers and 1 leader. Quinn et al. (2003) identified 8 leader profiles: 4 effective and 4 ineffective. For this set of virtual experiments we used the Aggressive Achiever (effective profile) and Extreme Unproductive (ineffective profile) leader profiles. We included two additional profiles by reversing the facilitating and producing skill levels so that we have both an Aggressive Achiever and an Extreme Unproductive profile, one with a higher facilitating skill level and one with a higher producing skill level.

Virtual Data

A feature of the computer simulation that runs virtual experiments is that the data is generated to meet certain parameters. In this case, the data is generated so that it mimics individual responses of followers and leaders to real questionnaires (Black and Boal, 1997; Quinn et al., 2003). This data is generated each time the computer simulation is run.

We generate virtual data to mimic two group conditions: a high group with a high average CFL and a low group with a low average CFL. We also generate virtual data to mimic the four leader profiles (Effective Producer, Effective Facilitator, Ineffective Producer and Ineffective Facilitator) identified above. The simulation structure allows for the two conditions of passive and proactive leadership.

Hypotheses

We begin by examining the effective leader and their affects on the development of the group CFL. The initial profile examined is an efficient leader with a higher skill level in the producer role. We initially hold the group constant, match the level of CFL between the leader and the group and examine the effects of a passive effective leader with a proactive effective leader and then develop 8 hypotheses, which will be tested through the virtual model (see Table 5.4).

Table 5.4: Statements of Hypotheses

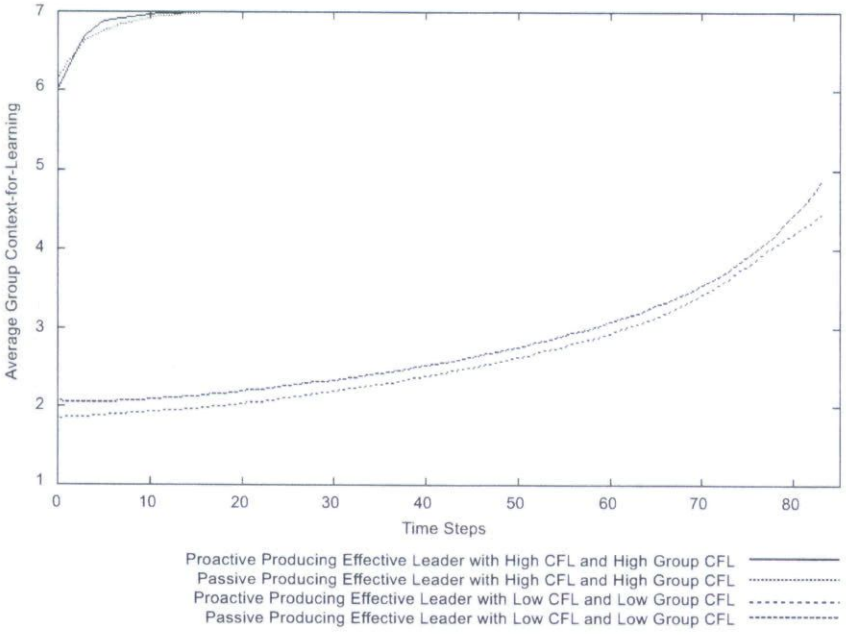
H1:	A proactive effective leader with producer strength whose CFL matches the group CFL will enable group CFL scores similar to a passive effective leader with producer strength whose CFL matches the group CFL.
H2a:	A proactive effective leader with producer strength with low CFL and high group CFL will enable group CFL scores lower than a passive effective leader with producer strength with low CFL and high group CFL.
H2b:	A proactive effective leader with producer strength with high CFL and low group CFL will enable a higher group CFL score than a passive effective leader with producer strength with high CFL and low group CFL.
H3:	A proactive effective leader with facilitator strength whose CFL matches the group CFL will enable similar group CFL scores to a passive effective leader with facilitator strength who CFL matches the group CFL.
H4a:	A proactive effective leader with facilitator strength with low CFL and high group CFL will enable a higher group CFL score than a passive effective leader with facilitator strength with low CFL and high group CFL.
H4b:	A proactive effective leader with facilitator strength with high CFL and low group CFL will enable a lower group CFL score than a passive effective leader with facilitator strength with high CFL and low group CFL.
H5:	A proactive ineffective leader with producer strength whose CFL matches the group CFL will enable group CFLs similar to a passive ineffective leader with producer strength whose CFL matches the group CFL.
H6a:	A proactive ineffective leader with producer strength with low CFL and high group CFL will enable group CFLs lower than a passive ineffective leader with producer strength with low CFL and high group CFL.
H6b:	A proactive ineffective leader with producer strength with high CFL and low group CFL will enable group CFLs higher than a passive ineffective leader with producer strength with high CFL and low group CFL.
H7:	A proactive ineffective leader with facilitator strength whose CFL matches the group CFL will be similar to a passive ineffective leader with facilitator strength who CFL matches the group CFL.
H8a:	A proactive ineffective leader with facilitator strength with low CFL and high group CFL will be higher than a passive ineffective leader with facilitator strength with low CFL and high group CFL.
H8b:	A proactive ineffective leader with facilitator strength with high CFL and low group CFL will be lower than a passive ineffective leader with facilitator strength with high CFL and low group CFL.

Results of the Computer Simulation

To examine the hypotheses, we plot the average graph across 100 runs of the simulation. Each run of the simulation included 85 iterations. Thus each graph displays an average developmental track for the group CFL for that experimental condition. We conclude that differences exist if the two lines do not overlay for a majority of the iterations.

To examine H1, which called for the two lines to be similar, we look at Figure 5.1.

Figure 5.1: Proactive Producing Effective Leaders with CFL Matching the Group CFL

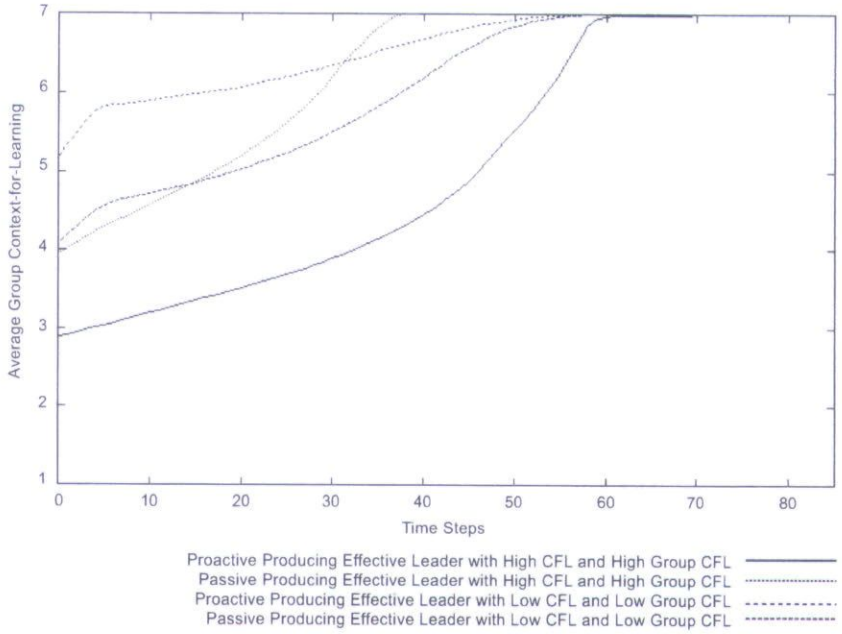


We examine the two lines at the top left and the two lines at the bottom of the graph. Neither set of lines overlap consistently. While this was closer to being true in the high group, this was not the case in either set of graphs, thus ***Hypothesis 1 is not supported.***

To examine H2a, we examine Figure 5.2 below. In H2a, we argued that the proactive effective producer leader with a low CFL leading a high group (solid line) would have a lower path than the passive leader in the same conditions (tiny dashed line). The solid line of the proactive leader is below the passive leader. **Hypothesis 2a is supported.**

Hypothesis 2B argued that the opposite would be true if the leader's CFL was higher than the group's (spaced dashed line versus narrow dashed line). We examine Figure 5.2 again. We have supporting results. We interpret the results as providing **support for Hypothesis 2b**.

Figure 5.2: Producing Effective Leaders



Hypothesis 3 suggests that proactive and passive leaders were hypothesised as having no differences. That is clearly not the case (see Figure 5.3). Neither the lines from the high groups nor the lines from the low groups are overlapping for a majority of their length. Thus there is **no support for Hypothesis 3**. In both instances when the leader has the same CFL level as the followers, it was better to be proactive than passive when using the facilitating style.

Figure 5.4 reveals that the proactive effective facilitating leader with a high group (solid line) has results that overlay the passive leader (tiny dashed line) and/or has worse results for a majority of the iterations. **Hypothesis 4a is not supported.**

When we examine the opposite mis-matching (high leader CFL with a low group CFL), the graph below indicates that group CFL enabled by the proactive leader is below that enabled by the passive leader a majority of the time and is barely above that enabled by the passive leader when it does cross over. **We find support for Hypothesis 4b.**

Figure 5.5 reveals the virtual experiments when we change the two leaders from being effective leaders to being ineffective leaders. We keep the same two groups. We follow the same pattern of first examining the producer leader and then the facilitator leader.

In Figure 5.5 the bottom two lines show the proactive ineffective producer leader whose CFL matches the low group that they lead has a developmental

Figure 5.3: Proactive Facilitating Effective Leaders with CFL Matching the Group CFL

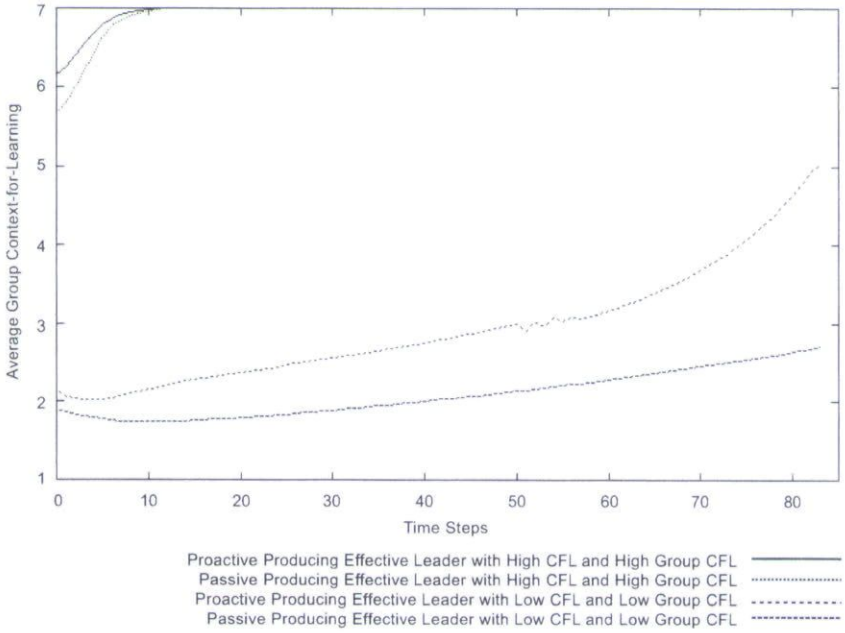


Figure 5.4: Facilitating Effective Leaders

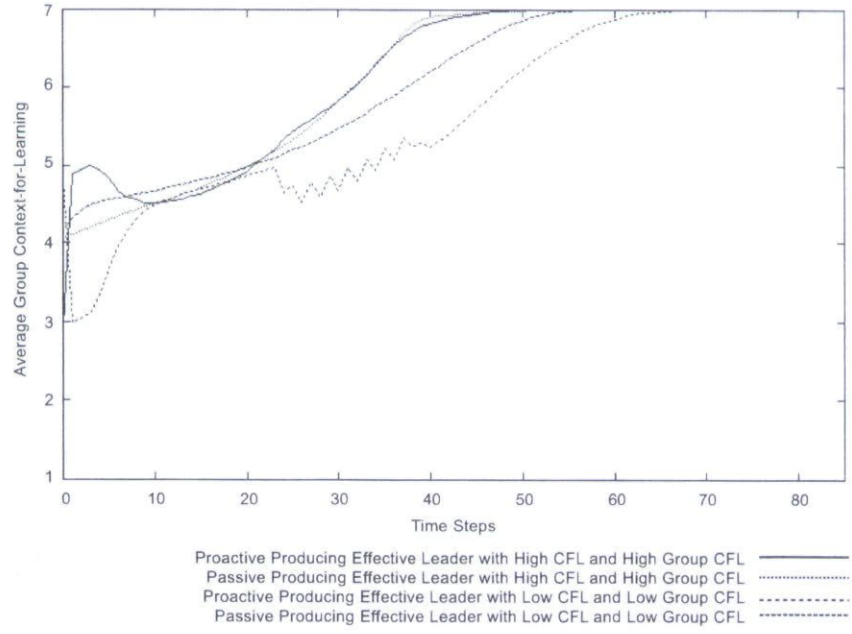
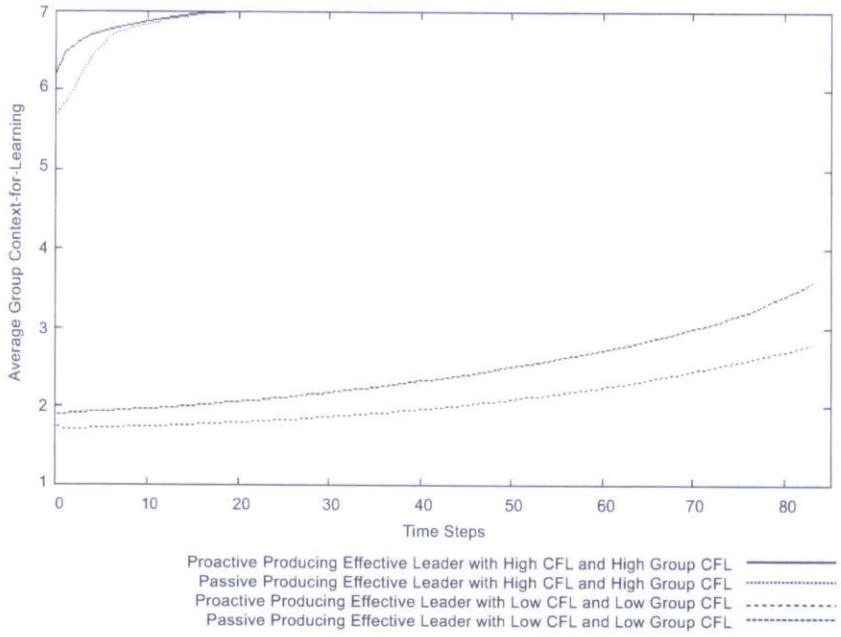


Figure 5.5: Proactive Producing Ineffective Leaders with CFL Matching the Group CFL



group CFL path that is different than the passive leader for a low group. The two lines on the right show the results for a high group. The lines overlap a bit at the end but are mostly non-overlapping. **There is support for Hypothesis 5.**

Figure 5.6 displays the proactive and passive ineffective producer leader when their CFL does not match the group. We find that when the leader's CFL is low and the Group is high, that there is a difference between the two paths. Granted, the difference for the low group is minimal, but it is present.

Hypothesis 6a called for the developmental path of the proactive ineffective producer leader to be lower than the developmental path enabled by the passive ineffective producer leader. This was not the case. **Hypothesis 6a is NOT supported.**

Hypothesis 6B calls for the proactive to be higher than the passive when the leader's CFL is higher than the groups. This was the case for the bottom two lines in Figure 5.6. **Hypothesis 6b is supported.**

The case of the ineffective facilitator leader and the two groups is shown in Figure 5.7. We again examine the two graphs below to determine if there are differences between passive and proactive leaders when leader's CFL matches group CFL.

We again examine the top two lines on the top left for overlap. There is no overlap, thus they are not similar. We examine the bottom two lines on

Figure 5.6: Producing Ineffective Leaders

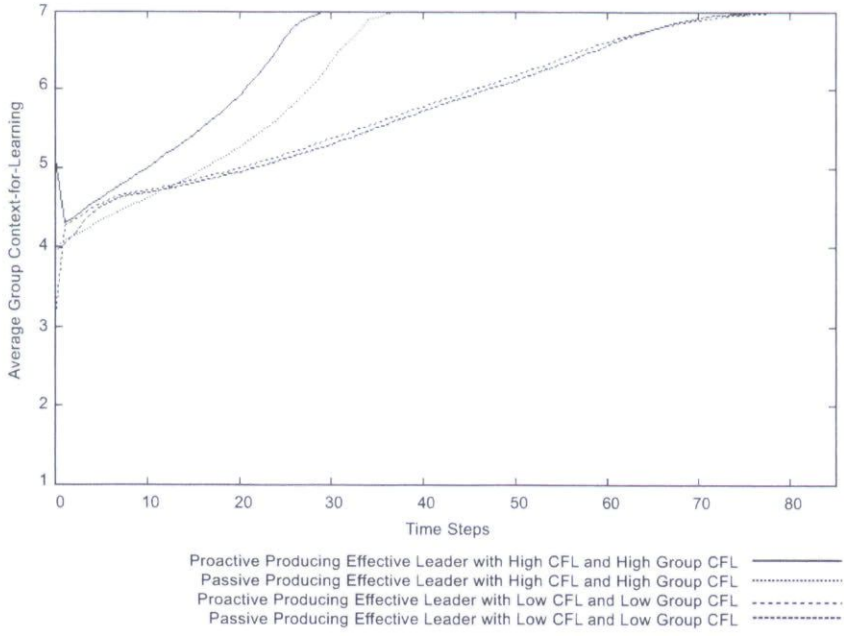
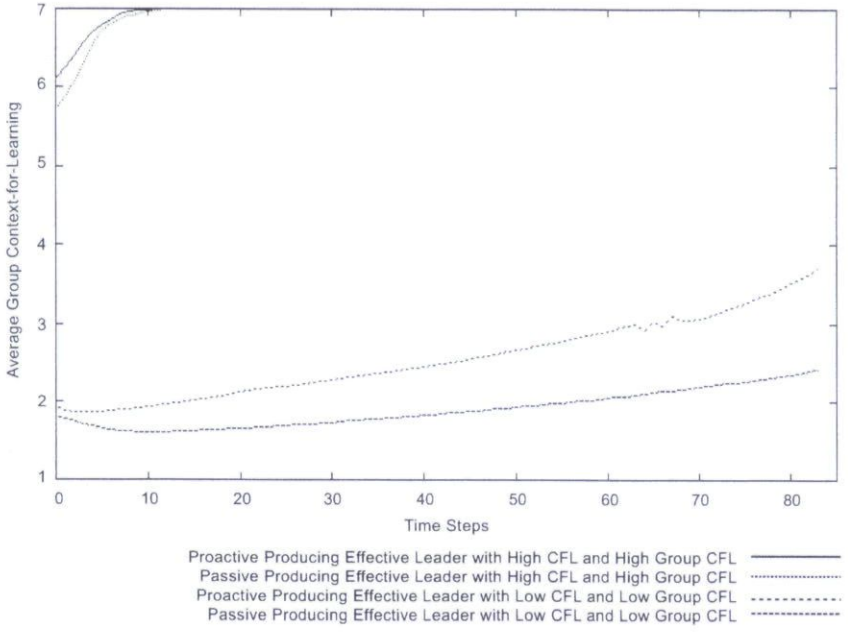


Figure 5.7: Proactive Facilitating Ineffective Leaders with CFL Matching the Group CFL



the graph for overlap. They do not overlap either. **There is no support for Hypothesis 7.**

Figure 5.8 displays the effects when the leader's CFL does not match the group's CFL. We initially examine the effects when the leader's CFL is initially lower than the group's CFL.

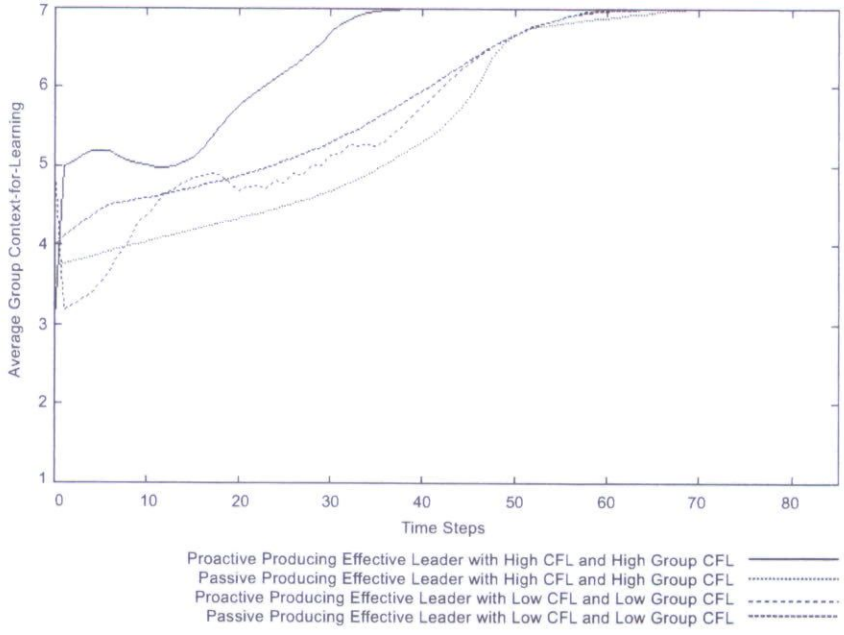
Hypothesis 8a called for the proactive ineffective facilitator leader to enable a higher path than the passive leader. This is clearly the case. **We find support for Hypothesis 8a.**

Hypothesis 8b examined the results when the ineffective facilitator leader had a CFL higher than the group CFL. In the following graph we see that the two paths cross after about 10 iterations and re-cross again. The proactive ineffective leader is lower or overlapping the passive ineffective leader for a majority of the path. Thus while it is not the exact same path, there is much greater similarity for a low group, with either a proactive or passive ineffective leader. **Hypothesis 8b is weakly supported.**

Discussion

From the lack of support for Hypotheses 1, 3, 5 and 7, we conclude that there are differences when leaders choose to act proactively and when they act passively. For both effective and ineffective leaders (in Hypotheses 2a, 2b, 4a, 4b, 6b, 8a and 8b) we find that when a leader interacts with a group the effects of

Figure 5.8: Facilitating Ineffective Leaders



that interaction depend a great deal on the relative level of the leader's CFL *vis-à-vis* the group's CFL.

In almost all cases, when the leader's CFL and the group's CFL matched, the proactive leader out-performed the passive leader (for the exception, see Figure 5.1). Even when the leader and group were mis-matched, the proactive effective leader sometimes performed better, but more often performed worse or at best equally well with the passive effective leader. For ineffective leaders, where the leader's skill matched the group, it typically did not make much of a difference. The patterns were similar, showing that the leader's behaviours did not matter (effective or ineffective). Indeed, the greater difference appears to be in the influence of the leader's CFL levels rather than in the leader's effectiveness or ineffectiveness as far as specific leadership skills are concerned.

Conclusion

In conclusion, this agent-based model and the virtual experiments show that some differences in the developmental paths beyond those of leader's skill levels in leadership behaviours exist and are due to leader's being proactive in their use of those skills. However, the greater differences appear to be in the skill level of the competency that the leader brings to the group. The developmental paths are sensitive to the relative placement of the leader's CFL levels *vis-à-vis* the group's CFL levels.

There are implications for researchers examining both leadership issues and the creation and use of strategic resources. When the strategic resources are socially constructed and tacit, the skill level of the leader may be critical in developing the resource rapidly and in maintaining high levels of the resource. Furthermore, the more proactive the leader is, even when the leader's skill sets are weak, the more responsive the development of the resource, if the leader has resource skills, at least as strong as the group which they lead.

Virtual simulations, while offering some level of understanding of the associated underlying agent-based model, needs to be supplemented and verified with field data. This report, while promising in its results, is a preliminary report facilitating our understanding of the creation of strategically important resources formed from social and human capital. It is evident from this work that social capital is very context sensitive. The simulation work assumes that everybody learns, that there is no forgetting, that people always stay in the same work group and that other forms of social networks such as friendship cliques do not impact work or market-based social networks. Each of these assumptions is restrictive.

The main finding is that the skill set of leaders and followers may be a critical decision for a business and for a leader and that acting in a proactive fashion will allow leaders to make the best of their situation in almost all scenarios. It must be noted though that proactive behaviour is not always appropriate. In the case of a mis-match between the leader's CFL and the group's CFL, it

may be better to be cautiously passive rather than proactive. For example, taking a proactive producing style when you are the effective leader of a high group but with a relatively low CFL means that you may be proactively dragging the group downward. For the facilitating effective leader, taking a proactive stance when you are relatively low does not make as much of a difference.

Leaders are being called upon to both improve their own skills and improve their work group's performance. We can see from this simulation that part of that equation is based on effects outside of the leader's influence zone. For example, if the leader is paired with a low group, performance will lag that of a high group even with proactive efforts on the part of the leader. This is true even if the leader has an existing high level of leadership skills and resource skills. However, the proactive leader will enable better performance for that group in comparison with the leader who is acting passively. The only situation that calls for a leader not to act proactively is if the leader's resource skill levels are relatively low *vis-à-vis* the skill levels present in the group. In that scenario, the leader would do well to restrain their proactive nature and act more passively. Again ... context matters.

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