II. EVALUATION

Chapter 6

Evaluation of the Fifth Dimension Program from an Internal Perspective

Besides initiating after-school educational programs in community settings, one of our goals was to evaluate these programs with respect to the quality of educational experiences of the participating children. Due to the various perturbations of our programs during the first year of Phase II, as chapter 4 should have made clear, we choose the second year (1988-89) as the most appropriate for our analysis.

Methodological Approach

In the original proposal, we did not anticipate the extent to which the systems we would put in operation would be natural systems with a constant flow of participating children and undergraduates who worked together. We soon came to realize that the nature of the after-school activity we had initiated in the various community institutions was too complex and dynamic to be captured by a traditional methodology that seeks to create experimental and control groups that are compared through pre- and post-tests.

In the most general terms, the methodological challenge posed by the systems we had put into operation was to find the most effective approach to study what is currently often called "socially situated cognition" (e.g., Lave, 1988): that is, to capture developmental patterns in real-life settings, where they are embedded in complex contexts, as opposed to experimentally designed situations. In addition, special problems arise from the attempt to study collaborative, rather than purely individual, learning, which is one of the central features of the Fifth Dimension program, as our theoretical discussion in chapter 3 should have made clear.

The most crucial problem in this respect was to find the right unit of analysis to capture developmental changes in the context of a dynamic socio-cultural system. On both theoretical and practical grounds, we would argue that to evaluate and compare programs like the Fifth Dimension, the most appropriate unit of analysis is not the individual child, or even the interactional pair.

Such an assertion may strike some people as surprising. In most developmental research, it seems almost self-evident to take the individual child as the unit of analysis. In a study such as ours, for example, we would find ways to score the cognitive abilities of children entering the Fifth Dimension, measure the changes in these scores over time, and compare these children with each other and with matched controls, as we had argued in the proposal. When we tried to follow such a procedure in this case, however, we encountered immediate difficulties simply on practical grounds. Children in the Fifth Dimension do not go through a uniform sequence of activities. In fact, no two children follow a precisely equivalent itinerary through the maze. Furthermore, the children do not travel alone, but are almost always involved in collaborative activities. Thus, it would be very difficult to match and compare them systematically as individual units; and the attempt to do so would be, at best, strained and, at worse, misleading (cf. Newman, Griffin, & Cole, 1989).

On the other hand, much research in situated cognition has taken as its unit of analysis the interactional pair or trio (the mother-child dyad, for example). Dyadic or triadic analysis brings us closer to the solution, since children in the Fifth Dimension generally play the games in pairs or trios, along with an undergraduate. For the purposes of this analysis, however, the interactional dyad or trio is also not the most appropriate unit of analysis

because the configuration of actors changes from day to day. This is true from the most micro-interactional level to the level of the site as a whole. Children and undergraduates play together in combinations that shift continuously. In addition, the overall population at each site is not stable: children enter and leave the program throughout the year; and there is an almost complete turnover of undergraduates each quarter. This situation of flux and variability, then, means that the standard methodological approaches are inappropriate.

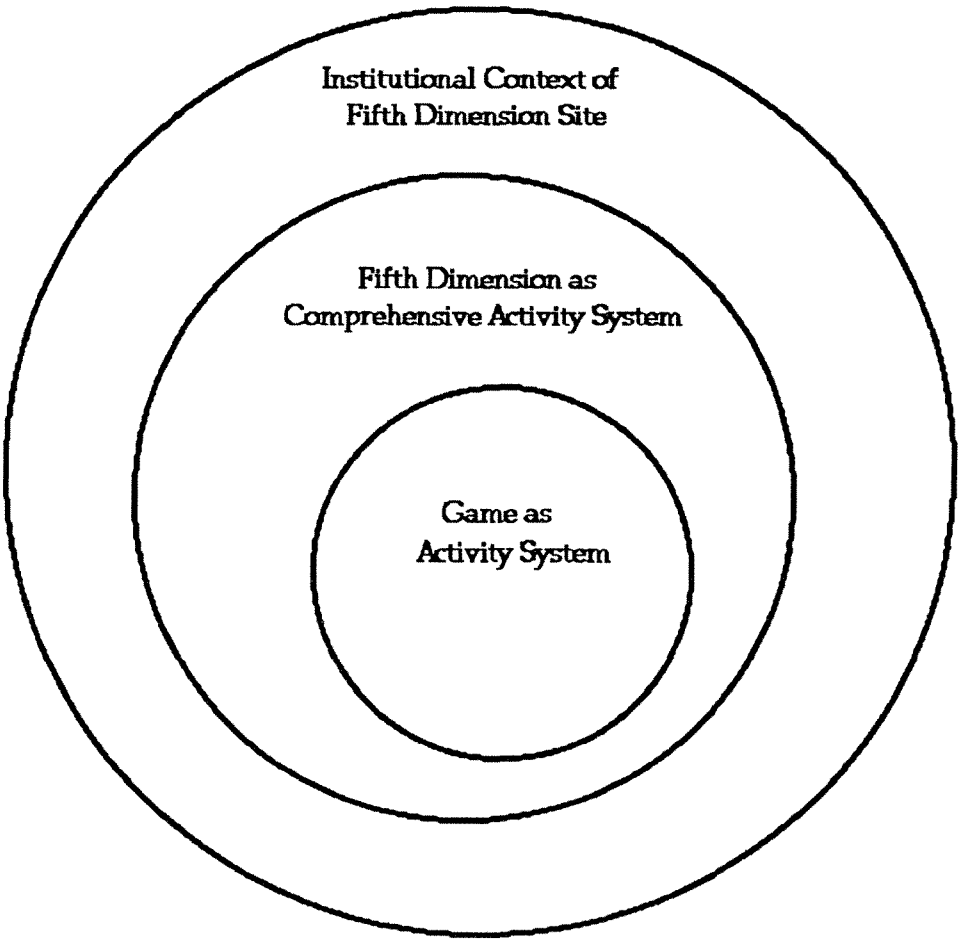
Therefore, we decided on an alternative approach. Given the nature of the Fifth Dimension program, the most appropriate unit of analysis for evaluating the cognitive growth taking place in the program is a game conceived as an ongoing system of collective activity. It should be made clear that by "game" we do not mean a particular occasion when a game was played. We are referring to the game in its more encompassing sense (as in "the game of baseball" rather than "a game of baseball"); and, as we have explained, it should be understood as an ongoing system of activity constituted by a structure of shared and socially elaborated rules. Each game fits into the larger system of the Fifth Dimension as a whole, but also it has its own distinct characteristics (see Figure 6).

Insert Figure 6 about here

Taking a game as the basic unit of analysis avoids the practical difficulties we have just outlined. Examined as an ongoing activity system, it has a degree of continuity and stability that interactional pairs or the changing population of participants do not. This approach also makes the most sense on theoretical grounds, since it allows one to focus directly on a

FIGURE 6

EMBEDDED CONTEXTS OF SITUATED COGNITION
IN THE FIFTH DIMENSION PROGRAM



dynamic context of situated cognition and cognitive growth.

Furthermore, choosing a game that was played at both of the Phase II research sites allows for a systematic and genuinely worthwhile comparative analysis (see Figure 7). This comparative analysis can help to illuminate the kind of relationship between the game activity and its larger socio-cultural context which most effectively promotes cognitive development.

Insert Figure 7 about here

Finally, it is worth noting that this sort of focus also makes sense on what might be called specifically technical grounds--having to do, in particular, with the nature of our data and the kinds of analyses for which they are best suited. Given the way that the Fifth Dimension project has been organized, our richest source of data are field notes written by the undergraduates describing, and reflecting on, their interactions with the children at site. By analyzing the whole set of fieldnotes that deal with a particular game, one can reconstruct significant long-term patterns in collaborative activity and cognitive growth.

The Task-Activity: An Adventure Game, 'Mystery House'

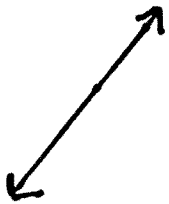
The activity on which we will focus here is a computer game called 'Mystery House'. It is a commercially available adventure game that follows the form of a murder mystery novel. The player enters a house in which people keep mysteriously dying, and in which he or she encounters both clues and dangers. For the player, the object is to unravel the clues and find the killer without getting killed, and also to find the set of jewels that are hidden in the house.

FIGURE 7

INTERACTING INSTITUTIONS
(UNIVERSITY AND COMMUNITY)

<1> LABORATORY OF COMPARATIVE HUMAN COGNITION (UCSD)

FUNCTIONS: Liaison and Research Coordination (during research phase)
PERSONNEL PROVIDED: Research Coordinator
Site Coordinator
(one at each site)
Faculty Member to Teach Practicum Course



<2> UNIVERSITY COURSE: PRACTICUM IN CHILD DEVELOPMENT (UCSD)

FUNCTIONS: Combines Theory and Practice
PARTICIPANTS: (a) INSTRUCTOR: Member of LCHC
(b) UNDERGRADUATES:
> attend class and do field work at site (twice a week)
> serve as active participant-observer
> facilitate children's learning
> write detailed field notes

<3> COMMUNITY-YOUTH SERVING INSTITUTIONS
(e.g., Library, Boys' and Girls' Club, Catholic Church, etc.)

FIFTH DIMENSION PROGRAM: M-Th 3:30 to 5:00 p.m.
PARTICIPANTS: (a) CHILDREN: attend after school hours
(b) ADULTS: >Site Coordinator (provided by LCHC)
>Undergraduates (from Practicum course)

Part of what makes Mystery House so useful for our purposes is that it is a very complex game with a number of steps, each with its own intellectual puzzles and pitfalls. To advance in the game requires trial-and-error, a great deal of thought and effort, and (usually) effective teamwork. Furthermore, "success" in the game is not an all-or-nothing affair, so it can be scored at a whole range of levels. Thus, advancing through Mystery House is a long and gradual process, involving repeated efforts--which allows for long-term observation. Moreover, to advance in this game one has to maintain the previous level reached, which requires preserving or, in the case of a new player, transmitting the knowledge already attained. In short, this game is a good test of collaborative learning and problem-solving because it brings out sharply both (1) the problem of generating individual and shared knowledge and (2) that of accumulating and transmitting shared knowledge.

The game was played all year at both the Library and the Community Youth Club. On any given day, the game might be played by one child or, more usually, a set of children--two or possibly three--working with an undergraduate (sometimes, but rarely, two undergraduates). We will refer to one of these groups of children and undergraduates as a team or play-set. To score the performance of the different teams who played the game, we devised a coding scheme based on a task analysis of the game; this involved breaking the game down into its cognitive goals (and sub-goals) and establishing a gradation of difficulties inherent in achieving them. Using this coding scheme to interpret the information from the field notes, we were able to calculate a total score for a team each time it played one of the games. (For Mystery House, the highest possible score in our coding scheme is 63.)

Over the course of the year, a roughly equal number of children played the game at least once at each site: 28 at the Library and 30 at the Community

Youth Club. With the exception of one child at each site (both of whom joined in the fall quarter) neither the children nor the undergraduates who played the game knew anything about it in advance; they had to learn it while playing.

Results: Two Distinct Patterns of Knowledge Generation and Accumulation

For each day that a specific team played Mystery House, whether they did it once or several times in succession, we recorded the last score they achieved (which was always the highest). Figures 5, 6, and 7 illustrate the pattern of scores achieved at each of the two sites over the course of the academic year. (As we explained earlier, at the Library site the program was divided into two "shifts" per week, Monday/Wednesday and Tuesday/Thursday, each with a different set of children; the pattern of scores for each of these groups has been presented in a separate figure.) A comparison reveals a significant difference between the two sites in this respect. Not only were the average scores higher at the Library site over the course of the year; the results show a steady accumulation of shared knowledge from quarter to quarter at the Library site, but not at the Community Youth Club site.

At the Community Youth Club site (see Figure 8), the highest score achieved was 32--which, as we will show in a moment, is not very high in comparison to those achieved at the Library. Even more important is the fact that this score was achieved in the fall quarter. Neither individual children, nor the group as a whole, improved their performance as time went on. There was some improvement during the fall, and we know from analysis of the field notes that some generation and transmission of shared knowledge took place. But, with the beginning of the winter quarter, the chain of transmission and accumulation was broken, and each new child who played Mystery House had to start from scratch.

Insert Figure 8 about here

In contrast, the pattern of scores for both groups at the Library site reveals an accumulation of shared knowledge from quarter to quarter.

In the Tuesday/Thursday group (see Figure 9), the highest score achieved was 52, and almost half the scores recorded were over 32, the highest score at the Community Youth Club. Even more significant, the level of scores tended to increase over time, even when new children were playing the game. In the spring, there was a great deal of turnover of participants, which produced some perturbations in the scores; but they still remained high. And one can assume that, if the new children had been able to stay another quarter, the scores would have gotten even higher.

Insert Figure 9 about here

This pattern of improvement is even more striking in the Monday/Wednesday group (see Figure 10). With this group we see a really steady accumulation of shared knowledge from quarter to quarter. As with the Tuesday/Thursday group, the highest score (51) was achieved in the spring.

Insert Figure 10 about here

In short, these results demonstrate that the game "worked" much more successfully at the Library than at the Community Youth Club. Even though there was considerable circulation of individual participants at both sites (with both children and undergraduates coming in and out), the overall pattern

FIGURE 8

MYSTERY HOUSE Game Scores
Community Youth Club: Fall 1988 — Spring 1989

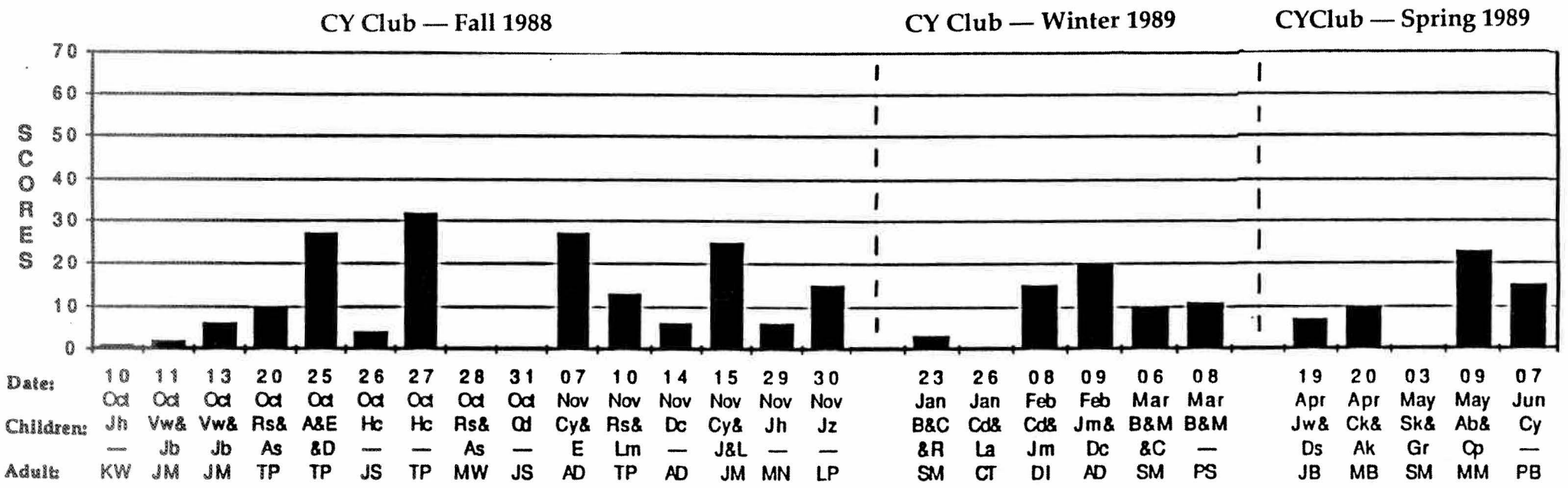


Figure 9

MYSTERY HOUSE Game Scores
Library (T / Th): Fall 1988 — Spring 1989

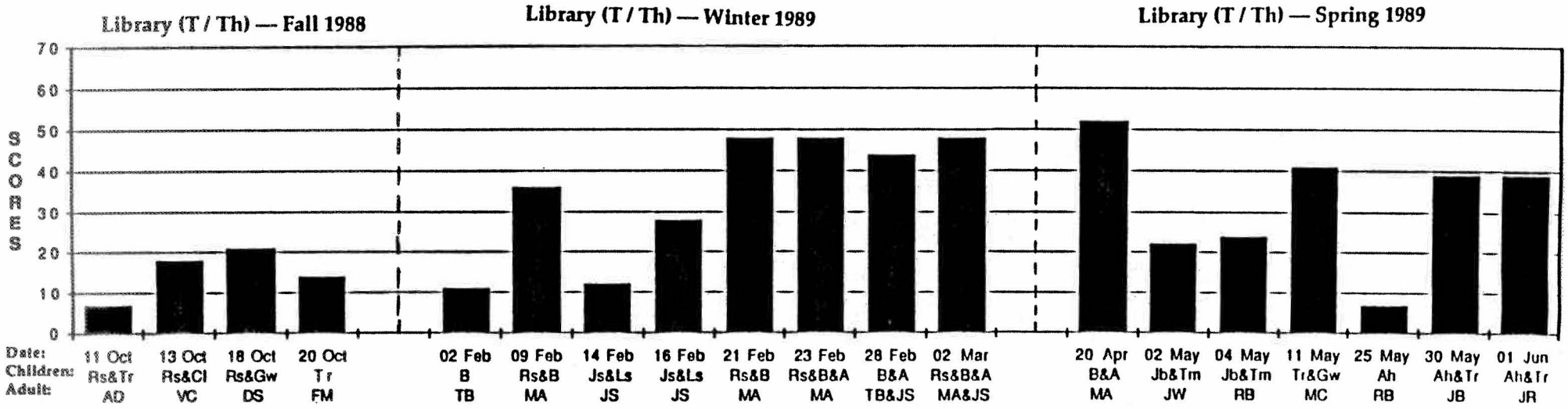
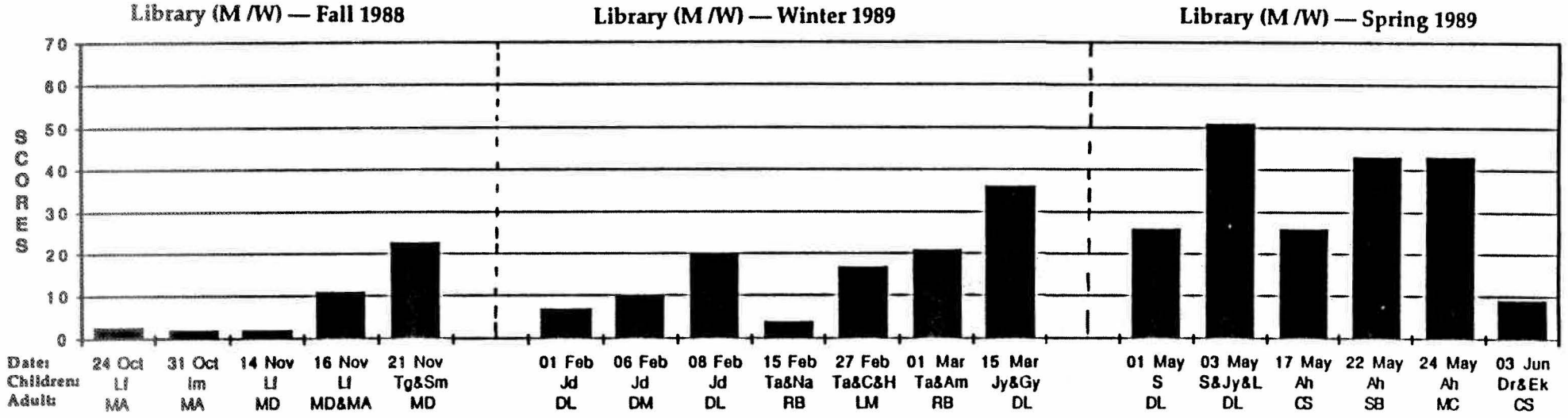


Figure 10

MYSTERY HOUSE Game Scores
Library (M /W): Fall 1988 — Spring 1989



of scores at the Library went up from one quarter to another; not only did individuals do better, but the group as a whole advanced. At the Community Youth Club, on the other hand, there was no progress of this sort. Individual children hit relatively low plateaus fairly early, and neither they nor other children were successful in building on what they had achieved.

The First Level of Contextual Embeddedness: Cognitive Growth Within the Culture of Collaborative Learning

How can we account for these very different patterns of results in the two sites?

Can this difference be explained by the background characteristics of the individual children involved, which they bring to the Fifth Dimension? On the basis of the information available, this seems unlikely. Children at the two sites were very similar in terms of age, gender composition, family background, ethnicity, and other standard demographic variables; they came from the same community and appeared to attend the same schools. If anything, in fact, the children who played this game were older at the Community Youth Club, and had, on average, more previous familiarity with computer games.

Thus, the differences seem to have something to do with the characteristics of the Fifth Dimension sites themselves. And this conclusion is reinforced by the similarity between the patterns of results achieved by the two groups at the Library site, even though two different sets of children were involved. The next question therefore, is which characteristics of the sites were critical in generating these different outcomes?

Again, some intuitively plausible factors can be ruled out. Without going into detail, let us just mention that at the Community Youth Club, as well as at the Library, there were participants who should, in principle, have been

able to serve as vehicles for the accumulation and transmission of shared knowledge. Each site, for example, had a single site coordinator throughout the year; and at both sites there was some continuity of undergraduates (it was low, but the rates of turnover were about equal). Both sites had new children coming in and leaving all through the year, so that the population was fluctuating. The Library did have a slightly higher proportion of children who stayed on for the entire year and formed a core of continuity. But this can only be part of the explanation, since there was a continuous core of children at Community Youth Club, too. And, to the extent that there was a larger stable core of children at the Library site, this is part of what needs to be explained.

The explanation we would like to advance is that it was primarily the different cultures of the two sites which produced the difference in the outcomes. Specifically, the Library site was more successful at generating and maintaining a culture of collaborative learning. This difference was manifested in terms of two mutually-reinforcing elements: <1> the pattern of interaction within the Fifth Dimensions at the two sites; and <2> the degree of commitment to, and involvement in, the play-world of the Fifth Dimension and its system of rules. What these add up to is a difference between what we will call, following Durkheim (1897/1951; 1925/1973), the degree of social cohesion of the play-world at the two sites. The social cohesion of the Library site was demonstrably stronger, and one result was greater cognitive success.

To elaborate: Mystery House is a difficult game. At the Community Youth Club, when children encountered difficulties, they were more likely to give up and do something else. As our analysis of the field notes makes clear, there was not the same degree of effort--or of cooperation. And the knowledge accumulated by individual children (or undergraduates) did not become part of a

collective cultural stockpile--that is, it did not enter into the collective memory, or the body of collective knowledge--so it was not effectively passed on or built upon. Thus, as we have seen, new children started from scratch, hit a low plateau very early, and did not go beyond it.

Why did things work out more successfully at the Library in this respect? The crucial factor seems to be that the play-world of the Fifth Dimension, constituted by its system of shared rules, had more solidity and a stronger influence on participants. Children and undergraduates spent more time helping each other out, asked others for help more readily, and did not give up so easily. We can sum this up, as we have suggested, by saying that the social cohesion of the library site was stronger. The field notes provide evidence of various kinds that this was the case, but the two key indicators on which we will focus are the quantity and the quality of problem-solving interaction at the two sites.

In the first place, the Library site had a greater degree of what we call interactional density. The rates of problem-solving interaction were higher; this applied both to interactions between children, and to interactions between children and undergraduates. In general, there was more continuity and stability of interaction at the Library site, while interactional patterns at the Community Youth Club tended to be more fragmentary and discontinuous. Furthermore, there was a much more substantial transmission of shared knowledge through interactional chains at the Library site, while at the Community Youth Club these chains were more likely to break.

There are many aspects to this phenomenon, but let us offer one illustration. Table 7 measures the extent to which participants in collaborative teams--both children and undergraduates--maintained their participation from one time to the next. Specifically, what proportion of

consecutive teams had overlapping membership, and how many of the participants overlapped? A quick glance at this table is enough to establish the difference between the two sites. At the Community Youth Club, a decisive majority of the consecutive teams (72%) showed no continuity, while at the Library site the opposite was the case (65% and 69% showed continuity). The implications for the transmission of shared knowledge are obvious.

Insert Table 7 about here

But this sort of evidence captures only part of the picture, because what is important is not only the quantitative pattern of interactions but the quality of interactions as well. These comparisons cannot be summarized as readily as the quantitative patterns just discussed, but it is clear from the field notes that at the Library site there was a stronger spirit of cooperation and of commitment to the goals of the program. As we have mentioned, children there were more ready both to ask for and offer help with the game. And various pieces of evidence suggest that, simultaneously, the undergraduates at the Library were more involved in the activities and felt a stronger bond with the children. For example, undergraduates at the Library were more likely to use the word "we" in talking of the children; and even the quality of their field notes was better.

This analysis brings us back to the themes of our earlier theoretical discussion. These two central features of problem-solving interaction--interactional density and quality of interaction--are closely intertwined and mutually reinforcing. And both of them simultaneously depend upon and promote a sense of commitment to the goals of the play-world and to the system of rules that constitutes it. To put it in Durkheim's terms, the two crucial elements

TABLE 7

Proportion of Consecutive MYSTERY HOUSE Play-Sets with Overlapping Membership

	Number of Overlapping Participants			
	3 Part.	2 Part.	1 Part.	No Part.
B & G Club	04%	04%	20%	72%
Library (M/W)	—	12%	53%	35%
Library (T/Th)	25%	19%	25%	31%

of social cohesion are integration and moral regulation; and both were higher at the Library site. Thus, the Library site had a higher degree of social cohesion, which meant a stronger culture of collaborative learning.

Readers may recall that Durkheim, in his book on Suicide, argued that social integration and regulation lowered suicide rates. Suicide is not, of course, a problem in the Fifth Dimension. But it may be of interest to note that dropout rates were much lower at the Library site: once children entered it, they worked harder and were much more likely to stay with it the whole year (see Figure 11).

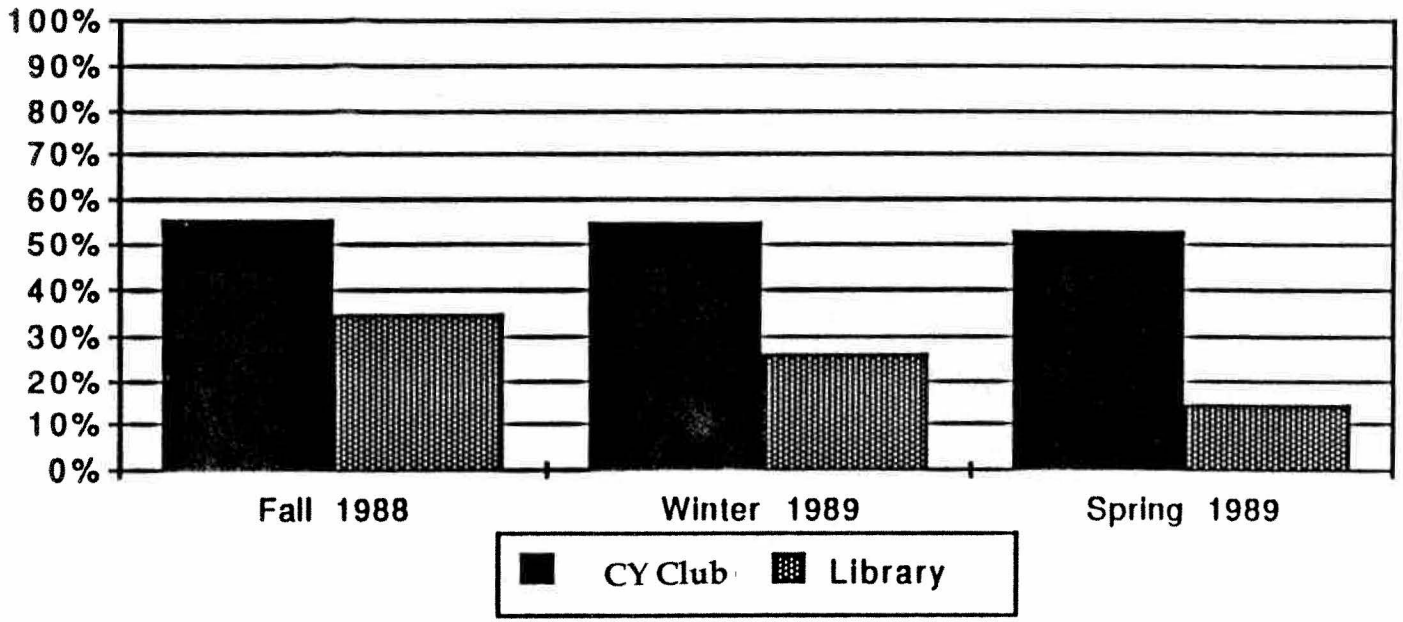
Insert Figure 11 about here

We can now sum up our first major conclusion: The degree of cognitive success and growth in the task-activity we have examined depended on a collective characteristic of the group as a whole--the strength or weakness of the culture of collaborative learning. And an effective culture of collaborative learning requires a high degree of social cohesion, which is produced by the integration and regulation of the social group.

This analysis demonstrates that the social or interpsychological context within which individual development needs to be understood is not limited to the immediate framework of dyadic or small-group interactions, but consists above all in the larger socio-cultural framework which shapes the meaning and impact of those interactions. In this case, the specific activities and interactions at each site were embedded in, and shaped by, the context formed by the culture of each site. The culture of the site, understood as a collective reality--as an activity system--is thus the key explanatory factor in accounting for the different patterns of generation and accumulation of

FIGURE 11

Drop-out Rates of Children at Different Fifth Dimension Sites: Fall 1988 — Spring 1989



knowledge bound up with a particular activity: the same task-activity evolves differently, and comes to be imbued with different meaning, within two different socio-cultural contexts.

The Second Level of Contextual Embeddedness: The Fifth Dimension Culture and Its Host Institution

A further question, however, still remains unanswered: Why was the culture of collaborative learning stronger at the Library site?

While there are a number of factors involved, the one on which we would like to focus is the interaction between the cultural logic of the Fifth Dimension, centered on its rule-governed activity system, and that of the host institution. For a number of reasons, the whole culture of the Library had more affinity with, and provided a more supportive environment for, the culture of collaborative learning in the Fifth Dimension than did the atmosphere and culture of the Community Youth Club.

The Library is a serious, earnest, studious, rule-governed universe. Its patrons abide by its rules and regulations, and any newcomer must learn to accept and abide by them. This rule-governed universe accorded with, and reinforced, a central feature of the Fifth Dimension program: the premise that the children will try to advance within a well-defined system of shared rules--voluntarily chosen rules, to be sure, but still a coherent structure of constraint and opportunity. As the field notes attest, the children at the Library site committed themselves rather easily and spontaneously to the framework of rules that constitute the Fifth Dimension and its play-world.

In contrast, the pervasive atmosphere of the Community Youth Club is one of deliberate lack of structure and absence of constraint. The Club prides itself on an "open door policy," whereby the children walk freely in and out of

the Club, making their own decisions about what they want to do and shifting easily between different activities--whether it be the Fifth Dimension, a game of air hockey, or getting a treat from the snack bar. The Club provides a cafeteria of choices for children, who are not asked to commit themselves to any one of them. This context was to a certain extent at odds with the rule-governed universe of the Fifth Dimension, making it more difficult for the children to accept fully the organizing logic of its play-world; the children's inclination was to come and play only the games they liked and to leave as soon as they were done. With a few exceptions, it took a lot of effort, continuous vigilance, and considerable persuasion on the part of the undergraduates to have the children follow their itinerary through the maze. The Fifth Dimension was an extremely popular activity at the Community Youth Club, in terms of the number of children who wished to participate; but their involvement in, and commitment to, the play-world ran considerably less deep than at the Library site.

The differences between the atmosphere and expectations of these two institutional cultures manifested themselves in a variety of ways in the children's attitudes and behavior; but one particularly striking and significant illustration is provided by the different patterns of children's attendance at two sites. Children at both sites were encouraged, though not required, to remain for the entire hour-and-a-half period each day they participated in the Fifth Dimension. At the Library site, the children almost always did so. They generally arrived on time--even apologizing on occasion when they were slightly late--and left only at the end of the period. The children's respect for and adherence to the schedule was, admittedly, reinforced by the fact that they were usually driven to and from the site by parents or other caretakers, who delivered them and picked them up on schedule.

But even children who walked or bicycled to the Library site always arrived and left on time. Thus, all the participants recognized common starting and stopping times, and during the period in between they all participated in what was seen as a shared activity. At the Community Youth Club site, in contrast, everything was in relative flux. Children wandered in and out at will, and rarely stayed through the whole period. This pattern of expectations extended to the parents as well; they would come to pick up their children according to their convenience or the children's wishes, without regard for the schedule of the Fifth Dimension program.

These different patterns of attendance are significant as indicators of the relative strength of the children's commitment to the goals of the play-world and to the system of rules that constitutes it. But they also had important practical consequences for the degree of social cohesion at the two sites. As we noted earlier, the different elements of the social cohesion of the play-world--interactional density, continuity of interaction, commitment, and so on--mutually reinforced each other. The reverse was also true. The steady pattern of attendance at the Library site both reflected and reinforced the solidity of the play-world and its influence on participants. On the other hand, the intermittent and fragmentary character of children's participation at the Community Youth Club site undermined the social cohesion of the play-world in a number of ways, both direct and indirect--while, at the same time, this pattern of attendance was in turn reinforced by the relatively weak social cohesion of the play-world.

One can begin with any one of these elements and trace a ramifying chain of mutually reinforcing effects. For example, the more steady and continuous pattern of attendance at the Library site, both within and between sessions, encouraged more stable and engaging patterns of interaction among the children

and between children and undergraduates. The higher level of interactional density provided more opportunities for long-term collaboration, and for the development of effective team groups. One way in which it supported such collaboration was by fostering closer emotional bonds within the group, particularly between children and undergraduates; thus, when the children encountered difficulties in their Fifth Dimension activities, they were more likely to turn to other children or to undergraduates for help rather than giving up. The fact that the children and the undergraduates had a stronger sense of being involved in a shared enterprise, and that the undergraduates were more able to be of effective assistance to the children in working their way through the maze, led to more satisfying relations between them. As a consequence, the undergraduates felt more committed to enhancing the children's intellectual growth, while, at the same time, the children were more willing to fulfill the intellectual demands placed on them by the play-world--and so on.

On the other hand, the fact that most children at the Community Youth Club site were less committed to steady and continuous participation, reinforces and is reinforced by the fact that the population of the site was much more fluctuating and discontinuous; and this tended to weaken both the density and intensity of problem-solving interaction. For example, undergraduates were far less likely to work with the same child--or team--from session to session, or even over the course of a single session. In combination with other factors we have mentioned, this situation contributed to making the interactions between children and undergraduates fragmentary and emotionally (with some exceptions) less involving, so that they were less likely to develop strong bonds. Since the children's involvement in, and commitment to, the play-world was weaker, they were more likely to give up when confronted with difficulties, rather than turning to others for help--especially given the fact that, at the Community

Youth Club, they could readily walk away from the Fifth Dimension site and engage in some less intellectually demanding activity. And so on.

One might wonder whether the atmosphere of the Community Youth Club could be made more conducive to sustained intellectual effort (even in playing computer games). The answer is that it sometimes does seem to be so, though usually the kind of intellectual effort it stimulates is relatively individualistic. But its main thrust runs counter to the cultural logic of the Fifth Dimension, which is oriented to creating and maintaining a culture of collaborative learning. As a result, while there were certainly instances of collaborative activity at the Community Youth Club site, a culture of collaborative learning never took firm roots to provide a constitutive framework which would shape and permeate the activities of the participants.

The key point is that from the perspective of the logic of the Fifth Dimension the culture of the Community Youth Club and that of the Fifth Dimension were not well integrated with each other, at least in comparison with the situation at the Library; rather than being mutually supportive, to a considerable extent they were pulling against each other. Each of these cultural systems embodies an approach to development--explicit or implicit--which might (hypothetically) have served as a basis for successful learning activity; but in practice they interfered with each other. The consequence was a weaker culture of collaborative learning than at the Library site, and a correspondingly lower degree of cognitive success.

Chapter 7

An Analysis of the Fifth Dimension at the Institutional Level

In the previous chapter, our focus was on examining the quality of educational experiences of the children participating in the Fifth Dimension programs. By systematically comparing Fifth Dimensions to each other, we were able to examine the dependence of these experiences to their large institutional context. However, the perspective we adopted in those analyses was that of the logic of the Fifth Dimension as a system and the educational goals that this system of activity promotes.

In contrast, in the present chapter, we will shift both our focus and our perspective: we will examine the interaction of the Fifth Dimension with the community institution within which it resided, but now the perspective adopted would be that of the community institution itself. Specifically, we will attempt to understand as well as we can infer from the course of events over the three years of the research (Phase I, II, & III) on what basis (or on the basis of what sort of criteria) the institutions took the decision of whether to continue or discontinue the program. Through this account we hope to provide some light with respect to the broader question of reconfiguring educational activity.

Some Methodological Guideposts

To remind our reader: Our research strategy in selecting the various community institutions was to maximize both unity and diversity; we involved several institutions that, while they were similar in various ways, they were also different and distinct from each other. On the one hand, the three main institutions that participated in our project--the Children's Center, the Community Youth Club, and the local Library--were located in a single community

and were quite near each other. Thus, they were all drawing on essentially the same population of children, attending the same set of elementary schools; with some exceptions, the parents of these children were white, middle-class, and native speakers of English. On the other hand, these three institutions had a different organizational structure, fulfilled different roles in the community, and had different orientations and concerns, aspects that we will turn to examine in some detail.

Our research goal of achieving a self-sustaining after-school educational activity can be analyzed as follows. We were trying to achieve a situation of collaboration between, at least, two main institutions: the University and a community institution. This situation of collaboration is such that the institutions do not need to have identical goals, but rather they can have two distinct but complementary goals; that is, although the goals are different they must be able to support and sustain one another. Specifically, the form of collaboration we were promoting required fulfilling, in some capacity, the following conditions: (a) that both the community institution and the University could use the Fifth Dimension as a common mediating object to promote one of their own goals; and (b) that these goals are complementary to each other in some capacity.

In other words, the first requirement seems to be that the community is able to use the Fifth Dimension to promote one of its long-term goals (e.g., provide children with computer activity, or introduce children to the library) in the same way that the University had a well-defined goal that it could pursue through it (i.e., train its students in educational, communicational, and developmental issues through practicum experience). The second requirement is that the community institution can use the program for a goal that utilizes the program's own intrinsic values. (There are obviously several levels of

instantiation that this second requirement can take; but the point is that an ideal collaboration between institutions would manage to use fully the internal logic of the system to promote its own goals.) If this second requirement is not met to some degree, we do not expect that the community institution would be willing to support, in the long run, the cost of its operation.

Our analysis focuses on how well this general goal of achieving a collaborative situation fared, when it broke down, and why did it do so. Through this analysis, we hope to begin to assemble some general pattern that can address the question of when, and under what conditions, the collaborative situation we were promoting, essential in trying to reconfigure education, is achieved or blocked.

(1) The Children's Center

The Children's Center was administratively semi-independent from the local school district, but it relied heavily upon it for its resources and its population. Serving a range of children that extended below the elementary-school age, it promoted mainly free play activities where adults supervise groups of children without directing them very much. As an after-school program, the Center saw itself as providing primarily a safe and pleasant place for children to be during the after-school hours while they waited for their parents to pick them up.

As our account of the interviews of Phase I between the directress and the project director indicates (see chapter 2), there were several structural problems that underlay the initiation of the Fifth Dimension program at the Children's Center. These problems were brought out again in different ways during the course of the first two quarters of the first implementation year, when we attempted to coordinate running a Fifth Dimension program in their

setting (see chapter 4). And, in retrospect, these problems made the consolidation of the program for Phase II of the research highly improbable.

Three main, interconnected, factors seem to have been operating. One factor was that the Center's legal responsibility of the children in the growing and disquieting publicity of child abuse cases in Southern California made the directress very uneasy about having a number of University students, who would stay only for 8 weeks at a time, being around the children. The Center, unlike the Community Youth Club, had legal responsibility of the children for two reasons: (a) it was operating under the auspices of the school district that requires acceptance of legal responsibility for licensing; and (b) it also ran a program with a much younger range of children, including all-day infant, toddler, and preschooler's programs.

The variability of undergraduates that the Fifth Dimension introduced, along with a much larger number of them than the directress had originally asked (5 as opposed to 2--a number that was required to run the program at the capacity she desired) was a constant source of anxiety for her. In other words, a structural element of the Fifth Dimension program--its dependence on undergraduates to run it--interfered and threatened one of the major concerns of the Child Development program: to provide a pleasant and safe place for children to be during the after-school hours, a concern that concurs with the wishes of many working parents.

Because of this variability and fluctuation of the University students, it might have been more comfortable for the directress if she had one of her own staff supervise the program along with (or rather than) the research coordinator who was also new to her. To make matters worse, in response to pressures in other sites, during the winter quarter, the first research coordinator began to supervise the site once a week while another research

coordinator began to supervise it the other day. Thus, both research coordinators were rather new to her and none of the previous year's research personnel was around any longer, which might have been a source of reassurance for her.

The second major factor was that the kind of activity we were promoting was initially of interest to her for the older groups of children who attended the Center. As we mentioned previously, the Center's main activities are non-structured free play, which is most appropriate for the younger age groups. The directress's initial goal, as she expressed it in the interview (see chapter 2), was to use the computer activities we were promoting for the older age groups. As a result of policy changes at the beginning of the academic year when we were scheduled to start our activities, the older age group was no longer bussed to this Center, but to a new one. In other words, by losing this age group from her setting, she also lost the most obvious need that the Fifth Dimension could have served to fulfill. Consequently, on the one hand, she had to adjust her goal of how best to use the Fifth Dimension in her setting; and, on the other hand, the attractiveness of the Fifth Dimension was weakened, when she no longer had to worry about keeping the older children motivated, occupied, and out of mischief.

As we saw in chapter 4, there were still plenty of children at this site who participated (and thus could participate) well in the Fifth Dimension. During the first session the group was only slightly younger as compared to those of other sites: a large number of children were 6-7 years, along with a few of 8- & 10-year-olds. This group, however, had all the right elements to build a cohesive group with a strong common culture (e.g., participation was consistent; density of interaction was high; and there were also strong bonds of friendship between children and between children and undergraduates).

For reasons that might reflect best the directress's adjustment of the goal she envisioned for the Fifth Dimension in this setting, this group did not come back to the Fifth Dimension during the second session. It seems that the directness, seeing how popular the program was, wanted all the children to have an opportunity to participate in it. The new group were all quite young and several of them could not read or write. Owing to heavy overload in trying to operate two new sites, the research team could not really adjust itself quickly to the younger make-up of the children it had to work with, which probably contributed to some further devaluing of the overall activity.

Two points are worth mentioning here. On the one hand, the directress began to pursue a goal for the Fifth Dimension in her setting which (a) was not taking into account any of the specific properties that make the Fifth Dimension unique; she simply regarded it as another computer club or simple a series of computer games with no further intrinsic value, except some obvious educational one; and (b) she aimed to provide equal access to all children who want to participate, thereby making it difficult for anyone to participate in it in a greater capacity than goal (a), which was often not met for the younger age group. On the other hand, the research team, while present during this critical period, it remained silent with respect to any of the changes; and, most important, was unsuccessful in helping the directress to find an adequate goal for the Fifth Dimension in her setting.

Why was that the case? On a self-reflective note, this initial set of interactions between the Center and the research team reveals an interesting dimension about the research team itself. It reveals that the research team, at the beginning of the project, did not exactly know how to direct and control the system that it was creating. It did not know exactly how it worked and was struggling along, making as many "mistakes" as were the community institutions

(e.g., see in chapter 4 the experience at the Community Youth Club the same year). In the present case, when the Child Development staff shifted the groups of children that came to site, the problem was that, although we had some idea of the dynamics of the program, we did not know them well enough to try to protect the Fifth Dimension's internal coherence and continuity, and more important to set the terms of how much change we would allow into the system.

The point is not so much that we could negotiate and we didn't because we were not understanding the dynamics of the Fifth Dimension well enough (in fact, it is questionable whether it would have been appropriate to speak to the directress about the changes of the groups); or that it was the research team's "failure" to help the directress shape her goals, that the program was not continued at this institution. Rather, the point is to show that there was a period when the research team's understanding of the Fifth Dimension should have come in to help the directress find a meaningful goal for her setting. For "true collaboration" to emerge, the research team and the community institution should have been to negotiate their goals together. It is also important for the research to acquaint community personnel with the intrinsic properties of the Fifth Dimension so that it can best be used in their settings.

The third major factor operating at the Children's Center was that they did not seem to have the full support of the school district, which did not provide the equipment it had promised and also made difficult the installation of a telephone line for telecommunications. This set of difficulties increased the demands that the directress would have to meet in order to keep the activity in the long run: not only find a personnel to supervise it, but also secure computers and other equipment for the program. Given then the anxiety

it was causing her, plus the casual way she was using it, it did not seem to guarantee very long-term goals.

These three sets of factors, along with the role that the research team played, interacted together to create a situation where the removal of the target population made it difficult for this setting to find a really meaningful role that the Fifth Dimension could fulfill. (This does not imply that if the target population was present all problems would have been removed; the point is that its removal exacerbated an already difficult situation.) Having the children merely being exposed to computers, without realizing the intrinsic qualities of the Fifth Dimension, was not adequate in midst of the other difficulties that were present (factors 1 and 3). In short, we believe that the program was discontinued early on in this setting because, in the language of our conceptual analysis, the requirements that the Fifth Dimension be a means to the institutional goal and that this goal is achieved using the intrinsic logic of the Fifth Dimension were not met.

Two reasons make the trajectory of goal formation in this institution different than the two other institutions: (a) the type of program the Center offered and the way the director ran it, brought to the surface early on a number of decisions and institutional constraints that made it difficult to adopt the program--a task that other institutions faced only when it was time to pass on to Phase III; and, (b) flexible expertise on the researchers part also became critical early on and we were not up to the task.

(2) The Library

The Library's main function does not center exclusively on children, as do the other two institutions, but rather on providing all community members, including children, with a range of informational and educational resources.

These resources extend from the more traditional reading and lending out of books and magazines to other occasional activities such as computer classes for adults, tax consultation, story-reading, puppet-shows, and so on. Thus, children are only one of the groups that it tries to attract. In fact, it has a distinct children's area with books and furniture appropriate for young children, including a monitor and a VCR to watch tapes. But, unlike the Center and the Club, the Library--though not very far--is not located within easy walking distance from most of the elementary schools in this area, and only a handful of school-age children come there alone during after-school hours to do their homework. Thus, the majority of children in the Library are accompanied by their parents who often use the facilities themselves.

As our accounts of Phase I (chapter 2) and Phase II (chapter 4) indicate, the Library staff adopted the Fifth Dimension program in its setting by having it fulfill two interrelated long-term goals: (a) use the Fifth Dimension as a way to introduce and familiarize the children with its activities; and (b) use the Fifth Dimension as a way to expand both the range of resources it offers to the community and the age range it can attract. In the language of our conceptual analysis, we can say that the Library's goals met the first requirement for the situation of collaboration we were setting up, but not the second requirement. In other words, the Library used the Fifth Dimension to fulfill some of its own long-term goals, but it was not using any of the intrinsic properties or values of the Fifth Dimension in doing so.

This becomes apparent when we begin to notice that at the same time that these long-term goals of the Library are getting fulfilled, the Fifth Dimension itself is getting devalued. (Why is the Fifth Dimension getting devalued is a question that we'll return to shortly, but first we want to establish the fact that the Library is using the Fifth Dimension to promote its own long-term

goals.) What stands behind both goals the Library expressed for the Fifth Dimension is that it uses the Fifth Dimension as an advertisement. This Library's goal, just like any other library, is to become well-known in the community so that it is used by a large number of community members; in the same way, the librarian's goal is for the children to use the Fifth Dimension to learn about the Library's resources. For example, the librarian's interaction with the University student early in Phase II (chapter 4, p. 60) shows that the Fifth Dimension is attracting a lot of attention. And the only activity during the third year of the project that we did not have any problem persuading the head librarian to do--and this was our only common activity for the year outside of our meetings with the Friends of the Library--was to arrange press coverage for the Fifth Dimension by a local newspaper, even though it meant interviewing her (and thus interfering with her work load). She also readily advertised the Fifth Dimension in the Friends of the Library pamphlet and even wrote a small advertising blurb, although she resisted coordinating with us on the text.

During the first year of the project, the Library was often empty in the afternoons when observations were made. By the third year of our project the Library was getting quite popular. Every afternoon there were a lot of people who used the facilities. Many parents came with their children and there were a lot of senior citizens reading the newspaper or checking out books. Our program grew in popularity merely because parents or children saw the program when they were in the Library--as the parents whom we interviewed told us. It is very unlikely that the Fifth Dimension was a primary reason for the growth of the Library's clientele; greatly increased population is a far more likely cause. But the result was the same. The Library became a very busy place.

It is around this same time that feelings of annoyance began gradually to

surface between the Library staff and the research/teaching team. As we saw earlier, they began to see the Fifth Dimension's staff as a nuisance because they were worried that they might be delayed past closing time until all the children and undergraduates were out of the building. But, a second, more significant, event is the pattern of interactions around a new electronic encyclopedia that the Library had acquired during the beginning of the third year. The project director assumed, according to their once stated goals, that the librarians were eager that we have the children use this encyclopedia. Although we constructed task cards which required the children to use it (and gave instructions about how to use it), we came to realize that the librarians were getting very annoyed when children from the Fifth Dimension, accompanied by a University student, used this encyclopedia. Also when the task cards asked children to go up to the librarian and ask for some assistance to find some reference book, it soon became clear that the librarians were getting annoyed. The truth of the matter was that they were now rather busy and they had to attend to a lot of other demanding patrons.

In fact, it appears to us that this sequence of events gives us a glimpse as to why the Fifth Dimension began to lose its value in the librarians' eyes. The Library was rather small so that the presence of 8 to 10 children who often forgot they were in a library, and hence talked freely while they carried on with their tasks, did fill a lot of space. But these children were eager to come to the Library, and the Library was becoming their second-home. Isn't that what the librarian's wish was of how to use the Fifth Dimension?

When we began negotiating about transferring control for Phase III this devaluing of the Fifth Dimension came out in the open. It became clear that, from the point of view of the Library staff, the very success of the program, which kept many children involved and enthusiastic in its activities, disrupted

the quiet atmosphere appropriate for a Library. The Library staff felt that the noise and the playful bustle of the Fifth Dimension site disturbed some of its other patrons, including the librarians.

What emerges then is that there was a two-level incompatibility between the Fifth Dimension and its goals and the way the Library tried to use the Fifth Dimension in its setting. On the one hand, there is a first-level incompatibility between the goal of the Library in using the Fifth Dimension and the structure of the Fifth Dimension as a system. In other words, the Fifth Dimension is not used for any of its own intrinsic properties, but because during Phase I the head librarian thought this is a fun way to learn. In fact, what emerges over time is that a structural element of the Fifth Dimension, play, comes to interfere with other priorities and concerns of the Library (i.e., to be a quiet place for people to carry their work.)

On the other hand, the second level of incompatibility is between the goals of the Fifth Dimension and the goals of the Library. A library is normally a place that centers itself on the availability and free access of information resources: Books, newspapers, tapes, and by extension resources like "adult computer classes," "income tax advice," story-reading time, and so on. In other words, in the staffs' view it is only a "place" where all these resources can be found, and its goal is to be able to provide them freely and comfortably. Still, among these services, its primary goal is to promote the lending and borrowing of books (and other such materials), and the additional resources that modern libraries introduce are partly useful resources for the community and partly advertisement stratagems to make the place useful and attractive. The Library staff do not involve themselves with them and they just want to provide a place for them to be.

The Fifth Dimension program did not fit neatly into this goal. It

required a lot of responsibility to run it; it required expert personnel devoted to it; but more important it had its own goals and demands that pulled away for the "resource" attitude of the Library. It was its own microcosm in the Library and it promoted very different values than the ones they believed it their duty to transmit to children in the capacity of librarians. It promoted not only learning through education, but also promoted collaboration and social interaction. The way in which these goals pulled and pushed at each other can best be seen from the fact that as children were getting more immersed in their activities, we (if we noted it) or the librarians would come over and ask them to be a bit more quiet because they were disturbing the other patrons in the Library. In short, the Fifth Dimension was no longer a "resource" that fitted neatly into the rest of the Library goals; rather, it was its own distinct activity, with its own logic, its own goals, and its own aspirations.

In short, by asking the Library to appropriate this activity, we were asking them not only to take responsibility for a "resource," but to begin to conceive of themselves and their goals in a different way. This situation bears some similarity to the difficulties at the Children's Center, but, as mentioned earlier, the crisis arose at a later point because the discrepancy in goals took longer to surface.

The conclusion we want our reader to draw is not that it was a mistake to ask these institutions to join our activity. Rather, our aim is to get a better grasp of exactly what went wrong and why so that in the future one might be more prepared to achieve satisfactory collaboration in similar situations. Furthermore, from a theoretical point of view it provides us a better understanding of the conditions, requirements, and limits of the type of collaboration we were tying to achieve.

(3) The Community Youth Club

While the Community Youth Club shared one of the Children's Center's main functions of serving children during the after-school hours, it differed from it in several significant ways. To start with, the Club serves a slightly older group of children and thus it offers a wide variety of organized activities: sports, swimming, arts-and-crafts, cooking lessons, and so on. It is run by an organization that is in significant ways community-based and community-driven but, on the other hand, it does not have any legal responsibility for the children who attend it. It tries to be as inclusive as possible and it provides a free atmosphere for children to come and go as they please. Furthermore, the Club is self-consciously committed to maximizing the children's freedom of choice and to allowing maximum flexibility in participating in different activities. Aside from providing children with an extensive range of alternatives, there is a general feeling that children ought to begin and end particular activities as they please. Finally, unlike the Children's Center, but like the Library, use of the Community Youth Club is essentially free. There is a nominal participation cost, but it is routinely waved in cases of need.

The goal that the Community Youth Club adopted for the Fifth Dimension in its setting was to do straightforwardly "computers," which in this setting was associated with their educational program. (It should be noted that they conceive education very broadly since activities like rope-jumping are considered part of the educational program.) This was an activity that no Community Youth Club in the area had yet developed when we first approached them, and they were quite interested in developing some kind of computer activity. In short, the Fifth Dimension not only fit immediately into a long-

term goal of the Club, but it also fulfilled a need for the general type of activity they would like to have.

When we first began our Fifth Dimension activities at the Club, they showed enthusiasm and interest in what we were doing, but, unlike the Children's Center, but, like the Library, they left us the physical and mental space to develop our activities as we saw fit (keeping in mind that we had to fit into the overall institutional culture). As time went on they remained highly supportive because, from their point of view, our program was an unqualified success. As measured by the number of children who participated in it--one key value by which they measure success and failure of all their activities--the Fifth Dimension was and remains one of their most popular programs and has remained so for three consecutive years. In short, not only do we help the Club fulfill its goal of providing children with a computer activity, but we also do that well, as the continuous high attendance attests.

How highly the Club has valued the Fifth Dimension all along can be seen by two strong indicators. The first one is that the original Community Youth Club was always interested and eager to have the Fifth Dimension program run during the summer months; despite the fact that we planned to provide no resources for such an effort, we managed to help them achieve that goal by running some variation of the Fifth Dimension every summer. (Of course, it cannot run as a fully operated system because the Practicum class is not offered during the summer quarter but we managed to engage several students through special studies courses.) The second indicator is that a neighboring Club, Coast City, after the first year of our operation in the La Playa Club, went to great lengths to adopt the program in its own setting. As we learned in Phase III when we interviewed the director of that Club, after having heard about the program from the other Club and liking it, he sent one of his

activity directors to attend a workshop at the University and learn about the program (our computer and training workshops for the class), raised the money for computers, and slowly, through dedication, perseverance, and help from dedicated students, he managed to bring the program into this Club.

To be sure, the continuous support of the Club for the Fifth Dimension was best illustrated when they were willing to take responsibility for its financial support and to continue expanding it into three and now four Clubs.

Thus, while it is clear that the goal that the Club perceives for the Fifth Dimension in their setting fulfills the first requirement of our conceptual analysis for entering into a collaborative partnership with the University, the question remains whether it also fits the second requirement: in other words, is the Fifth Dimension appropriated by the Club for its own intrinsic system or not?

At one level the answer to this question seems to be yes, but at another level no. And here our conceptual analysis needs to be extended slightly to capture the complexities we see. As our interviews with the Club personnel at the end of Phase III made clear, they valued the Fifth Dimension not only for being simply a computer activity but for being the system that it is. But how do they see that system? They see it as involving computers and games, but also as involving "quality time with undergraduates." They see educational value in the program and how well education is balanced with play. In short, while they see the different elements of the Fifth Dimension, they did not perceive any of the "problems," that one can see if one adopts a different perspective, as we saw in the previous chapter. In fact, when we asked them how they would like to improve the program, they never mentioned any of the "deficiencies" that the program might have as viewed from the perspective of a cohesive culture of collaborative learning.

As we saw in the previous chapter, the only drawback of the Fifth Dimension at the Community Youth Club (which also shows up in the other Club settings we have studied so far) is that from the point of view of the logic and the goals of the Fifth Dimension it promotes as a system, this success is a qualified one: it tends to dilute its own internal goals so that it is not so successful in its own terms. It is for this reason that we do not believe that the second requirement has been fully fulfilled yet, and will require some work before it fully will be.

While the internal logic and culture of the Fifth Dimension has not penetrated the consciousness of the Community Youth Club (relevant) personnel at the rather intricate level of its internal dynamics--a level to which, to be fair, we became fully aware of only after our analyses--the Fifth Dimension program has penetrated at two other levels. First, it has made them aware of the possibility of combining education with play to such an extent that they have begun to be perceive a lack in their own exclusive play and game curriculum. While education has been one of their stated goals, the de facto chief goal of the Community Youth Club is to create an atmosphere in which the maximum number of children can have fun in a healthy social environment in their after-school hours. Contact and experience with the Fifth Dimension has made them aware that educational goals have been rather neglected in their settings. As the director of the Coast City Club said to us, they have been "inspired" by the Fifth Dimension to build an educational center with a library, the Fifth Dimension, and other, more quiet activities. (Note the irony of this statement in comparison with the statements and complaints of the librarians!)

A second, unexpected, level is the emerging need for a person who would function as the overall coordinator of the Fifth Dimensions for all the

different Clubs, a role whose need is being felt as the Fifth Dimension keeps extending into the various Clubs. This is an interesting change because it might signal a shift from their prior philosophy, which is to give considerable autonomy to the different directors. Whether this change would materialize and whether it would signal a real change remains to be seen.

We hope, then, that the latent conflictual situation between the "culture" of the Fifth Dimension (which promotes freedom and control through structure) as opposed to the liberal ideology of the Club's culture of absolute free-choice, might also begin to undergo some interesting transformations. The positive point is that we have been able to establish a functioning collaborative situation between two distinct and different institutions and we are beginning to see the interpenetration of one system into the other.

In closing, then, this account of our experiences should serve as a reminder that the problem of integrating new programs successfully into existing institutions is extremely complex, and requires careful consideration of the often paradoxical and unanticipated outcomes of the interplay between the program and its host institution. Efforts at educational innovation of the sort discussed here pose an extensive range of theoretical and practical problems; and these can be effectively addressed only through a strategy of analysis which situates learning and development in their cultural and institutional contexts.

Chapter 8

Some General Reflections and Conclusions

It is now time to take stock of what we have accomplished with respect to our various goals. As we stated in the initial sentence of this report, our goal was to determine if it is possible to create sustainable new forms of educational activity during afterschool hours. This overarching goal provided the framework with which we achieved a variety of constitutive goals. These included:

--A study of institutional changes required for an alien activity to be successfully incorporated.

--A better understanding of the dynamics of change between an activity and its institutional contexts.

--The creation of a flexible, new form of activity that can serve as a tool for those interested in expanding the borders of education.

--An exploration and test of cultural-historical/activity theories of how to mix activities to create developmentally positive forms of activity and analyze them in scientifically acceptable terms.

We will summarize the road we have travelled and our thoughts on the various steps along the way first in terms of the accomplishments at the "macro" goal level, and then in terms of each of the sub-issues.

The System as a Whole.

Did we succeed in creating a sustainable new form of afterschool activity? Out of the four community institutions we started with in the first year of the project, only one survived all the phases of the research up to this time (keeping in mind that the dynamic system we set in motion is still evolving). The school system was the first to disappear, then the Children's Center, then

the Library, all except the Community Youth Club, where the program is growing in complexity and size with every passing month. Not only has the La Playa Club taken over about half of the responsibility for the after-school educational program we helped initiate; it has been adopted as a "line item" policy at four such institutions and there is good reason to anticipate that a year from now there will be several more. In addition, the program has been taken up by an elementary school as a way of accomplishing its computer literacy goals and by a hispanic church/mission as a form of educational enrichment for their children.

This degree of success, modest though it certainly is, has highlighted an aspect of the system's growth that we had anticipated at the outset, but had not yet fully experienced prior to the end of Phase III, the institutional constraints **within the university** that would limit the system's growth and perhaps lead to its dissolution.

In assessing the legitimate areas of the Public University's education that might contribute to this effort, we can see clearly that under even the most favorable circumstances, the Public University is unlikely to devote much more of its resources to this form of activity; it would distort the mission of the university as presently conceived. In practical terms it means that it is very unlikely that more than three or four basic practicum courses can be offered per year, with some additional advanced and graduate student participation. As a purely practical matter, the professor of such a course cannot accommodate more than two dozen students at a time; the course is labor intensive including the critical reading of about 50 field notes per week and on-site work with students almost daily.

The solution to this problem represents our plans for development over the next three or four year period. Although different institutions of higher

learning might be able to adopt this form of University-Community collaboration to a somewhat larger degree than the Public University (we are thinking here of institutions which emphasize educational programs) the limitations we face from the institutional side appear to be representative of those that other institutions would face. The path to the future lies through the creation of **many modest sized** University-Community entities, and not through the continued expansion of such activities within any one institution.

Consequently, we have entered into cooperative arrangements with San Andreas State University, which is not far from the Public University, and which emphasizes education. The Fifth Dimension program will be major apprenticeship research experience for San Andreas students in the Community Youth Clubs and cooperate with the Public University in integrating the two efforts regionally. In addition, four additional University-Community systems will participate: two hispanic sites (the one initiated during this grant period in a Hispanic neighborhood church and one in Michigan) and two largely Black centers (one in Chicago and the other in New Orleans). Our goal is to determine if we can create sustainable new forms of educational afterschool activity that will prove equally useful across a wide range of ethnic and social class backgrounds, a direct generalization of what we believe we have learned in the course of this work.

Lessons about Institutional Constraints

We hope that the sketch of our plans is not read as a declaration that we can succeed at the next level of aggregation as well as we have achieved at this one. Our overall feeling is that the changes we have initiated are in a fragile and vulnerable state.

Nowhere is this felt more acutely that at the Public University. There are approximately 1 1/2 faculty members there who teach the requisite courses. While experience shows that temporary faculty can be found to "fill in" instructional needs if a regular faculty member is around to provide support, this dependence on a very few individuals is clearly a problem. Nor do we see the problem getting any better--which motivates our interest in "distributed" solutions. Discussions with the Public University's administration are now under way to determine if we can have the practicum courses staffed like "production" courses which would mean two Teaching Assistants for about 24 students. On the positive side the Public University's computer center is supportive of our efforts to assist the university-community telecommunications links.

The fragility of the University contribution is clearly visible to our partners in the community who are making plans to go ahead with the activity, even if University support wanes. We think this is a very healthy development, although it is different from the way we conceived the coordination when we started.

The major challenges on the community side as we see them are twofold. First, they must raise modest amounts of money to create a local facility. Second, they--like the university--must learn to appreciate the contributions that each side of the relationship offers to the others. The community is providing a unique environment for teaching as well as a research on important issues of concern to both them and the university researchers. On the other hand, the University is offering both intelligent and concerned young role models and special ways of doing things, as a way of enhancing its teaching and research.

If these challenges are met the results could be very interesting. If they are not, it is more than likely that the activities will degenerate to either video arcade games or some form of very school-like activities; in short, it is the mixture of play and education that will decompose.

On the Dynamics of Change and the Relation of Activity to Context

We hope that our experiences are also taken as an instructive, cautionary tale. We failed more often than we succeeded. Does this mean that our forms of activity cannot be useful in creating new forms of education in day-care centers, libraries, and junior high schools? We believe that the answer to this question is "no." We are acutely aware of the fact that when cooperation fails, we must always be ready to shoulder half of the responsibility. We are also aware of the difficulties resulting from our limited expertise as well as difficulties we introduced because of the University's bureaucratized procedures and its rhythm of instruction. We might have, if we were wiser and more observant, found ways to accommodate the internal dynamics of the institutions we dealt with. However, other Universities may have conditions more conducive to such interactions, so those who see promise in the way we have proceeded should keep an open mind about precisely **which** institutions they choose to put in interaction with each other.

With respect to our own experiences, certain generalizable lessons were learned about the dynamics of change involving the interacting institutions and the constitution of the activity, which is our joint "goal object."

First, we came away from our analysis of the interviews conducted in Phase I convinced that we had achieved only a very limited success in helping the local institutions to "discover" their goals from the menu we offered in Year 1. The dominant attitude seemed more or less to be "don't look a gift horse in

the mouth" and computer-based activities run by people from the Public University looked to be an attractive horse ... until the workshops started. As later interviews revealed, very little about the internal dynamics of the system they chose to use was understood by community representatives. We cannot be certain of why they adopted the system. Was it because they found it fun and flexible, or might we have biased our workshops in that direction? But we can be certain that they did not know or much care about its inner logic as a means for creating developmental growth. As the director of the Children's Center put it (p. 26), she wasn't interested in any more of that theory stuff.

There is irony in the different outcomes for the Community Youth Club when viewed from different perspectives: instructive irony that speaks to the heart of the problem of objects and their contexts. Our data concerning shared knowledge and collaborative learning--and the creation of the culture of collaborative learning--clearly reveal that a developmentally richer medium of interaction was created at the Library than at the Community Youth Club. But it was the Community Youth Club which was revealed to have a stronger compatibility between its Fifth Dimension program and the institution as a whole. The challenge is to enhance this compatibility so that the Fifth Dimension program can be able to fully realize its development-enhancing potentialities while at the same time accommodating institutional constraints.

Overall, we might describe the processes as one of "mediated co-construction" in which shared control of a third object, the Fifth Dimension, requires that both partners fully trust each other; that each one of them will not only look for their own-self interests; but that they can together look for the "common good." In other words, what we need to create is a situation,

where self-interests have been transformed to "self-interests properly understood," to use a term of the social theorist, Tocqueville.

We are afraid that we have not penetrated very deeply into institutional layers and we don't believe, for a moment, that we have been able to transform the way each institution perceives its own self-interest; but our effort has been an initial step in that direction.

This brings us to further problems that we have observed in the course of this research and which are very critical for delineating the steps of future research and development: the delicate role of the research team; and the need for ways to initiate institutional memory and continuity.

Our analysis of the Fifth Dimension at the institutional level has made us realize that the way we have been formulating the problem has been over-simplified. We have often talked as if the kind of division of labor we want to achieve through the collaboration is a simple one. At first, one institution provides the material and maintenance of the system, while the other side brings the personnel which is educated in the theoretical ideas embodied into the program. What our analysis shows is that this kind of division of labor is an analytic fiction. Even if it were possible, such a form of interaction would be rather mechanistic and ineffective. In fact, we saw that for the collaboration to continue the community institution must understand the dynamics and potentialities of the system it has at its disposal. Thus, part of what the research side needs to do is "educate" the community institution of the system it has at its disposal. It must try to have them see the intrinsic values of the system and how they might work together to bring its best aspects out.

The second major problem that plagued all participants equally has been lack of continuity of personnel at both the research/teaching and the community

institutions. Crucial information was often lost because of personnel discontinuities. Why the loss of personnel occurs is a problem internal to each institution and while important, is beyond our purview here. However, what does need emphasizing is that self-conscious attention to the issue of creating continuity in the system should be a part of any such activity from the very beginning.

Finally, our analysis from the point of the Fifth Dimension itself, its internal logic, and the cognitive goals it promotes as a system has made us aware of how the effectiveness of new programs will depend, not only on their intrinsic qualities considered in isolation, but on how successfully they can be integrated into the larger framework of the educational (or other) institutions into which they are introduced. Therefore, it is important to consider carefully how they can best be situated in these contexts, not only physically but--above all--culturally. Careful and theoretically informed comparative analysis of the concrete instantiations of such programs can play an especially useful role in this sort of change process. Furthermore, insuring the successful introduction of educational innovations involves more than merely achieving their adoption. As we have shown, the operation and impact of a given program will be significantly shaped by the interplay between its implicit cultural logic and that of the larger institution in which it is embedded, and this interplay can often be quite complex. New programs and activities, no matter how well conceived in their own terms, will not always work equally well in all settings--nor will they necessarily work well at all if they are simply inserted into an institutional setting that remains otherwise unchanged. (This is true a fortiori, of course, if new hardware or equipment is simply added to existing settings.) If we want to maximize the intellectual benefits of educational innovations, it will be necessary to

think carefully about how this might involve changing educational practices, and about how to create favorable conditions for such changes.

Testing Theories of Learning and Development

Our final observations are directed to our data gathering in the course of day to day interactions of the children, colleges students, and research, when the Fifth Dimension was in session. When we first started this project, we hoped to be able to provide an external measure of the effectiveness of the program in promoting children's development. Our efforts in this direction were universally defeated. In principle, for example, we could have set up some sort of pre- and post-test for all the children who participated for some criterial number of hours. But we would have had no control group of children to compare them with. In principle, we could have visited all of the children's teachers and perhaps even have gotten evidence of their grades in school. But even in principle we could not obtain the grades of other children in the same class, and as a practical matter, we were working overtime just to create the program, write field notes, and tape record a few key debriefings of participants.

What we could and did do was to encourage the writing of detailed fieldnotes by all adult participants, and to use these accounts of what transpired, in conjunction with our task analysis of the various games/lessons to provide a rich picture of the dynamics of change in face-face interaction and evidence about the developmental level of the interaction in which the children were taking part.

Methodologically what this means is that instead of taking a hypothetical change in inner capacity as the criterion of change our approach takes ability to participate appropriately in an interaction as the key criterion (where the

shape of the interactions was gauged in terms of a game). What this analysis has shown to date is that one can use the participants' accounts of their experiences in the Fifth Dimension as the source of data about shared culture, and that the developmental level of interaction within a game is a function of shared knowledge or the thickness and continuity of the culture, which are not deducible from individual biographical facts about children such as how old they are or what their gender is. It is precisely in demonstrating the feasibility of growing activity systems with their own particular cultural configurations in different institutional settings, and in being able to relate quality of interaction and development within such systems to their cultural properties, that we think this work has made the greatest contribution to cognitive research.

References

Anderson, A.B., Diaz, E., & Moll, L.C. (1984). Community educational resource and research center. The Quarterly Newsletter of the Laboratory of Comparative Human Cognition, 6 (3), 70-71.

Bronfenbrenner, U. (1979). The ecology of human development: Experiments by nature and design. Cambridge, MA: Harvard University Press.

Cole, M. (1985). The concept of internalization in Vygotsky's account of the genesis of higher mental functions. In J.V. Wertsch (Ed.), Culture, communication, and cognition: Vygotskian perspectives. Cambridge: Cambridge University Press.

Cole, M. (1990a). A cultural theory of development: What does it imply about the application of scientific research? Paper presented at the Latin American Workshop on Applied Developmental Psychology. Recife, Brazil.

Cole, M. (1990b). Cultural Psychology: Some general principles and a concrete example. Paper presented at the Second International Congress on Activity Theory. Lahti, Finland.

Cole, M. (1990c). Cultural psychology: A once and future discipline? In J.J. Berman (Ed.), Nebraska Symposium on Motivation: Cross-Cultural Perspectives, 37. Lincoln, NE: University of Nebraska Press.

Cole, M., Griffin, P., & Laboratory of Comparative Human Cognition (1987). Contextual factors in education: Improving science and mathematics education for minorities and women. Prepared for Committee on Research in Mathematics, Science, and Technology Education, Commission on Behavioral and Social Sciences and Education, National Research Council. Madison: Wisconsin Center for Education Research.

Cole, M., Hood, L., & McDermott, R.P. (1979). Ecological Niche Picking. Unpublished manuscript. UCSD: LCHC.

Cremins, L.A. (1976). Public education. New York: Basic Books.

Durkheim, E. (1951) Suicide. New York: Free Press. (Originally published in French in 1897).

Durkheim, E. (1965). The elementary forms of the religious life. New York: Free Press. (Originally published in French in 1912).

Durkheim, E. (1973). The dualism of human nature and its social conditions. In R.N. Bellah (Ed.), Emile Durkheim on morality and society (pp. 149-163). Chicago: University of Chicago Press. (Originally published in French in 1914).

Durkheim, E. (1973). Moral education. New York: Free Press. (Originally published in French in 1925).

Engestrom, Y. (1987). Learning by expanding: An activity-theoretical approach to developmental research. Helsinki: Orienta-Konsultit Oy.

Fantini, M.D. (1985). Stages of linking school and nonschool learning environments. In M.D. Fantini & R.L. Sinclair (Eds.). Education in school and nonschool settings: Eighty-fourth yearbook of the National Society for the Study of Education, Part 1. Chicago: University of Chicago Press.

Giddens, A. (1979). Central problems in social theory: Action, structure and contradiction in social analysis. Berkeley: University of California Press.

Goodlad, J.L. (1984). A place called school. New York: McGraw-Hill.

Griffin, P. & Cole, M. (1984). Current activity for the future: The zo-ped. In B. Rogoff & J.V. Wertsch (Eds.). Children's Learning in the "Zone of Proximal Development". New Directions for Child Development, 23. San Francisco: Jossey-Bass.

Laboratory of Comparative Human Cognition (1982). A model system for the study of learning difficulties. The Quarterly Newsletter of the Laboratory of

Comparative Human Cognition, 4 (3), 39-66.

Laboratory of Comparative Human Cognition (1983). Culture and cognitive development. In P.H. Mussen & W. Kessen (Eds.) Handbook of Child Psychology: Vol. 1. History, Theory, and Methods. New York: John Wiley.

Lave, J. (1988). Cognition in practice: Mind, mathematics and culture in everyday life. Cambridge: Cambridge University Press.

Leotyev, A.N. (1981). Problems of the development of the mind. Moscow: Progress.

Newman, D., Griffin, P., & Cole, M. (1989). The construction zone: Working for cognitive change in school. Cambridge: Cambridge University Press.

Nicolopoulou, A. (in press). Play, cognitive development, and the social world: The research perspective. In B. Scales, M. Almy, A. Nicolopoulou, & S. Ervin-Tripp (Eds.), Play and the social context of development in early care and education. New York: Teachers College Press.

Nicolopoulou, A. & Cole, M. (forthcoming). The Fifth Dimension, its play-world, and its institutional contexts: The generation and transmission of shared knowledge in the culture of collaborative learning. In N. Minick & E. Forman (Eds.), The Institutional and Social Context of Mind: New Directions in Vygotskian Theory and Research. New York: Oxford University Press.

Piaget, J. (1965). The moral judgment of the child. New York: Free Press. (Originally published in French in 1932.)

Vygotsky, L.S. (1966). Play and its role in the mental development of the child. Soviet Psychology, 12, 6-18. (A stenographic record of a lecture given in 1933.)

Vygotsky, L.S. (1978). Mind in society: The development of higher psychological processes. Edited by M. Cole, V. John-Steiner, S. Scribner, & E.

Souberman, Cambridge, MA: Harvard University Press.

Vygotsky, L.S. (1987). The collected works of L.S. Vygotsky, volume 1: Problems of general psychology (including the volume "Thinking and speech"). Edited by R.W. Rieber & A.S. Carton. Translated by N. Minick. New York: Plenum Press.

Weintraub, J. (1974). Some reflections on Durkheim's concept of human nature: Preliminary expectoration. Unpublished manuscript: University of California, Berkeley.

Wertsch, J.V. (1985). The social formation of mind: A Vygotskian approach. Cambridge, MA: Harvard University Press.