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A JOURNEY ALONG THE ROAD TO "MODEL 2": AN IN-DEPTH STUDY OF ONE PRACTITIONER'S EXPERIENCE IN LEARNING THE DIAGNOSTIC SKILLS OF ACTION SCIENCE

SUSAN B. CASS

A Thesis

In

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ABSTRACT

A Journey Along the Road to "Model 2": An In-depth Study of One Practitioner's Experience in Learning the Diagnostic Skills of Action Science

Susan B. Cass

This work is an in-depth case study of an action science teaching/learning project, and the focus is on one practitioner's experience in learning the diagnostic skills of action science. Using the theory-of-action approach developed by Argyris and Schon, the study examines a series of episodes, critical incidents, and issues that arose during a reflective practicum in which the learner participated over a year and one half period. The study is unique in that not only is the learning experience examined from the learner's perspective, but the practitioner under study is the researcher herself. In applying the particular approach and methodology to studying in-depth part of the complex process of learning to become an action scientist, the goal is to contribute to the current, rather limited bank of knowledge in this area, and build understanding about what kinds of learning environments and processes might better facilitate the learning of future action scientist trainees.

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Sue Cass (August 1997)

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CHAPTER 1

INTRODUCTION AND STATEMENT OF THE PROBLEM

As a methodology of research and practice action science is relatively new. While the science itself is continually being evolved and refined, the methodology of training action scientists in the necessary skills of their field is something that is still not well understood nor developed. While certain attempts at teaching and learning action science have been documented and some of the problematics discussed (a summary of this will be outlined later), there does not in fact appear to be any existing in-depth descriptions of the process of learning action science other than that of Robert Putnam (1990).

It would seem important therefor, to ask and explore such questions as:

How does one go about learning to become an action scientist?

What are some of the learning phases or stages in the process?

What are some of the difficulties confronted?

Are there critical learning issues or incidents that may be common to many learners?

What are some of the teaching and/or learning strategies may facilitate learning in this area and be helpful in overcoming such difficulties or blocks in learning?

This study has been designed to address some of these critical questions and issues.

The main goal of this study is to explore in-depth part of the process of learning to become an action scientist, in order to contribute to the current bank of data and information available to action science teachers and learners.

More specifically, it is my hope that the results of this research project will contribute to building understanding in one critical area of training; that of diagnostic skill development

Learning the diagnostic skills of action science is a complex and challenging process that is not well understood either from a teaching or from a learning perspective. Practitioners of action science such as; Argyris (1976, 1982, 1985a), Argyris and Schon (1974), Argyris, Putnam and McLain-Smith (1985), Putman (1990) and Schon (1987) have frequently discussed certain problems, learning dilemmas, learning phases, etc. that students in action science learning settings and action scientists in training have faced. But there is clearly a lack of "thick", detailed description of learner's or trainee's experiences and learning processes.

If we are to evolve an action science teaching methodology, there is clearly a need for building knowledge and understanding in this area. More specifically, more concrete data is needed about the dilemmas confronted by learners, the critical learning incidents and difficult episodes, and the kinds of strategies that have been used successfully in moving learners forward in their process of becoming action scientists.

This study will make a contribution in this area. Not only is it aimed at describing in-depth an action science teaching/learning experience, but it will do so from the perspective of the learner. This perspective is seldom explored in the current research literature, and therefor will add a new dimension to our knowledge and understanding in this area. To future learners of action science, it should prove helpful in contributing to their understanding of their own learning process, and provide some suggestions that may be useful in planning, facilitating and/or directing their learning. And to future teachers of

action science it may assist in further sensitizing and building understanding of the learner's experience, and therefor contribute to the planning and facilitating of more productive and successful learning/teaching activities.

The research project that I have conducted, and which I will describe in this thesis, consisted of an in-depth case study of the process of one learner developing the diagnostic skills of action science. Data for the study have been drawn from my own learning experience as a graduate student and "action scientist in training". More specifically, I have focused on the learning process that took place during my participation, as research assistant, in a twelve month action science teaching/learning project conducted at the Learning Development Office of Concordia University.

The case has been examined from a theory-of-action perspective and the study guided by the methodological rules and practice of action science. The sessions conducted, and significant learning episodes that occurred over the twelve month period were recorded and all well documented. The entire learning process has been examined through critical "reflection-on-action", whereby my overall performance and participation as the central learner in the project has been under study. The analysis has focused on identifying and examining from a theory-of-action perspective:

1. Important stages and "critical incidents" in learning;
2. Particular learning difficulties, dilemmas and/or blocks which were confronted over the training period; and
3. Those teaching and learning strategies which proved useful and/or effective in overcoming learning difficulties.

In the chapters that follow I will first describe action science, the theory of action approach to doing action science, and the skills and knowledge

necessary to becoming action science practitioners (chapters two and three). In chapter four I will discuss diagnostic skills, and where the learning of these skills "fits" in the overall process of becoming an action scientist. Chapters five, six and seven will provide a more detailed description of the project that I undertook, the methodology used, and rationale for this methodology and the particular approach which was taken. In chapters seven to thirteen I will tell my story and describe in-depth my process of coming to learn the diagnostic skills of action science during the project that was undertaken. Each of the chapters will focus on a significant phase or event in that overall learning process. Finally, in chapter fourteen, I will conclude by sharing certain reflections and offer a series of insights about teaching and learning the diagnostic skills of action science, based on the learnings that came about during the project.

I believe it is important to state that this project did not start out as the basis for an M.A. thesis. In fact, my initial interest and motivation for participating in the research project was to further develop my understanding of the methodology of action science and to more actively put my theoretical knowledge into practice. When the project began I was in the initial phase of my M.A. thesis research, which was to focus on using the theory of action (described further in chapter two) to diagnose cross-cultural conflict cases. I saw participation in this project as an ideal opportunity to further develop the diagnostic skills that would be crucial to the successful completion of my own research. But as the project progressed it soon became clear that there were some important learnings to be had by focusing on, and examining more closely the dynamic processes that had been taking place in our small "laboratory". Through our discussions we also all agreed that we would be willing to make public our practice as central data for further study in this area.

And so the focus of my own research shifted to this intensive case study of one learner's learning experience. I have worked from the premise and the sincere belief, that such documentation and in-depth study of one trainee's experience in learning the diagnostic skills of action science will produce valuable information for future training projects and teaching/learning experiments in this area.

CHAPTER 2

ACTION SCIENCE, AND THE THEORY-OF-ACTION APPROACH

Action Science as a Methodology and a Critical Theory

Before delving further into the study that was undertaken, I will discuss action science as a methodology and a critical theory, differentiating it from other popular "action technologies". I will also summarize and describe the particular theory-of-action approach to doing action science that was used in this study.

Brooks and Watkins (1994) have used the terminology "action technologies" to refer to a wide range of theories, methodologies, and strategies whose aims are to enhance learning and facilitate change through processes of systematic inquiry. Such "action technologies" include; action research, action learning, collaborative inquiry, action science, and participative action research to name a few. All action technologies are similar in four particular dimensions:

> First is that their intended result is the construction of new knowledge on which new forms of action can be based...The second dimension is that those members who permanently work or reside in a particular context should be central to the research process...The third dimension is that the data used in the research process are systematically collected and come from the experience of the participants... the learning process is formalized and systematized as an organized research process...The final

> theme is that all of these action technologies are focused on change. Action is studied, probed, and pondered in order to make improvements in professional practice, organized outcomes, or social democracy.
> (Brooks and Watkins, 1994, pp. 11-12)

Also central to all of these technologies is a collaborative relationship between the researchers and their "subjects", in which the skills, knowledge and interests of each are combined to create new knowledge.

Development of the earliest type of action technology is usually credited to Kurt Lewin and the particular model of "action research" that he developed as a result of his work with groups in the 1940's (Lewin, 1948; Joiner, 1983). Lewin was critical of traditional laboratory research and controlled experimentation in the social sciences and believed that researchers and social scientists "...needed to go beyond explanations of behavior to discoveries of how people could change in order to learn to be more effective and more in tune with social reality" (Joiner, 1983, p.52-53). He argued that in order to accomplish this there needed to be an integration of science and practice.

Lewin was also the first to use the concept of "re-education" as the type of learning essential to real and lasting personal and social change. He saw this as a type of "deep" and pervasive learning that touched the total life of the individual, including cognitive structure, values, beliefs and sentiments, perception, and subsequent behavior. He also proposed a three-step model of change, arguing that in order for such re-education to occur, individuals needed to go through the stages of: "unfreezing" and developing the internal motivation to change, "changing" or "moving" in which new responses are

developed based on new information and cognitive re-definition or a "re-framing" of one's reality, and "refreezing" in which the individual stabilized and integrated the new ways of reasoning and acting into their total personality. Finally, he argued that in order to facilitate re-education of individuals and societies, processes and methodologies of "collaborative inquiry" between researchers and individuals or groups under study needed to be developed.

Lewin's work led to the development of a particular form of action research, the methodology of which had two main purposes, to facilitate effective re-education on many levels, and to contribute to the building of theory and more generalizable knowledge. His action research involved researcher and "co-researchers" (the subjects) working in close collaboration to understand and solve individual, social, and organizational problems, within a research and learning environment which offered both a sense of belongingness and support, and individual freedom. Throughout the post-war period he conducted a number of important laboratory experiments in which participant/subjects were involved in all phases of the diagnosis, planning of the process, implementation, active reflection on the process, and evaluation. It was out of this pioneering work that the first "T-group" (Basic Skills Training Groups) projects grew in the 1960's and 1970's.

Today the term "action research" is used to include all types of research that involve an ongoing collaborative relationship between the researcher and the subjects (often referred to as the "co-researchers"), involve practitioners working on their own practice and "real" problems, and both seek to bring about a change (i.e., improvement) of the situation under study, and contribute to the store of academic knowledge and theory (French and Saward, 1983; Shafritz, 1988; Lamming and Bessant, 1988; Brooks and Watkins, 1994). It is

research that seeks knowledge that will inform action both within and outside of the laboratory context. What distinguishes action research from other forms of research is firstly that it explicitly recognizes that the act of doing the research will have an influence on the individuals, groups, and/or organizations under study. Secondly, it seeks to create conditions in which there is shared control of the research environment in order to generate valid data and information. A third distinguishing factor is the particular methods and technologies of "action inquiry" and "action learning" which are used.

"Action learning" technologies focus on bringing individuals together in group settings to work collaboratively on real problems. Action learning therefor involves employing techniques and establishing a process "...which includes questioning the framing of the problem, collecting data, and trying solutions" (Brooks and Watkins, 1994, p.10). A central premise is that "...strangers to a problem have to bring questions and perspectives different from those who "own" the problem, thus helping them to see their solution in new ways" (Brooks and Watkins, 1994, p.1).

In all forms of action research there is some form of action inquiry technology that includes "...a recurring cycle of action, reflection, hypothesis, and revised or new action based on the reflections and hypothesis about what occurred in our previous action" (Brooks and Watkins, 1994, p.1). "Collaborative inquiry" is a type of action inquiry that unites researchers and practitioners in a non-competitive, collaborative relationship in the pursuit of knowledge in the service of action.

"Action science" is a particular type of action research that has been described as both a science and an art. It is a scientific approach to research, a critical theory with the central interest being the improvement of the human

condition, and a science of practice. It is "...an inquiry into how human beings design and implement action in relation to one-another" (Argyris, Putnam, and Smith, 1985, p.5), and it "...attempts to both inform action in concrete situations and to test general theory" (Argyris, Putnam, and Smith, 1985, p.237).

Critical theories attempt to both explain the status quo, and offer an alternative. As a type of critical theory, Action Science has as its goals:

1. To describe the way the world is.
2. To offer an alternative.
3. To offer a means of realizing the alternative by proposing particular theories, methods, and techniques of intervention.

Central to all action science research and methodology is the production of "usable knowledge" (i.e., knowledge that may be used to inform action beyond the limited context of the laboratory setting, for example in the design of training for practitioners in the subject under study). In order to meet the challenge of producing knowledge that may be truly useful to their clients/co-researchers in understanding ineffectiveness and in learning to design and implement alternative action, action scientists attempt to identify (or diagnose) patterns of action in such a way that the knowledge will be transferable to a wide range of situations. To do this they work with real-life problems and:

> ...engage with participants in a collaborative process of critical inquiry into problems of social practice in the learning context. The core feature of this context is that it is expressly designed to foster learning about one's practice and about alternative ways of constructing it. (Argyris, Putnam and Smith, 1985, p.237)

Talk and action provide the central data from which, through processes of collaborative inquiry, the action scientist works with the practitioner(s) in

building and testing diagnoses and interpretive theories about problematic behaviors and why the practitioners behave as they do, and in designing, testing and evaluating new action strategies.

The action scientists' quest for "knowledge in the service of action" is guided by three important criteria. First, the knowledge must be publicly testable. This means that their theories must include propositions that are subject to disconfirmation (or confirmation) by practitioners/clients testing the theory in real-life contexts. This implies,"...making propositions public, providing the directly observable data on which they were based, making them connectable to these data, and designing conditions that are conducive to validly testing them" (Argyris, Putnam and Smith, 1985, p.233). Organized knowledge therefor is publicly tested with the participants who generated the data, as an integral part of the diagnosis-building process.

The second criterion is that the knowledge produced must be useful in action. This means that the participants who have generated the data are able to recognize at a very concrete level what they do, or how they perform, in such a way that they can recognize it in action and generalize the knowledge to a broader context (i.e., beyond the specific situation or case under study).

The final criterion is that knowledge must be practical, addressing itself to the formation of purposes, not merely the means and ways of achieving them. This therefor implies that participants should be assisted in becoming more aware of the underlying purposes and guiding principles that inform their actions. They should also be helped in identifying any inconsistencies that may exist. Consequently, the knowledge provided must be helpful in not only the solving of problems but also the setting, framing, or reframing of problems.

The Theory of Action Approach

Chris Argyris, Robert Putnam, and Diana McLain Smith (1985) propose one, and perhaps the most highly refined, approach to doing action science. The "theory of action" approach and methodology of action science that they propose has largely stemmed from the work of Chris Argyris and Donald Schon during the 1970's to 1980's (Argyris, 1968; 1970; 1974; 1975; 1976; 1982; 1985a; 1985b; Schon, 1974; 1987). My study has been guided by this particular science and approach.

Central to this approach to doing action science are some fundamental theories and concepts that guide the methodology. The first of these is the "theory of action", which begins with a conception of human beings as designers of action. People design their action to achieve intended consequences, and they adapt their strategies or programs of action in order to be more effective. They therefor hold implicit and/or explicit theories that they draw upon to design their actions. It is through examination of these theories of action that we may come to understand how and why we act as we do.

Argyris and Schon and associates differentiate two different categories of personal programs or theories of action. The first, our "espoused theories", are those which we claim to believe in. They are the explanations and justifications we offer for our actions. Alternatively, our "theories-in-use" refer to our actual performance. They are the real programs that drive our actions.

The environment and the worlds in which we function daily are highly complex and we need to be able to manage such complexity skillfully. Our theories-in-use help us to better cope with this complexity, in quickly reducing and organizing complicated and multiple data into a more manageable form

(i.e., it can be more easily understood or made-sense-of). These theories-in-use "...allow us to maintain control in that they are composed of governing variables, assumptions and action strategies that we hold tacitly and which enable us automatically to take action on behalf of our governing variables" (Souvaigne, 1985, p.5). They are therefor a set of rules or propositions that dictate that if we find ourselves in a particular situation, we should act in a particular way, or employ particular strategies in order to achieve the results or consequences we intend. These theories-in-use are often followed tacitly, without conscious awareness.

We can easily see how theories-in-use are very necessary to daily living. Without them we would be completely immobilized and overcome by the overload of information and stimuli with which we deal almost hourly. Take for example the theories-in-use that guide standard greeting ceremonies between acquaintances of the same cultural orientation. As I meet my colleague Robert, we automatically make and hold eye contact, smile, and exchange a sturdy handshake. Our actions occur with a smooth, rapid, and skilled efficiency, and it is unlikely that either of us even stops for a moment to think about or question why we do what we do. We just understand implicitly that "that is how it is done", and do it, each following our tacit rules "expertly".

But in certain situations our theories-in-use can sometimes also create problems or get us into trouble. In the first case they may be so automatic, and consequent actions implemented so skillfully, that we don't slow them down to examine the governing variables or values that underlie and drive the actions. We do...without conscious reflection about why we are performing the way that we are. Our "expertness" in implementing our theories-in-use can therefor actually prevent us from doing such reflection. Also, at the core of these

theories-in-use may be values which we in fact claim not to believe in and/or support (i.e., in our espoused theories) but we don't bother to search for and test out any contradictions. In this way we make the governing variables of our theories untouchable or unquestionable. For example, "...when we face dilemmas that might call for an adjustment in the governing variables in our theories-in-use, we tend to choose not to adjust our theories, even when the consequences are that we do not act as we intend" (Souvaigne, 1985, p.7).

Let us return for example, to the greeting ceremony. This time I meet my colleague Robert who is now accompanied by a new friend, Prempal. We meet and after a quick glance at me Robert stops eye contact, remains physically distant, nods briefly and then presents his new friend who does the same. I am left with my hand suspended in mid-air, and my smile is quick to fade. I feel foolish, awkward and angry at my colleague for being so rude! The same theory that has informed my previous act of greeting, now tells me that Robert is not behaving appropriately, and in fact is behaving very discourteously towards me (as is Prempal). I say nothing about how I am thinking or feeling, and after a brief exchange I go on my way, feeling insulted and somewhat hurt about Robert and Prempal's behavior. Imagine my surprise when I discover some month's later, that Robert's friend Prempal was visiting Canada from India for the first time. In Prempal's cultural context making physical contact and holding eye contact with a new female acquaintance would be considered highly disrespectful, and even aggressive! Robert's actions during our greeting had been designed to respect both the cultural norms and values of his new friend, and my integrity as a woman and a colleague. Clearly my theory-in-use had created problems for me in this situation, and consequences that I certainly had

not intended. Not only had my actions been inappropriate, but my reasoning had been completely wrong, and this I had never questioned.

The research of Argyris and Schon has in fact revealed that people's reasoning processes do not appear to work the same when they reason simply to understand, and when they reason in order to design and implement action. Not only does this hold true with surprising consistency, but they also propose that when people are placed in difficult or threatening situations they will typically not behave in ways that are consistent with their espoused theories. Their actions will not be consistent with what they claim to believe, to value, and to be guided by. There is a gap between their "espoused theory" and their "theory-in-use". Not only will they not be aware of this gap, but their theories-in-use will make them unaware of their unawareness!

Argyris and Schon's research also showed that even if people become aware of this gap, it is difficult to eliminate or change. Certain other theorists have even argued that it may be human nature to resist change, and that:

> ...there is a remarkable sameness to social patterns of response and adaptation to change. Individuals and families, groups and organizations, communities and nation states respond to the threat of change by seeking to remain the same...individuals seek to assimilate new experiences to their existing ways of understanding; only as this becomes impossible do individuals accommodate or change their ways of understanding. (Putnam, 1990, p.35)

It would seem therefor, that to surface, examine, and perhaps critically question inconsistencies in our theories of action is a process that we tend to avoid.

These theories and the values underlying them are the basis of our daily survival in our personal and professional worlds. Invalidating them shakes the foundation of our vision of personal effectiveness and risks changing the very way in which we function and relate to the world around us.

Model 1 and Model 2

As a result of their extensive research and testing Argyris and Schon (1974) have developed "Model I", which is a theoretical model that offers an explanation of the predominate theories-in-use in Western culture (a vision of "the way the world is" in critical theory terminology). Through this theoretical model they seek to explain why and how people design and implement action that is not consistent with their espoused theories. They describe how people can be not only unaware of this discrepancy, but unaware of their unawareness! (i.e., the underlying reasoning processes that lead to such inconsistencies). Their theory therefor provides a theoretical design which maps and explains Argyris and Schon's definition of ineffectiveness. While Model 1 behavior can, in fact, be effective in normal day-to-day life, it is generally quite ineffective in difficult or challenging situations. The model shows us why this is the case.

The first component of a theory-in-use is the governing variables (i.e., the underlying beliefs and values). In summary, Model 1 has four main governing variables that are:

1. Unilaterally define goals and try to achieve these.
2. Maximize winning and minimize losing.
3. Minimize and/or suppress negative feelings.

4. Be rational.

The second components of a theory-in-use are the subsequent actions or behaviors that individuals produce. Model 1 proposes that there are four common action strategies that stem from the above governing variables. These action strategies are:

1. To design, manage, and control the environment unilaterally.
2. To own and control the task.
3. To unilaterally protect oneself.
4. To unilaterally save face and protect others from being hurt (and act as if this were not the case).

There are a series of consequences that can result from these action strategies, and these consequences are largely defensive and can present important blocks to learning and relationship building. In summary, the main consequences are:

1. Miscommunication and mistrust.
2. Self-fulfilling prophecies.
3. Self-sealing processes (and limited learning).
4. Escalating error.

These consequences also make it less likely that errors will be corrected, or relationships improved. In fact, the result is often that the consequences tend to reinforce the initial governing variables and action strategies and so the individual's reasoning remains the same, and the errors continue and/or even escalate.

The following table presents Model 1 in more detail.

Table 1. Model 1 Theory-in-use

Governing Variables	*Action Strategies*	*Consequences for the Behavioral World*	*Consequences for Learning*	*Effectiveness*
Define goals and try to achieve them.	*Design and manage the environment* unilaterally (be persuasive, appeal to larger goals).	Actor seen as defensive, inconsistent, incongruent, competitive, controlling, fearful of being vulnerable, manipulative, withholding of feelings, overly concerned about self and others or underconcerned about others.	Self-sealing.	Decreased effectiveness.
Maximize winning and minimize losing.	*Own and control the task* (claim ownership of the task, be guardian of definition and execution of task).	Defensive interpersonal and group relationship (dependence upon actor, little additivity, little helping of others).	Single-loop learning.	
Minimize generating or expressing negative feelings.	*Unilterally protect yourself* (speak with inferred categories accompanied by little or no directly observable behavior, be blind to impact on others and to the incongruity between rhetoric and behavior, reduce incongruity by defensive actions such as blaming, stereotyping, suppressing feelings, intellectualizing).	Defensive norms (mistrust, lack of risk taking, conformity, external commitment, emphasis on diplomacy, power-centered competition, and rivalry).	Little testing of theories publicly. Much testing of theories privately.	
Be rational.	*Unilaterally protect others from being hurt* (withhold information, create rules to censor information and behavior, hold private meetings).	Little freedom of choice, internal commitment, or risk taking.		

Source: Argyris and Schön, 1974.

As an alternative theory-in-use, Argyris and Schon have developed "Model 2", which is designed to help people inquire into the reasoning, the values, and the assumptions that inform their actions, in such a way that they may learn and design actions which are more effective in achieving their desired intentions. Model 2 works from very different governing variables which are:

1. Valid information.
2. Free and informed choice.
3. Internal commitment to the choice and constant monitoring of its implementation.

The subsequent action strategies which stem from these governing variables are:

1. Design situations or environments where participants can experience high personal causation.
2. Control tasks jointly.
3. Control jointly any protection of self and/or others (and this is always oriented towards growth).

And the consequences that can result from these strategies are:

1. Increased effectiveness and increased learning.
2. More effective joint problem-solving.
3. Reduced error and reduction or elimination of the relationship-damaging, and/or learning-limiting consequences of Model 1 behavior.

The table that follows provides a more in-depth mapping of Model 2.

Table 2. Model 2 Theory-In-Use

Governing Variables	*Action Strategies*	*Consequences for the Behavioral World*	*Consequences for Learning*	*Consequences for Quality of Life*	*Effectiveness*
Valid information.	*Design situations or environments where participants can be origins and can experience high personal causation* (psychological success, confirmation, essentiality).	*Actor experienced as minimally defensive* (facilitator, collaborator, choice creator).	Disconfirmable processes.	*Quality of life will be more positive than negative* (high authenticity and high freedom of choice).	
Free and informed choice.	*Tasks are controlled jointly.*	*Minimally defensive interpersonal relations and group dynamics.*	Double-loop learning.	*Effectiveness of problem solving and decision making will be great, especially for difficult problems.*	Increased long-run effectiveness.
Internal commitment to the choice and constant monitoring of its implementation.	*Protection of self is a joint enterprise and oriented toward growth* (speak in directly observable categories, seek to reduce blindness about own inconsistency and incongruity). *Bilateral protection of others.*	*Learning-oriented norms* (trust, individuality, open confrontation on difficult issues).	Public testing of theories.		

Source: Argyris and Schön, 1974.

Tools, Methods and Techniques of Analysis, Diagnosis, and Intervention

But the road from Model 1 to Model 2 is a long and difficult one. Not only must practitioners learn to recognize their problematic (i.e., Model 1) behavior and develop the desire to change, but they must go through the process of learning a new theory of action (i.e., a "re-education" process) and then integrate this change into their lives and their practice. Doing this requires

deep and profound "double loop learning", or what Senge (1990) refers to as a radical "shift of mind".

Proponents of the theory-of-action approach clearly differentiate this profound "double loop learning" from "single-loop learning". As Robinson (1980) argues, for example, in single-loop learning the learner learns that they lack a desired skill. They then focus on learning this new skill, and changing their behavior, strategies, or tactics. But this single-loop learning is all done within the parameters of learners' existing theory-in-use. It is rare that a learner will question the validity of the underlying reasoning, values or goals which lie behind their actions. How they "frame" or interpret their problem tends to be left intact and essentially unchallenged, even though this underlying reasoning may in fact be faulty and be the source of their problems. It is for this reason that many proponents of the theory-of-action approach question the long-term effectiveness of such single-loop learning (and training!).

As an alternative, the theory-of-action approach proposes a type of diagnostic and skill training that presents a potential for "double-loop" learning. Here the focus is on the learner developing insight and understanding about why they lack the desired skill, and "...learning about the values and assumptions that drive one's own or the other person's behavior" (Schon, 1987, p.256). In contexts which focus on diagnostic and skill training, learners not only examine their strategies, but undertake a process of probing much deeper, reexamining, questioning, and if necessary changing the very values and assumptions that inform their actions. Learners are helped to identify and correct gaps and errors in their problematic theories-in-use. They learn to perform more skillfully, but through a process that works from the "inside-out", promoting both a deeper level of understanding of their behavior and the

reasoning that drives this behavior, and a more lasting commitment to change.

Diagnosis, therefor, is a critical ingredient in applying the theory-of-action approach, and learning diagnostic skills is an important step both on the road to becoming an action scientist (and this will be discussed further in chapter seven), and on the road to becoming a more effective "Model 2" practitioner. Diagnosing theories-in-use is a way of helping practitioners understand what they are doing, identify the counterproductive features in this, see an alternative, and change (i.e., reach this alternative).

In order to undertake their work as researchers, and in assisting their clients in their journey along the road from Model 1 to Model 2, action scientists using the theory-of-action approach employ a series of tools, methods and techniques of analysis, diagnosis, and intervention. Let us now examine some of these in more depth.

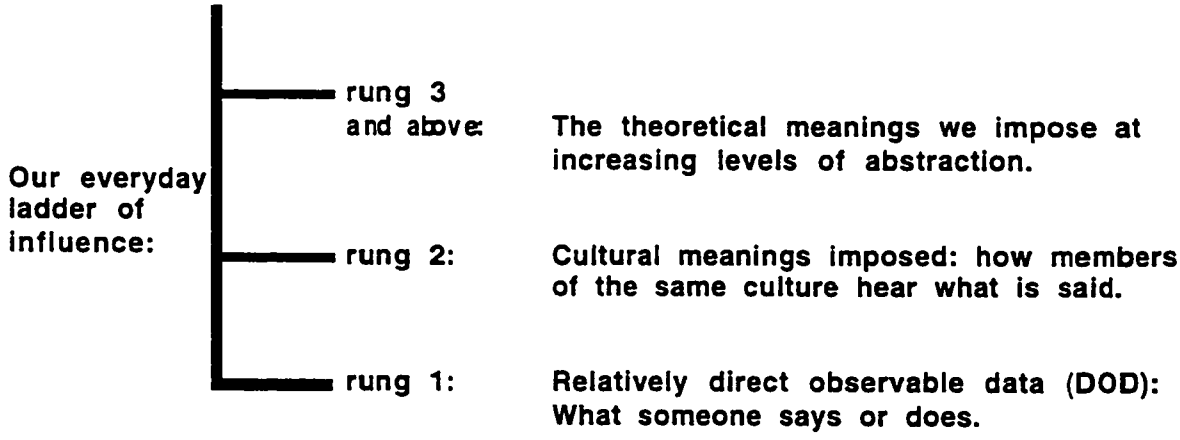
As was previously discussed, Model 1 and Model 2 are theoretical explanations of theories-in-use. But they are also important tools of analysis in the theory-of-action approach. They provide a framework for diagnosing and "mapping" the positive or problematic characteristics of practitioners' reasoning and behavior. The "ladder of inference" is another important tool that helps the action scientist in this task.

In the theory-of-action approach and in the methodology of action science, talk is action and is very meaningful. It is described by Argyris (1985) as a "window into the logic of our action", and is thereby central data in action science research. While interpretation and analysis of this talk can be very difficult, the "ladder of inference" is an important analytical and diagnostic tool that can assist the action scientist in this task. The ladder of inference is "...a schematic representation of the steps in the reasoning processes by which

human beings understand in order to act" (Putnam, 1990, p.252). It is a tool that can be used to help retrieve reasoning processes and test interpretations, by helping to make explicit the data which people select to define meaning and the inferential steps that they take to reach their conclusions.

Our everyday ladder of inference consists of three main rungs (see Table #3). The first rung includes all relatively observable data i.e., that which is explicitly said or done by another (including gestures, facial expressions, etc.). The second rung of the ladder of inference is the cultural meaning that we attach to what has been heard and/or observed. This meaning would generally be similarly understood by all persons sharing the same language and cultural community. The third rung of the ladder is the meaning imposed by the hearer/seer, based on implicit or explicit theories which they draw upon to make sense of and reach conclusions about what was said and/or done. Such meanings are based on highly individualized theories of explanation which can vary greatly from person to person. It is from these first three steps of the ladder of inference that people then move on to define and implement their actions.

Table #3



(Argyris, Schon, Putman and Smith, date unknown, p.4)

It is clear from this model, that the higher up the ladder we move, the greater are the chances of individual variation in interpretation. People will very quickly move from, for example, something that is seen or heard (focusing on certain data and not other), making culture-bound inferences as to the meaning of this, and then implicitly or explicitly imposing meaning in order to reach conclusions about what has been said and/or done. While people do tend to remain quite aware of the conclusions they reached, they may find it very difficult to retrieve the process that they went through to reach these (i.e., what took place at the different levels of their ladder of inference).

As an example, let us return one more time to my greeting of my colleague Robert. When, in response to my gaze and extended hand Robert overts his eyes and remains standing with his hands at his sides, this initially creates surprise and confusion for me. In our cultural context, the rules and norms that we all generally understand and adhere to tell us that my gestures of greeting should be similarly returned by Robert. He has therefor not behaved appropriately. I then begin to try to give meaning to his action as I move up my ladder of inference. As a woman, a colleague, and a feminist I am insulted and feel he is not behaving respectfully towards me. I feel he has also embarrassed me in front of his new friend. Is he "showing off" for Prempal? Is he angry will me? Is he looking for a confrontation? I leave having concluded that he has probably intentionally chosen to be impolite and disrespectful, and I remain upset and confused. The inferences and conclusions that I have drawn are not explicitly tested for their accuracy, i.e., I withhold them, generally remain silent, and withdraw from the situation.

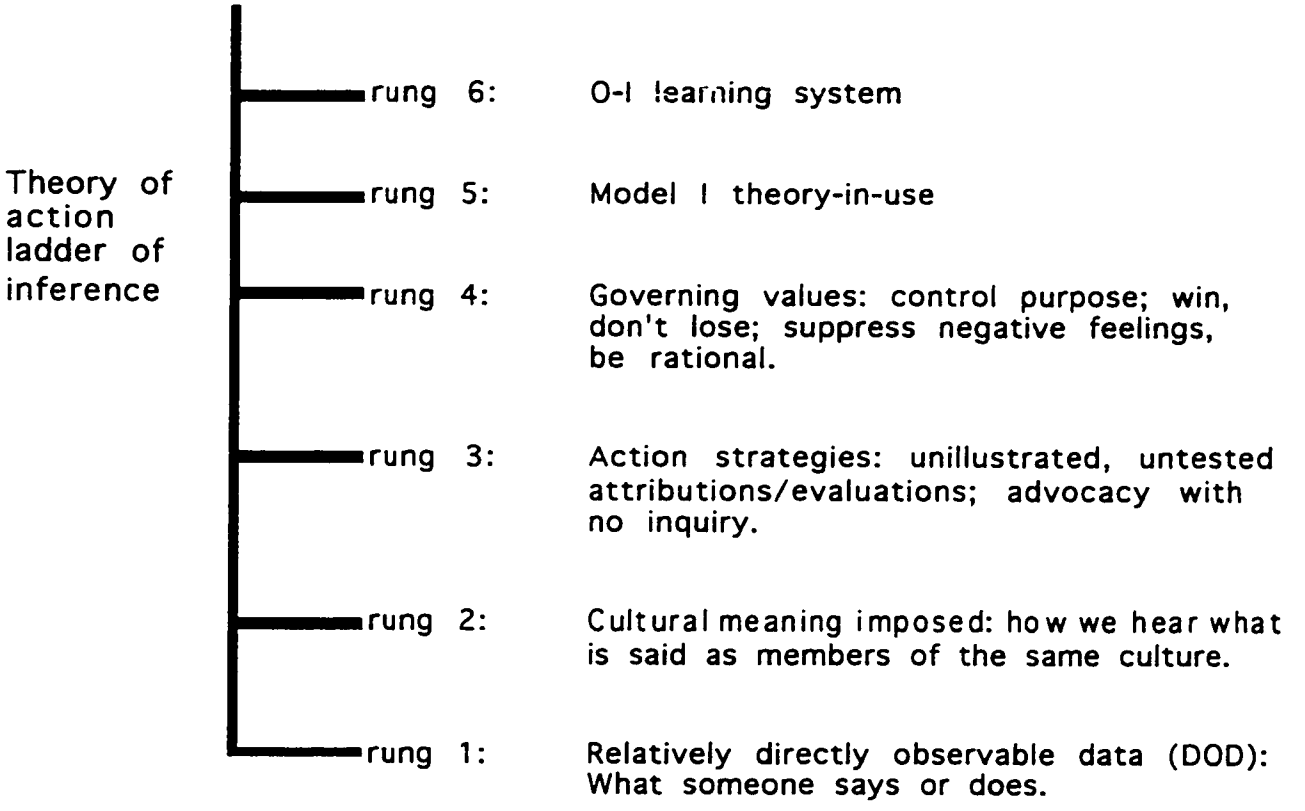
I have in fact, thought and acted in a typically Model 1 way in this situation. My very skillfulness in meaning-making has, in this incident,

resulted in my performing with considerable incompetence. And herein lies the paradox of "skilled incompetence" that occurs when people "...use practiced routine behavior (skill) to produce what they do not intend (incompetence)" (Argyris, 1986, p.74)

In order for the action scientist to retrieve such meaning-making processes and to understand and reconstruct differences in meaning imposed at each level of a practitioner's ladder of inference, they must actively retrieve and test out the data available at each level; i.e., not only what was said or done, but the thinking and reasoning that lay behind those words and/or actions. In this way they may come to better understand how situations were interpreted, i.e., how the person(s) reasoned about the situation/dialogue under study in order to act as they did. This approach requires exploring the theories that informed their clients' interpretations and consequent actions.

Action scientists using the theory of action approach use an explicit ladder of inference to diagnose theory-in-use, and to determine if behavior is consistent with Model 1 or Model 2. This ladder is outlined in table #4 which follows:

Table #4



(Argyris, Putnam and Smith, 1985, p.5)

By employing this ladder of inference in their research, action scientists work towards making explicit the inferential steps that their clients have taken, from concrete data to abstract theories. They probe, for example, for the underlying attributions and evaluations which have been made by their client in their process of interpreting the situation under study, and use these data to develop causal explanations and hypotheses. These inferences can then be publicly tested (also by employing this same ladder of inference) with their client. The action scientists therefor not only present their conclusions (their diagnosis), but provide the data and logic to support this, such that it may be confirmed or disconfirmed by the client with whom they are working.

We see how, in addition to Model 1 and Model 2, that the ladder of inference is a central analytical and diagnostic tool to the action scientist using the theory-of-action approach. In essence it serves three important functions in meeting the basic criteria of action science:

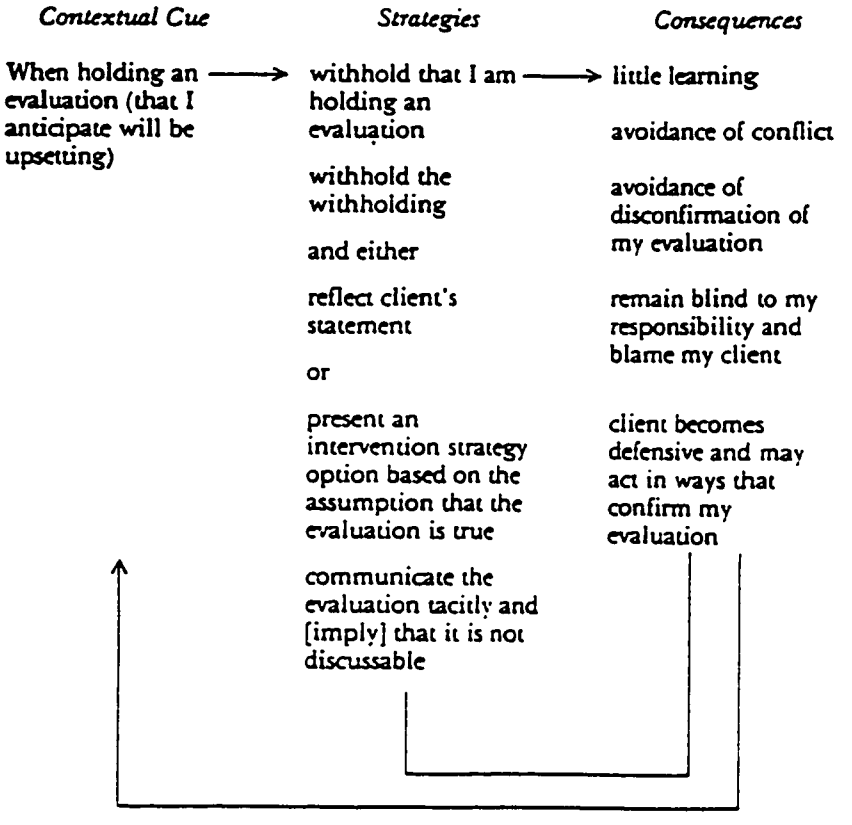
> First, it makes it possible to go from the data of a concrete case to more abstract models, so that these models can be falsified. Second, it makes it possible to connect generalizable knowledge to a particular case. And finally, it enables individuals to reflect on action by providing a tool that can be used to retrace and make public the inferences they draw from what happens to the conclusions they draw from events.
>
> (Argyris, Putnam, and Smith, 1985, p.247-248)

The third important diagnostic and analytical tool is "mapping". Maps are used to represent, diagramatically or verbally, a particular problem in such a way that this knowledge may be used not only to better understand the specific situation in question, but also may be applied more generally (i.e., to other situations or questions). Maps are more specific and concrete to the case under study than are the more abstract Model 1 and 2, and "...describe the tacit logic that informs social action and the implications of this for the behavioral worlds of the actors" (Argyris, Putnam, and Smith, 1985, p.248).

Maps can take many forms and can be used at different levels of analysis. While they may, in their simplest form, be used to demonstrate a single rule in an individual's action, they may also be much more complicated, describing a series of interrelated propositions about a client's practice. While mapping is a skill essential to the action scientist, the construction of compelling maps which both clearly "capture" and represent problems and are

most usable (i.e., easily retrievable) to the client, is also an art whose mastery requires considerable knowledge, experience and practice. Below is one model of a theory-in-use map.

Table #5. Map of a Counselor's Practice



(Argyris, Putnam and Smith, 1985, p.249)

As has been outlined, in action science talk is important data since it gives us access into the logic that defines action. While there are various ways that such data can be collected, action scientists are guided by a set of rules and methods throughout the entire process of collecting data, testing hypotheses, and analyzing data. Included in these are the norms and practice of Model 2 behavior. By applying these rules rigorously the action scientist can

work in a mutual learning and problem-solving process with their clients, unraveling and retrieving the reasoning processes that have driven their clients' actions. They may, in a similar way, test theories and hypotheses. Ultimately, their goal should always be to "...help practitioners become aware of the rules they now use and teach an alternative set, so that practitioners might skillfully enact them on their own" (Argyris, Putnam, and Smith, 1985, p.265). The research and learning context therefor becomes an active laboratory, a simulation arena in which all parties contribute toward the building of critical change theory.

In order to generate the initial data that will assist them in the process of constructing behavioral maps, and developing their diagnosis, action scientists may use such techniques as:

1. Recorded observations accompanied by audio tapes of actual conversations.
2. Interviews (usually taped with sections transcribed).
3. Action experiments (conducted in the laboratory setting and recorded).
4. Cases of real situations selected and written by clients. Such case writing is normally guided by a particular format in order to maximize the production of essential data.
5. Client-written journals or stories.

Frequently action scientists rely on a combination of methods, for example, combining a case study with action experiments or interviews with the person who generated the case in order to maximize the completeness and accuracy of their diagnosis. Such techniques assist both in the process of critically "reflecting-on-action" in order to learn more about the client's

strategies-in-use and their underlying reasoning, and promoting "reflection-in-action" which occurs when:

> ...the practitioner experiences a surprise that leads her to rethink her knowing-in-action in ways that go beyond available rules, facts, theories and operations. She responds to the unexpected or anomalous by restructuring some of her strategies of action, theories of phenomenon, or ways of framing the problem, and she invents on-the-spot experiments to put her new understandings to the test. (Schon, 1987, p.35)

Ultimately the action scientist must aim at consistently creating conditions whereby the client can test out the researchers' claims about the counterproductive features (the model I-ness) of their theories-in-use. By mapping inconsistencies which may exist between the client's espoused theories and their theories-in-use clients may actively examine their reasoning processes. Ideally they may then begin to be guided in developing new behavioral maps that involve different skills (hence diagnostic and skill training is facilitated).

So, from the above discussion we may begin to summarize what an action scientist is. In the first case, it is clear that action scientists, like social scientists:

> ...can be regarded as practitioners at work within their own community of inquiry. They too follow a set of norms that articulate what problems and methods are legitimate for study, that guide the setting and solving of problems, and that tell them what to do and what not to do as they go through the problem-solving process. What is most distinctive about the action science

> community however, is that it enacts communities of inquiry within communities of practice.
>
> (Argyris, Putnam, and Smith, 1985, p.225)

This means that action scientists not only share the concerns of other social scientists, but also take into account the concerns of the practitioner. They take up the task of not only seeking explanations for why certain behavioral phenomenon come to be, but are guided in their search by a profound interest in how they may eventually act to transform that which they discover. Because of this:

> ...the solutions devised by action scientists must be threefold, with each of the constituent parts informing the others. Action Science must first offer an explanation that describes what happened in a way that implies how it might be changed. It then must formulate an alternative that transforms what was described. And finally it must develop a pathway for getting from here to there. (Argyris, Putman, and Smith, 1985, p.228-229)

In the two chapters that follow I will explore in more depth the challenges of learning to become an action scientist and particularly in learning the important diagnostic skills of action science and the theory of action approach.

CHAPTER 3

ABOUT THE TRAINING OF ACTION SCIENTISTS

It is clear that becoming an action scientist, using the theory of action approach, implies being able to recognize gaps and inconsistencies in one's own practice, along with learning an entirely new theory of practice. For example, not only must action scientists have a high level of theoretical understanding of their science and art, but they also must have highly developed diagnostic and intervention skills. These skills will be explored more in the chapter that follows, but in short, trained action scientists must know their field at a cognitive level, they must be able to understand and interpret (diagnose) the action of their clients according to their theory and using the tools of analysis available to them, and they must be able to craft interventions with their clients which are both skillful and consistent with the Model 2 values which they espouse.

Experience (both personal and that of others working in this field) has shown that such training is a lengthy and complex process. Graduate students working under Argyris spend five to ten years learning to practice their science. Argyris and Schon and colleagues frequently discuss the various difficulties and lengthy period of time it takes simply for students and practitioners to gain a sound theoretical understanding of the theory of action, Model 1 and Model 2, etc., let alone be able to consistently apply a new theory of practice in their personal and professional lives. In discussing these issues, various descriptions have been given of how individuals may be helped to learn Model

2 theory-in-use in Argyris (1976, 1982, 1985), Argyris, Putnam, and Smith (1985), Argyris and Schon (1974), and Schon (1987).

There is a real shortage of research which has focused specifically and in-depth on the processes of teaching and/or learning action science and the theory-of-action approach. Nonetheless there have been several related studies that are particularly relevant to this paper and which deserve note.

Putnam (1990) has conducted the most intensive study to date of one practitioner's process of learning the theory-of-action approach of Argyris and Schon. His research is particularly relevant to this study since not only did he focus in-depth on the learning of one individual over an extended period of time (almost two years) and through various stages of learning, but his subject was also what he refers to as a "second-level practitioner", i.e., an organizational development consultant who was learning in order to teach others. His subject was not only learning the theory of action, but many of the diagnostic and intervention skills of an action science practitioner.

Putnam argues that such a learning process is in fact a complex, and not yet well understood process of "re-education" in that:

> Theories of re-education distinguish between learning new skills as discrete techniques and becoming skillful in a theory of practice as a whole. Successful re-education requires integrating new techniques into a coherent system of concepts, assumptions and values. Relatively little is known about how this occurs. (Putnam, 1990, p. iv)

He also argues that, "Re-education requires conceptual restructuring...It requires not only the acquisition and tuning of new schema's, but change in the old" (Putnam, 1990, p. 119).

Re-education refers to helping willing and motivated individuals make pervasive changes in patterns of behavior that are deeply rooted in belief and value systems, and world views about "professionalism" and "skillfulness". His study was aimed at tracing the intermediate phases of this learning process, from discrete techniques ("gimmickry") to integrated practice ("mastery"). He focused specifically on reflective talk, and at the same time tried methodologically to "...develop a way of using reflective talk to create descriptions of how learning occurs" (Putnam, 1990, p.1). Such a focus of analysis was important he argued, since, "From the first perspective, reflective thinking and talk are seen as mechanisms of learning; from the second, they are seen as text for interpretive analysis, ways of generating traces of the learning process" (Putnam, 1990, p.191).

His intensive research design focused on tracing his subject's learning through a series of group-training seminars, which he and Argyris conducted within a large manufacturing organization over a period of a year. This was followed by a series of in-depth weekly interviews and coaching sessions held with his subject/client. His core data were the transcripts from tape recordings of these sessions along with meetings where Paul (his subject/client) was working with his clients and trying to apply his new learning.

His study is a fascinating story of the process of one highly trained expert's experience in learning the theory of action and a new theory of practice, examined from a teacher's perspective using the methodology of action science. Putnam has argued that his study makes an important contribution to his field especially given that it addresses the fact that, "A related limit of previous research is the little it tells us about the requirements and

dilemmas of those who learn in order to teach other's" (Putnam, 1990, p.89). He also argues, more specifically that:

> ...Model 2 is presently rare. If it is ever to spread enough to have an impact on organizations, it must be carried by those Roethlisberger called second-level practitioners, those whose job is to act as multipliers of competence...But previous research has not focused on learning that extends to developing competence in helping others learn. (Putnam, 1990, p. 90)

His study also provides important insights into applying the methodology of action science and the theory of action approach to an intensive analysis of a learning process. It has therefor been particularly helpful in providing a framework for the methodology used in this study.

Watkins and Rogers (1993) also conducted a study that attempted to make an in-depth examination of one practitioner/interventionist learning to apply the skills of action science and the theory of action approach in order to teach others. It is a particularly interesting study since the interventionist in question was in fact Rogers, one of the researchers and co-author of the study. In this case the interventionist was a professional therapist with three years of training in action science, and the study focused on her work with a workplace learning group of self-identified adult children of alcoholics ("A.C.O.A.'s"). Her co-researcher and coach (Watkins) was a trained action scientist.

While the first goal of the study was to increase overall understanding of some of the workplace issues confronted by this particular clientele, the second goal was to test the efficacy of action science in working with this clientele group, and more specifically to see how (i.e., with what level of effectiveness) a

facilitator who had been trained in action science and the theory-of-action approach could apply this knowledge and skills in working with such a group.

The study focused on a series of one and one half to three hour weekly group meetings held over a period of sixteen weeks. Group participants wrote cases and the focus of the meetings was the diagnosis and reflection upon these cases, facilitated by the therapist/interventionist. Transcripts of these sessions provided the main data for the study. Between sessions the interventionist also met with Watkins, the trained action scientist, to discuss not only what had occurred in the group meetings, but specifically to reflect on the actions and effectiveness of Rogers, the interventionist and action scientist in training.

The study revealed important dilemmas confronted by the interventionist as she tried to enact a new theory of practice (i.e., of competence acquisition) and break from many of her previously held theories and traditional role of therapist. With regards to this:

> ...a critical aspect of this study was the opportunity to explore in-depth, not only the facilitator's beliefs about learning-oriented interventions, but also her beliefs about therapeutic interventions. In the end, the process of learning to distinguish between these two modalities and then learning to integrate a more evolved understanding in her practice was a significant piece of learning for the interventionist. We call it incidental, because the interventionist did not consciously know that she would be discovering and clarifying her own beliefs and reasoning about these intervention modalities in the process of enacting them." (Watkins and Rogers, 1993, p.4)

In discussing the study, the authors outline the nature of many of the dilemmas and challenges which were confronted by the interventionist as she not only worked towards having the action science approach take precedence over a therapeutic one, but also as she sought to facilitate the members of her group learning this new approach. It proved to be a powerful and insightful learning process for the interventionist from which two important conclusions were reached about the learning of action science in such a context; the need for the learner to be open to surprises, and that the learning process itself requires an experimental attitude, i.e., a trial and error approach.

Other researchers who have recently explored some of the challenges of teaching action science and the theory-of-action approach, and who have delved into the realm of experimentation with different approaches to teaching practitioners a new theory-in-use, and to facilitating learning on the road from Model 1 to Model 2 include Rossmore (1986), Friedman and Lipshitz (1992) and Watkins and Shindell (1994). All have argued for the need to develop more effective and less complex teaching and learning methodologies and technologies in order to make the approach more accessible to both teacher/facilitators and practitioner/learners.

Rossman (1986) has argued that the traditional teaching approach and methodology of the theory of action is not only too lengthy and costly to implement, but is also too complex for both the teacher and the learner. In his year-long empirical research project with a group of ninety-three managers in a major American company he experimented with three different approaches to teaching Model 2 skills, including the traditional theory-of-action approach, a control group, and a new approach that he had developed based on his work, research, and teaching in the field. His particular approach involved breaking

down complex Model 2 skills into a series of simpler sub skills that the managers were taught and practiced in controlled exercises. The post-tests showed that the managers who had been taught using his particular methodology generally showed an increased capacity to design these sub skills, than the managers who had been taught using the more traditional theory-of-action approach. Rossmore's study did not test, however, the degree to which the managers were able to effectively produce Model 2 behavior in action through the recomposition of these sub skills and hence his study leaves open some questions about the overall effectiveness of his particular approach, and generalizability of his findings.

Argyris, Schon and associates have frequently argued that the "unfreezing" of practitioner's theory of action is a necessary first step on the road to Model 2 and to double-loop learning. Teachers/ facilitators using the traditional theory-of-action approach commonly use a confrontative method of intervention (the "X-Y exercise") to begin this unfreezing process. In the exercise, practitioners are presented with a case (the"X-Y case") and are invited to evaluate the effectiveness of Y's behavior in the case. Their subsequent evaluations and interventions usually demonstrate the same (i.e., Model 1) errors and ineffectiveness that they accuse Y of. They are confronted with this on-line by the trainer/facilitator, and when all their efforts to produce more effective interventions fail, and their anxiety and sense of failure reaches a peak, they are presented with Model 2 as a "way-out" of their predicament. As they begin to "unfreeze", the trainer/facilitator can then begin to teach them more about Model 2 and how they may come to change their theory-in-use.

Friedman and Lipshitz (1992) found that in their action science teaching and learning projects, such traditional techniques and methodologies of

confrontation were not always successful in achieving the desired results of "unfreezing" learners in the early stages of learning. They even found that such strategies could result in increased defensiveness and withdrawal especially of "low learners" (i.e., less able or less motivated). They also found that the traditional approach required an extremely high level of knowledge, mastery and artistry on behalf of the teacher in order to implement it effectively in a classroom situation.

As a result of their classroom experiences Friedman and Lipshitz developed an approach to the unfreezing phase of learning which was longer, and less complex and intense for both the teacher and the learner. Their approach involved breaking down learning into smaller, more sequenced steps through a "re conceptualization process" whereby "...learners consciously change and reorganize underlying cognitive structures" (Friedman and Lipshitz, 1992, p.131), and where there were fewer threats to learners "psychological safety", and learners were not required to "...bear prolonged feelings of failure and confusion before they are given concepts for making sense of their experience" (Friedman and Lipshitz, 1992, p.131). Their approach, for example, gradually introduced learners to basic concepts, theories and techniques of the theory of action before using case studies and students' own interventions to confront problems, dilemmas, contradictions and gaps with the students own theories-in-use.

The teaching model and methodology proposed by Friedman and Lipshitz presents an interesting alternative to the traditional theory-of-action approach to the unfreezing phase of the learning cycle. The authors acknowledge though, that their model was designed for reaching "low learners", and that the traditional model may be best suited for "high learners"

(i.e., more motivated, able, etc.). Their study therefor, invites questions about the general applicability of the model in other learning contexts, and the consequences for later phases of learning on the path to Model 2. They do, though, make an important contribution towards making the theory-of-action approach more accessible to both teachers and learners.

The issue of needing to create a "safe" learning environment, a climate of trust, and effective and efficient means and mechanisms for facilitating learning in action science classroom and laboratory contexts, has also been addressed by Watkins and Shindell (1994). They have also highlighted some of the dilemmas that can arise in teaching action science, including:

1. The fine line which exists between skill training and therapy.
2. Whether students actually experience free and informed choice when it is difficult to accurately explain to them what they will experience in the learning process.
3. How facilitator competence and error is managed.

The authors refer to various experiments that they have been using recently in a graduate program in resource development and adult education at the University of Texas, in which role playing and various types of feedback techniques have been used successfully with groups of adult learners in the process of unfreezing and moving them along on the road from Model 1 to Model 2. While they have not gone into depth in explaining these techniques, nor in conducting comprehensive research on the overall effectiveness of their techniques and methodologies, they do raise some important issues for future research, and begin to open some doors to further such experimentation and the development of alternative, and perhaps more accessible (and more

effective?) teaching and learning strategies which could be applied in various action science contexts.

Souvaigne (1985) makes a compelling argument for the importance of more in-depth and intensive longitudinal studies of individual processes of learning a new theory-in-use, in order to assist educators in creating the most conducive learning environments. But while Souvaigne supports the need for examining such learning processes from the learner's perspective, she also proposes a specific framework for doing this. In particular she argues that, "...a fruitful avenue for...research may lie in the application of constructive-developmental theory to understanding and addressing the difficulty of learning a Model 2 theory-in-use" (Souvaigne, 1985, p.16). In comparing the similarities and differences of constructive-development theory and the theory of action she raises the critical question that if an "...individual's developmental position affects his construction of what effectiveness means and hence to construct learning to increase his effectiveness...(this) might have implications for how to teach Model 2 to different individuals" (Souvaigne, 1985, p.47). While my research has not ventured into the realm of developmental theories as they may relate to learning the skills of action science, her paper does leave open an inviting door to future study of the relationship of the developmental stages of constructive-development theory to learning a new theory-in-use (i.e., Model 2). She concludes that, "The potential discovery...of a relationship between such development and the learning of a theory of effective action seems profoundly relevant to the creation of learning environments conducive both to the developing and the increased effectiveness of individuals" (Souvaigne, 1985, p.69).

Viviane Robinson (1980) has discussed a particular approach of "diagnostic and skill training" that she has developed to teach consultation skills to professionals. Her approach is based on Argyris and Schon's theory of action and places considerable emphasis on the importance of practitioners developing diagnostic skills. She (like Argyris) argues that as much as fifty percent of training time must/should be devoted to developing such skills in the overall process of learning a new theory-in-use.

In short, Robinson proposes "...that the extensive emphasis on diagnosis is essential for the development of an internalized motivation to change" (Robinson, 1980, p.2). It is only through such internalized motivation and individual commitment to learning, that the maximum transfer of learning outside the laboratory context can be assured. In this way, diagnostic and skill training goes beyond simple skill training in that it trains the learner to be constantly questioning not only how they behave, or could behave, but also why, in that:

> ...diagnosis, by constantly making connections between how a student thinks about consultation and his or her actual consultation practice, teaches a student that dysfunctionality is not just a matter of lack of skill, or the wrong choice of words. Hundreds of different dysfunctional behaviors can possibly be traced to the same few assumptions about interpersonal or consultation situations. The diagnostic process (a) highlights the costs of continuing to act off those assumptions and (b) identifies the keys to correcting the dysfunctionalities...(And) when students can reason (on the spot) about a consultation situation, in a way that is consistent with the behavioral strategies they have

learned, they will be able to utilize those strategies in a way that is natural and creative. (Robinson, 1980, p.18)

A large part of Robinson's paper focuses on demonstrating this "diagnostic and skill training" approach and comparing it to skill training. While she reinforces and well illustrates the importance of learning diagnostic skills in the process of learning a new theory of action, she still leaves us with some important questions about how such learning can be best facilitated.

A final paper that deserves note is that of Marasignan-Sotto (1980) who, like Rossmore (1986), attempted to construct a diagnostic scoring method for analyzing theories-in-use. Her thesis provides some important tools for facilitating the diagnostic process of action scientists in training.

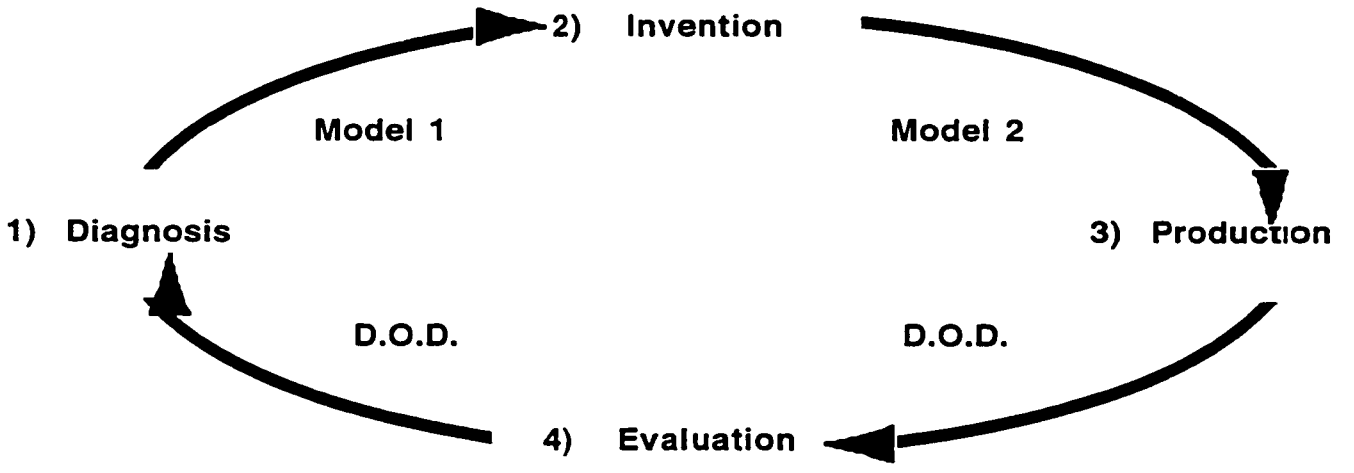
In this chapter an attempt has been made to provide an overview of several studies particularly relevant to this thesis and/or which reinforce the pertinence of the study that was undertaken. My project was designed to respond to the need expressed by many of the cited authors for more in-depth study of action science learning processes. As with the work of Putnam (1990) and of Watkins and Rogers (1993), my study will also examine the complex process of one practitioner learning a new theory of practice. I will also, as did Rossmore (1986), Friedman and Lipshitz (1992) and Watkins and Shindell (1994), explore the effectiveness of certain teaching and learning strategies in order to contribute to building knowledge in this area. Like Robinson (1980), I agree that diagnostic skills may be one of the most critical areas of learning on the road towards developing a new theory of practice. My research has therefor focused on this particular phase in learning to become an action scientist.

My research most differs from the others that I have mentioned, in the fact that the researcher (myself) is also the learner/practitioner who is in the process of re-education and under in-depth study. In the chapters which follow, I will describe in more depth my study, the particular approach which I chose to use, and the rationale for this approach.

CHAPTER 4

ABOUT LEARNING THE DIAGNOSTIC SKILLS OF ACTION SCIENCE

This thesis focuses on the process of coming to learn the diagnostic skills of action science. This is the first and perhaps the most crucial phase in becoming an action scientist. But a fully-trained action scientist must be able to implement a full Diagnosis - Invention - Production - Evaluation cycle in order to practice their science. The phases of this cycle may be demonstrated as follows (*note D.O.D. = "Directly Observable Data");



In order to carry out their research and practice, (and implement the cycle) action scientists must become highly skillful in two areas in particular. First, they must have developed strong diagnostic skills (the D.O.D. -> Model I phase in the preceding diagram), and secondly they must have developed mastery as interventionists (steps 2 to 4 in the above diagram).

The diagnostic phase in the theory-of-action approach involves working from and translating the directly observable data (the "D.O.D.") which is available to the scientist and/or which they build upon through direct interventions with their client. Such data may include transcripts of recorded sessions, interviews, client-written case studies or stories, or actual events as they occur in a natural or laboratory setting, etc. From this actual or recorded dialogue or D.O.D. the action scientist must then be able to identify which data are most relevant and important to their task, and piece this together such that they are able to construct an accurate and compelling diagnostic map which explains the central problems and identifies the counterproductive features (i.e., Model 1-ness) of their client's theories-in-use.

In building a compelling description of a client's theories-in-use, the action scientist must be able to identify and clearly demonstrate not only problematic patterns of behavior, but also the reasoning processes which appear to lie behind this behavior, and the values and beliefs which seem to be imbedded in the client's theories-in-use. They must then be able to identify and present the counterproductive reasoning and actions in the client's theories-in-use, and the gaps which exist between the client's intentions, and the actual consequences of their behaviors, and between their espoused theories (i.e., what they claim to believe in and value) and their actual theories-in-use (i.e., behavior). In this diagnostic phase therefor, the action scientist builds explanations of why their client is getting into difficulty, or not achieving the level of effectiveness which they would like. The diagnoses built in this first phase of the cycle provide the basis for intervention, i.e., the invention, production, and evaluation (steps two to four in the model) of alternative and more productive theories-in-use.

In order to understand and interpret the action of their clients, and the Model 1-ness of their behavior, the action scientist must be skillful and artful in the exploration and interpretation of complex belief systems. To complete this task action scientists, using the theory-of-action approach, rely heavily not only on the interpretive explanations of Model 1 and Model 2, but also on the ladder of inference as an analytical tool (which has been discussed in chapter three).

Action scientists, using the theory-of-action approach, must place considerable importance upon, and commit substantial time to, this diagnostic process. Not only must the scientist have developed a high level of skill in diagnosing complex and difficult cases, but they must also be able to construct compelling theories which clearly illustrate the counterproductive features and problems of ineffectiveness in the cases they have been presented with. In order also for their clients to begin to learn more effective theories of practice the action scientist must be able to work collaboratively with their clients, maximizing their involvement in the process of testing, confirming and disconfirming hypotheses, and in overall theory building. Through such involvement their clients are helped in better seeing and understanding their errors. In addition the action scientist must be able to facilitate the client's learning of the diagnostic skills necessary to detect and interpret these errors on-line themselves, and to function more effectively and independently outside the classroom or laboratory setting.

This brings us to the second area of skill and competency of the action scientist, that of intervention skills. In order to practice fully their science, and to produce knowledge which is truly in the service of action, action scientists must learn to be highly competent interventionists in working with their clientele. This means having learned the skills and integrated the governing variables of

Model 2 such that they may be guided by these norms in their research and in their interventions. They must fully "practice what they preach" in working with their clientele, as researchers and teachers modeling the norms of behavior to which they espouse.

In developing and presenting their diagnoses to their clientele, for example, they must be truly open to inquiry, challenges to, and even disconfirmation of their theories, and be able to create an environment of collaboration and joint problem-solving. At the "Invention" phase of the learning cycle, the action scientist must be able to work with their clientele in helping them find a solution to their problem i.e., in creating effective Model 2 behavioral alternatives. The scientist themselves must not react defensively when challenged, but rather behave in Model 2 ways throughout this process. They must be able not only to themselves produce Model 2 behavioral alternatives, but also to facilitate the client's learning in this area. They must be able to critically evaluate the alternative(s) by again examining the directly observable behavior which is produced (i.e., what the client does) and to work from this to build theories and hypotheses transferable into the real world. They must therefor be able to make new theories generalizable to a wide range of contexts and situations such that their client can act upon what has been learned and produce the behavior and consequences they desire. Learning such complex skills is a difficult and lengthy task, sometimes compared to the art of becoming fully fluent in a new language.

Action scientists must strive to meet the criteria of Model 2 in their research and in working with their clientele. It is the rules of Model 2 theory-in-use which must guide their quest for knowledge and theory-building. By themselves behaving in Model 2 ways, and using such analytical tools as the

ladder of inference, action scientists work with their clientele in examining problematic situations or cases. They explore the Model 1-ness and counterproductive features of their client's behavior, guided in their exploration by the rules, methodology, and governing variables of Model 2. They must also consistently be monitoring the Model 1-ness of their own behavior in the process, always open and willing to explore and to learn from this.

In the study I have conducted, on coming to learn the diagnostic skills of action science, the "case" on which I have worked is the subject of my own learning process. In fact this learning process will be broken down into a series of mini-cases, each being an episode reflecting a difficult phase or critical incident in learning to diagnose. I have applied my own diagnostic skills in working from the directly observable data (D.O.D.) available to me, including; transcripts of learning sessions (both those in which I was "in training" and those later sessions in which my coaches/colleagues and myself actively reflected on our practice), a personal learning journal, notes taken during sessions, and a descriptive story written about my learning following the training but prior to the collaborative reflection sessions. In working from, and reflecting upon these data I have attempted to map out a compelling diagnosis of what occurred, and of what was productive and counterproductive (i.e., the Model 1-ness) about my own theory-in-use in learning a challenging and exciting new skill. From this I have made certain suggestions and recommendations which hopefully will be useful to future teaching and learning projects focused on the training of action scientists. In the chapter that follows I will further elaborate on the methodology that was used.

CHAPTER 5

METHODOLOGY AND DATA COLLECTION AND ANALYSIS

From January to December 1989 I participated in a unique action science teaching/learning project along with Ron Smith (Associate Professor and Director of the Learning Development Office, Concordia University) and Fred Schwartz (Professor of Psychology, Vanier College). At the start of the project the following goals were established:

1. Working from a theory of action perspective, and guided by the methodology of action science, to analyze and diagnose a series of cases which had been presented by clinical teachers in healthcare settings. In using this methodology we hoped not only to identify and categorize what we saw to be the difficult problems confronted by this professional group, but also to assess the effectiveness of the theory-of-action approach in increasing our understanding of these problems and providing to the clinicians insight into alternative strategies for more effective action.
2. In the process of doing the work, and as we developed our skills and learned more about diagnosing cases, we would work at building a glossary, listing what we saw to be features central to the diagnosing of cases, in order to add to general knowledge and understanding in this still-developing area of action science.
3. To create within our working team, an action science laboratory in which we would explore the process of, and critical incidents and

issues in teaching the diagnostic skills of Action Science (myself, as a graduate student, being the central learner on the project).

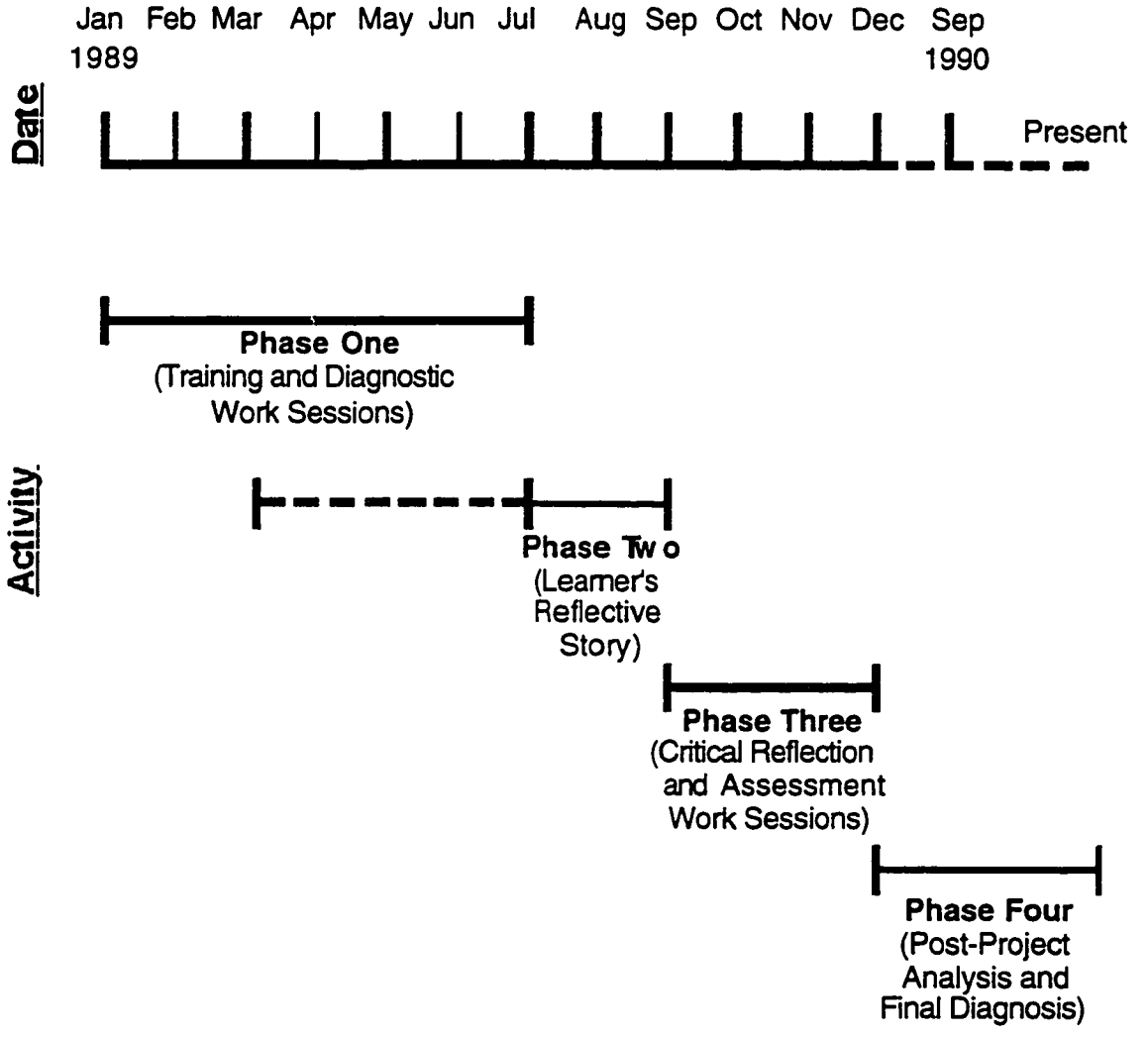
4. Also within this team laboratory setting, to explore episodes and critical incidents and issues in learning the diagnostic skills of Action Science.

Our overall vision was therefor to create a reflective practicum, a "community of inquiry within a community of practice" (Argyris, 1985). Within this "laboratory" we would therefor not only diagnose cases and reflect on how we went about doing this, but also reflect on our own practice as teachers and learners of the diagnostic skills of action science. Some of the results of the diagnostic work of the clinical cases has been summarized and reported elsewhere (Smith, 1992). My thesis has focused on the fourth goal in the project i.e., the examination of the process of, episodes, and critical incidents and issues in learning to diagnose.

A total of twenty-four work sessions of two to six hours duration were conducted during the project, and Ron Smith, Fred Schwartz, and I participated in all of the sessions. It is the audio tapes and personal notes taken during these twenty-four sessions which have provided the central data for this study. Two other important sources of data include my own "Learner's Personal Journal" and "Learner's Reflective Story". I will discuss at more length each of these sources of data in the explanation that follows of the different phases of the project.

There were four important phases to the project and the process of generating and analyzing data. The calendar of the project and timing of these phases is summarized in the table that follows, and a more detailed listing of the specific work sessions may be found in Appendix #1.

Table #6



Phase One of the project consisted of thirteen "training and diagnostic" work sessions (TDW) held between January and July of 1989. The main focus of the first ten of these sessions was the diagnosis of cases, and building diagnostic skills and knowledge (i.e., goals one and two). But in sessions eleven, twelve and thirteen the shift to phases two and three of the project began. Here the focus of the project begins to move away from the diagnosis

of cases to active reflection on the teaching/learning laboratory which we had created over the preceding months (i.e., goals three and four). The shift in focus occurred as a result of an important teaching/ learning "experiment" that was conducted in sessions nine and ten. This experiment will be explored in-depth in the discussion of the project that follows.

During this first phase of the project the main sources of data produced were audio tapes which were made of most of the sessions, extensive personal notes which were kept by all three participants in the project, and my own "Learner's Personal Journal" (LPJ) in which I frequently recorded and discussed critical learning incidents and issues.

In the second phase of the project, between July and September 1989, I wrote a detailed account of my own perspective of my learning process during the preceding months. Numerous data were compiled and analyzed in order to write this "Learner's Reflective Story" (LRS). Firstly, all of the first thirteen "training and diagnostic" work sessions were reviewed, and select portions were transcribed. In addition, my own notes and journal entries were compiled. On the basis of this compilation and my initial analysis of the available data, the first reflective account of my learning process was generated. This story was a personal perspective on the critical incidents, issues, dilemmas, and the overall process of my learning the diagnostic skills of action science during the first phase of the project. The criterion for this initial account was personal in that I focused on those incidents and learning phases which I initially identified as having been significant in my learning, and for which I could also demonstrate the nature of the learning which had taken place.

This story was my first in-depth effort at actively applying my diagnostic skills in reflecting on my own practice as a learner and action scientist in

training. It was also the first summary account of the learning events of the previous months. It therefor acted as a critical point of departure and reference point for the third phase of the project.

Phase three of the project consisted of eleven "critical reflection and assessment" work sessions (CRW) held between September and December of 1989. The main focus of this series of sessions was to facilitate our critical reflection on, and assessment of both what we had learned about diagnosing cases (goal two), and what we had learned about teaching and learning the diagnostic skills of action science (goals three and four). Through collaborative in-depth analysis, and application of the theory-of-action approach we worked at mapping out the learning process, critical incidents and issues that had occurred or arisen during the first phase of the project, and the evolution of our own theories-in-use as teachers and learners (the Model 1-ness or Model 2-ness in our own behavior for example, and the effectiveness or ineffectiveness of this). From this work we began to construct a series of hypotheses about important elements and/or issues in teaching and learning diagnostic skills. The "Learner's Reflective Story" acted as one central source of initial data, supplemented by the other two team member's notes and accounts. These were all rigidly put to the test using the analytical rules and tools of action science, in order to insure the accuracy and to maximize the completeness of our account. When necessary to the verification of our interpretation(s) we returned to the initial work session audio tapes. These eleven sessions, the critical phase of active "reflection-on-action", were also conducted by the two faculty experts and myself, the action scientist in training. These sessions were taped and so also became available as data for the final phase of the project.

The final phase of the study was my post-project analysis of data and diagnosis of the learning process that had taken place. This phase, conducted from September 1990 to present, involved returning to the twenty-four work sessions and making lengthy transcripts of those portions which had been identified as significant (i.e., where important learning issues, incidents, phases or events had occurred, arisen, or been discussed). Then, using all available data I conducted the in-depth analysis that lead to the building of the final diagnosis (the story) of a learning process which follows, and the concluding summary of observations and recommendations.

The Table which follows summarizes the content, the nature and focus of activities, and the data that was generated at the four phases of the project.

Table #7

Project Phase	Sessions/Activities	Major Focus/Goal of Activities	Sources of Data Produced
Phase I	"Training and Diagnostic" Work Sessions # 1 - 13	Goals 1&2 (Sessions 1-10) Goals 3&4 (Sessions 11-13)	- Audio Tapes - Participants Notes - "Learners Personal Journal"
Phase II	Writing of "Learners Reflective Story"	Goal 4	- Partial transcripts of sessions 1-13 - Learners first summary account of learning process ("Learners Refective Story")
Phase III	Critical Reflection and Assessment Work Sessions # 14-24	Goals 2,3,& 4	- Audio tapes - Participant notes
Phase IV	Post-project Analysis of Data and Final Diagnosis	Goal 3	- transcripts of taped sessions 1-24

Note: Goal 1 refers to the analysis and diagnoses of the series of case studies of clinical teachers in healthcare settings.

Goal 2 refers to the building of a glossary of features central to the diagnosing of cases.

Goal 3 refers to the exploration of critical incidents and issues in teaching the diagnostic skills of Action Science.

Goal 4 refers to the exploration of critical incidents and issues in learning the diagnostic skills of Action Science.

It is important, I believe, to also give at this time a more complete profile of the learner (myself) who was central in this study. Prior to embarking on this project I had taken part in several courses and learning projects focusing on reflective practice and Argyris and Schon's theory of action. More specifically, I had taken two graduate level courses, participated in a concurrent discussion group during the first, and co-founded and participated in an independent study group (the "Fan Club") which had been formed by five graduate students who had together taken the second course. This group met approximately every third week for over a year, including during the time of this research. Formation of the group had been stimulated by a mutual desire to further explore the practical application of the theory in our personal and professional lives.

I believe it is accurate to describe myself as a highly motivated learner. I had returned to graduate work in my mid-thirties after some years working as a professional in the area of international development and non-formal and adult education. I also had extensive experience working with groups, and while undergoing my graduate studies I worked regularly as a trainer and training consultant to numerous community groups and non-profit organizations. But this lengthy and intensive research project, and the studies and independent projects which supported and stemmed from it, would prove to be one of the most intense, and perhaps the richest learning experience of my career. I continue to profit from the learning in my ongoing efforts to develop my skills as an action scientist and a practitioner, and improve my personal and professional theory of practice.

In the chapter that follows I will provide my rationale for the case study approach which I selected to use for this study, and defend the particular "subjectivity" of my approach.

CHAPTER 6

RATIONALE FOR THE CASE STUDY APPROACH USED

The in-depth case study approach which I have selected to use in my research is admittedly unique. This uniqueness comes not from the case study methodology in and of itself, since this type of research is highly accepted and used extensively in the field of education. The uniqueness rests more in the action science methodology and approach that was used, and particularly in the fact that both the central researcher and the subject/practitioner under study are one and the same person (i.e., myself). This, within the norms and rules of traditional social science research, may invite some important questions, particularly about the objectivity and validity of my research. I would like to address some of these issues in this chapter, and "give reason" to the particular approach I have selected to use.

Any definition of case study tends to be broad, but all case studies focus on one phenomenon or event and have as a central task; "...to produce ordered reports of experience which invite judgment and offer evidence to which judgment can appeal" (Stenhouse, 1988, p.49). All good case studies are also guided by a research design and methodology which dictates how data will be gathered, what will be gathered, and how it will be interpreted. What makes case study different from certain other forms of research is that it is qualitative and descriptive, as opposed to quantitative and predictive in nature. The focus is more on the process than on the outcome, and on the meaning-making that lies behind the events or the phenomenon under study. Accurate and valid observation is critical, but it needs to be informed by theory and sound

methodology, and produce results that are testable. The results, though, are limited to providing accurate descriptions of behavior versus predicting behavior. In order to ensure rich description and to uncover underlying meaning-making processes, one objective of case study is also to get as "close" to the subject under study as possible, an objective which often raises issues and concerns about researcher objectivity.

Achieving "reliability" in the traditional sense of the degree to which findings can be replicated elsewhere, is not possible in any case study. What is possible is maximizing dependability and internal consistency in the research and in the reporting, such that results make sense to outsiders. In most cases the focus is to "go deep" in understanding the specific such that this may inform general theory-building, add insight, and build upon an existing knowledge base. In this way future researchers and/or practitioners may be helped in seeing possible similarities, and in interpreting new and unknown contexts and events.

The case study at the heart of this research project is a qualitative, descriptive, and interpretive work. It is qualitative in that the experience and the data are interpreted through words as opposed to statistics and numbers. It is descriptive and "thick" in that I will present a detailed account of a particular phenomenon. And finally, the case study is interpretive in that throughout my work I have developed certain conceptual categories and tested certain theoretical assumptions (in this case those of Argyris and Schon's "theory of action"). As has been previously discussed, my research design and my methodology have been guided by the "theory of action" approach to doing action science.

In this case, the particular "phenomenon" under study is one phase in my process of learning the diagnostic skills of action science during a twelve-month action science teaching/learning project. The setting for the project was an isolated "laboratory" within a university context. But this laboratory was also a learning "practicum", which can be described as:

> ...a setting designed for the task of learning a practice. In a context that approximates a practice world, students learn by doing...They learn by undertaking projects that simulate and simplify practice; or they take on real-world projects under close supervision. The practicum is a virtual world, relatively free of the pressures, distractions, and risks of the real one, to which, nevertheless, it refers. It stands in an intermediate space between the practice world, the "lay" world of ordinary life, and the esoteric world of the academy. It is also a collective world in its own right, with its own mix of materials, tools, languages, and appreciations. It embodies particular ways of seeing, thinking, and doing...(Schon, 1987, p.37)

In this laboratory/practicum I worked with my teachers/colleagues at developing particular knowledge and skills essential to becoming an action scientist, in this case the knowledge and skills in the art of diagnosing. I also worked at integrating a new theory of practice (Model 2), which is essential to becoming an action science practitioner. Finally, in working on the diagnosis of real-life cases, we tested and experimented with different techniques and approaches to doing diagnoses, in order to build upon existing knowledge and theory in this area.

As I have discussed (see Chapter 3), learning the diagnostic skills of action science is a complex process which little previous research has examined. Researchers in this area have also frequently commented on the need for more in-depth study of this process, in order to better understand it, and in order to be able to design and develop more efficient and effective teaching and learning processes. Because of this, I have judged that a qualitative case study approach could potentially offer a wealth of valuable information relevant to future work in this field, particularly since:

> The case study offers a means of investigating complex social units consisting of multiple variables of potential importance in understanding the phenomenon. Anchored in real-life situations, the case study results in a rich and holistic account of a phenomenon. It offers insights and illuminates meanings that expand its readers' experiences. These insights can be construed as tentative hypotheses that help structure future research; hence, case study plays an important role in advancing a field's knowledge base. (Merriam, 1988, p.32)

Case studies can also contribute to the improvement of practice by building on existing knowledge and understanding of a problem or process. By producing a well-organized, in-depth, and detailed report of a particular experience, supported by concrete data, good case studies invite judgment, and can stimulate and encourage further inquiry, exploration and experimentation into the problem or process under study. Since there is such a shortage of knowledge about the process of coming to learn the diagnostic skills of action science, my case study has been designed therefor not to provide definitive answers to teaching and learning issues and problems in this

area, but rather to make one more contribution towards building knowledge and understanding of this phenomenon.

While it is true that such a laboratory/practicum may be regarded as only a simulation of the "real-life" settings in which action scientists work, in fact to date much of the training of action scientists tends to take place in practicum contexts. In this sense my setting was very "real life" and in that sense I hope the external validity of the findings will be maximized, to the extent to which the findings will be applicable or generalizable to other such teaching/learning situations.

At the same time there are some important limitations inherent in my research design and my findings. As with Putnam's (1990) study, there are obvious limits as to the generalizability of some of my findings to other learners. In the first case, as a learner I was highly motivated, experienced, and quite knowledgeable and confident. I was also learning a very particular theory of practice, and therefor it cannot be assumed that my findings can be generalized to individuals learning other theories of practice.

The most important concerns which may arise though, are around issues of internal validity, and researcher bias and objectivity. Internal validity is concerned with whether the findings capture what is really there. This depends on how accurate and unbiased are the reconstructions of reality. Clearly, in any qualitative research, the researcher's theoretical orientation shapes their world view, and how and what they choose and see. I have already explained and defended the theory-of-action approach that I have used, and how this approach has guided me in my quest to practice what Putnam (1990) has referred to as "disciplined subjectivity". But the fact that I played a joint role of researcher and central subject introduced even greater challenges to trying to

be truly accurate and unbiased in my research and in my reporting. It is difficult to even begin to explain for example, what an emotionally charged activity it was to uncover, make truly public, and then put my knowledge and my learning to the test in interpreting my own errors and ineffectiveness. But within the design were certain factors which helped to balance and check my particular subjectivity. The first was the fact that throughout the first phase of the project it was never my intention to make my own learning process a separate research study and/or thesis work. Looking at my learning was a shared task and only part of a much larger project. But the most important checks to my subjectivity were my teachers and co-researchers, Ron and Fred. Senge has argued that:

> Because it's so hard to see theories-in-use, you may need the help of another person - a "ruthlessly compassionate" partner. In the quest to develop skills in reflection, we are each others' greatest assets. (Senge, 1990, p.202)

He has also argued that; "Leaps of abstraction occur when we move from direct observations (concrete "data") to generalizations without testing..." (Senge, 1990, p.193). Throughout the project Ron and Fred were truly "ruthlessly compassionate partners" in this sense. The interpretation of the rough data, and the testing and building of hypotheses and theories was very much a collaborative effort. On an ongoing basis they were my constant "reality checks", providing invaluable additional "windows on our reasoning" and constant test to the credibility and accuracy of my propositions.

The final test, of the rigor of my research, will be in the extent to which I have completely, accurately, and systematically represented the reality that I espouse to have lived during the project. In many ways it will be left to the reader to judge my writings and to draw their own conclusions from this. If

questions remain as to the reality of what I will present, I can only answer: "What can be more "real" than a disciplined learner's reflections, analysis, and exploration of their own learning when done with the intention of truly improving their practice".

In my research and my reporting it has always been my central objective to produce knowledge which may inform and be "usable" in designing other learning contexts, and in increasing effectiveness of both teachers and learners of action science. I have attempted to apply all of my skills in producing an accurate and truthful account of what took place. In the chapters which follow, I will describe my world as it was, in an effort to inform how other worlds might be, and to provide insights which may prove helpful to future learners and teachers of action science.

CHAPTER 7

AN INTRODUCTION TO MY STORY: A JOURNEY IN LEARNING THE DIAGNOSTIC SKILLS OF ACTION SCIENCE:

In the five chapters which follow I will tell a story about my personal experience in coming to learn the diagnostic skills of action science. In chapter five I discussed the four phases of the research project. In each of these phases important activities took place that facilitated my learning the diagnostic skills of action science, such that these skills could then be applied to the analysis and diagnosis of the learning process I had undertaken, and hence to the writing of this thesis. Each phase also provided a foundation upon which the following phase built. In summary, these four phases may be viewed as follows:

Phase One was the experimental phase of the project. During this phase we created a laboratory in which we experimented (collaboratively and individually) with different ways of doing diagnosis, and with different ways of teaching and learning diagnostic skills. It was a creative laboratory in that sometimes our experiments were calculated and planned, but sometimes they were spontaneously created and conducted on-line, as issues arose or events occurred which surprised, intrigued, or puzzled us. It was a phase of much trial and error, successes and failures, and much active "learning by doing".

Phase Two was the personal reflection-on-action phase. This was the phase in which I reviewed and reflected upon my learning process of the preceding months and produced a first written account of this (the "Learner's ReflectiveStory"). It was a phase of much study, questioning, and soul-searching, and my first effort at putting my newly acquired skills to work on the analysis and diagnosis of my own learning process.

Phase Three brought our team back together in our laboratory setting for the collaborative reflection-on-action phase of the project. During these eleven "Critical Reflection and Assessment" work sessions we created a dynamic reflective practicum in which we undertook important diagnostic work, reconstructing and critically reflecting on the overall teaching and learning process that had taken place. This was a critical phase for the collaborative testing and building of hypotheses and theories about diagnosing, and about teaching and learning the diagnostic skills of action science.

Phase Four is my (the learner's) final diagnostic mapping and discussion of the episodes of the project. The project was a select but critical stage in my overall experience of becoming an action scientist, and coming to learn the diagnostic skills of action science. While this process continues, this thesis and the discussion which follows is my effort at applying those diagnostic skills in identifying, reconstructing, and making sense of the learning experience which happened for me.

It is not my intention to recreate the entire story. In working from the learner's perspective I will always be sharing one view of what happened. I

have also chosen to select a number of "critical episodes" that occurred during my learning journey. In discussing and diagnosing each episode I will work from a theory of action perspective. Consequently, my descriptions of these critical episodes will include transcribed dialogue, personal notes taken during sessions, excerpts from my Learner's Personal Journal and Learner's Reflective Story, descriptive maps and reflective comments.

My selection of these episodes has been guided by a number of criteria. Each episode took me to a new place in my learning journey and therefor each is a new chapter in my story. In each it is clear that something significant was happening to me as a learner. The beginning of each episode is signaled by a significant incident, or some kind of important change in my/our approach to working, learning, or problem-solving. In each it is also evident that I make some kind of advancement in my learning. More specifically I demonstrate:

1. Having acquired new skills, knowledge or information about diagnoses or the artistry of diagnosing, and/or
2. Having changed my way of reasoning about myself as a practitioner-in-training and/or a learner.

Of these two types of learning, the first type often had to do with the "nuts and bolts", or more intellectual side of learning a new skill/artistry, such as acquiring new pieces of information, or learning new approaches or techniques. The second type, on the other hand, often had to do with more emotive issues often connected with dealing with error. For example, when I was hurt, surprised, puzzled and/or confused by something that occurred in my relationship with my colleagues, or when I was confronted with major problems in my theory-in-use and/or a significant block to my learning that had to be

overcome, and this subsequently lead to an examination and some important change my reasoning and actions.

Argyris (1990) has examined this second type of learning in some of his discussions about "error" and "defensive reasoning". He argues that at the heart of our ineffectiveness as human beings, and central to our Model 1 theories-in-use is "designed error". Recall that in the theory of action, error occurs when we do not achieve our intended results. From early in life we are taught how to act, how to be in control of our environment, and how to deal with such things as threat, embarrassment, hurt, or insecurity. These are key programs that we hold in our heads and which are sustained and reinforced by the Model 1 societies and cultures in which we live. But inherent in these programs are patterns of defensive reasoning that doom us to failure and to cycles of continual error. For example, our skillful and competent design and delivery of these basic programs (or "rules") also blinds us to our errors and ineffectiveness. We not only bypass the error, but we also cover up the bypassing.

It is through surfacing, confronting and diagnosing such errors and counterproductive reasoning, and through efforts at finding and testing out new, and more productive ways of thinking and acting that the road to Model 2 can begin to become clearer. And so while the first type of learning episodes have to do with acquiring new skills or new information, the second type have to do more with confronting and trying to manage errors in basic programs of interaction and effectiveness (i.e., theories-in-use), what I do, and what I subsequently come to learn.

Finally, in my selection of critical episodes, I have retained for in-depth study and analysis only those:

1. Which I as a learner and trainee identified as significant, and
2. Which were also identified and/or acknowledged by the two co-researchers during the critical reflection and assessment phase of the research project, and
3. For which specific data was available to demonstrate and/or confirm the nature of the learning which took place

In the Theory of Action a compelling diagnosis is one which clearly captures and explains, or maps out:

How the "actor" was thinking in order to act as they did;

The specific strategies used or actions taken;

What was productive and/or counterproductive about how this actor was thinking and acting; and,

What were the consequences of these "theories-in-use"?

These same criteria have guided me in my effort to describe, discuss, and "diagnose" each critical episode with as much accuracy and authenticity as possible. What makes my analysis different is that I work from the learner's (i.e., "the actor's") perspective in describing my reasoning and actions. I have also attempted to answer these important questions:

What appeared to have helped my learning?

What appeared to have hindered my learning?

In essence therefor, I will be treating each critical episode as a "mini-case" within the whole. For each I will provide a brief summary of what occurred and why the episode was selected for analysis (i.e., why was it seen as critical). Next I will describe, from a theory of action perspective, what appeared to have taken place, i.e., what did I do and why, and what were the consequences of my thinking and actions.

In my description, I will frequently present my data, particularly segments of the transcripts, in a two-column format. In this format, frequently used by action scientists using the theory-of-action approach, actual dialogue or text (i.e., data) is recorded in the left-hand column. The right-hand column is a window into my reasoning about what was taking place. It contains researcher's comments and coding of model 1 or model 2 features in the dialogue. A number following a speaker's name merely indicates where on the original audio tapes the dialogue may be found.

There are six chapters to my story. In the first of these (chapter eight) I will discuss what I hypothesize to have been the initial conditions that were in place as I began the project and my learning journey. Each of the following five chapters will focus on a critical episode on this journey. The six chapters may be summarized as follows:

1. In **"Setting the Stage for the Long Road Ahead"** (Chapter Eight) I will examine myself as a learner and participant at the beginning of the project. More specifically, I will look at how I appeared to be reasoning, the early "frames" that I held regarding the nature of the project and the tasks which lay ahead, my level of knowledge, ability and competence, my perception of my role and responsibilities as a participant, collaborator, and "team member" in the project, and about learning and being an effective learner.

   These initial conditions, my point of departure, would set the stage for much of my subsequent reasoning and my actions in the sessions which followed. Understanding and exploring these initial conditions and my "setting" of problems is crucial to making sense of, and building hypotheses about, many of the subsequent strategies that I

would design and experiment with, and the reasoning that lay behind my actions. Tracing the breaking of frames, and the evolution and change in these initial ways of thinking are also crucial in charting the course and overall evolution of my learning.

2. Having some of my early frames and ways of thinking put to the test, and living my first crisis confidence as a learner and collaborator in the project is the focus of the episode, **"Getting Shaken and Starting to Chart My Course"** (Chapter Nine). It is during this episode that I begin to confront, to try to make sense of, and to manage some of my earliest learning puzzles, problems, and barriers. And it is during this episode that I begin to actively employ a series of strategies aimed at performing competently, and managing uncertainty and a loss of confidence. Some of these strategies will also mark the beginning of a counterproductive pattern of behavior (the "production fear cycle") which will prove to create perhaps my most significant learning dilemma of the project (the "confidence/competence dilemma"). These will be further explored in later episodes.

3. In **"Exploring Avenues to Effectiveness; Finding Some Bridges and Gateways, and Getting Trapped in Dead-end Streets"** (Chapter Ten) I will focus on a lengthy (six session) episode in my journey, in which I both gain some important new knowledge and skills related to diagnosing, and at the same time become more and more entrapped in the "production fear cycle". I

will examine a series of strategies that I implement in my efforts to learn and to perform competently. I will explore the productive and the counterproductive features and consequences of these strategies.

It is an episode in which I make some important learning breakthroughs, but also set in place some of the most critical barriers on my journey to becoming an action scientist.

4. **"Taking Stock, Reflecting, and Starting to Shift Gears"** (Chapter Eleven) is an episode of transition which occurred over a period of two sessions. It was a period of both personal and collaborative reflection and project evaluation. This "stocktaking" episode, as we came to call it, in many ways marked the closure of a chapter in the project as I (and we) begin to make some important shifts in thinking and acting. It will also set the stage for what will prove to be the most important episode in the project.

5. **"Coming to the Brink, Taking Chances, and Crashing Down the Barriers"** (Chapter Twelve) is the most critical episode of my learning journey. It is about staring learning dilemmas squarely in the face, taking risks, and smashing down my most important learning barriers. It is during this episode, which mainly takes place during two lengthy sessions, that I make a radical "double loop" leap in my learning as I finally confront and begin to break out of the counterproductive production fear cycle. Central to the episode is "the experiment", a new teaching/learning strategy which is designed and implemented "on-line", and which will have profound

consequences in taking my learning to new levels and in helping me make important advances in my learning journey.

6. In **"Rolling on Towards New Horizons; New Frames, New Strategies, and New Behaviors"** (Chapter Thirteen) I look at the final training and diagnostic workshops in which we bring closure to the first phase of the project. It is therefor the final episode of this study. In it we assess my new stance as a learner and practitioner as I begin to explore and experiment with new theories of practice and new strategies for effectiveness. We complete our diagnostic work, and begin the process of "packaging" and actively reflecting on our learning's of the preceding five months. I begin the writing of the "Learners Reflective Story", and we begin to design the process for the third phase of the project, the "critical reflection and assessment" workshops. This episode is important to examine not only as the conclusion to the important Phase 1 of the project, but also as an assessment of the new stage I had reached as a learner, as a consequence of many of the events that had taken place during this first phase.

The Table which follows summarizes these five episodes with regard to time frame, and sources of data which have been used to reconstruct and diagnose them.

Table #8

Episode	General Time Period During Which it Occurred	Sources of Data
"Setting the Stage for the Long Road Ahead" (Chapter 8)	Project Onset (December) and TDW #1 (January 10) TDW #2 (January 24)	Personal Notes from TDW #1 & #2 (No transcripts available) LPJ LRS CRW #1 (September 28) CRW #3 (November 13)
"Getting Shaken and Trying to Chart my Course" (Chapter 9)	TDW #2	Personal Notes from TDW #1 and #2 LPJ LRS CRW #1
"Exploring Avenues to Effectiveness; Finding some Bridges and Gateways, and Getting Trapped in Deadend Streets" (Chapter 10)	TDW #3 (February 2) TDW #4 (February 17) TDW #5 (March 9) TDW #6 (March 16)	Transcripts from TDW #3, #4, #5, #6 LPJ LRS CRW #1 & #2 (October 27) CRW #3
"Taking Stock, Reflecting, and Starting to Shift Gears" (Chapter 11)	TDW #7 (March 30) TDW #8 (April 3)	Transcripts from TDW #7 Personal notes from TDW #8 (No transcripts available) LPJ LRS CRW #3, #4, #5, #7 (December 18)
"Coming to the Brink, Taking Chances and Crashing Down the Barriers" (Chapter 12)	TDW #9 (May 23 & 24)	Transcripts from TDW #9 LRS CRW #3, #4, #6 & #7
"Rolling Along towards New Horizons; New Frames, New Strategies, and New Behaviors" (Chapter 13)	TDW #10 (June 20) TDW #11 (June 26) TDW #12 (June 27)	Transcripts from TDW #10, #11, #12 LRS CRW #6 & #7

Note: TDW refers to "Training and Diagnostic Workshops"

LPJ refers to "Learner's Personal Journal"

LRS refers to "Learner's Reflective Story"

CRW refers to "Critical Reflection and Assessment Work Sessions"

In selecting and undertaking my analysis of the critical episodes which will be discussed in the chapters which follow, I have been guided by the rules and norms of action science. I have worked from what was actually said or written over the course of the project. I have analyzed and reflected upon this "directly observable data" in order to identify what was productive and counterproductive about how I was thinking and acting in my process of learning the diagnostic skills of action science, and in order to build a series of hypotheses and theories about this.

The meanings I have attached to the available data, and the conclusions I have reached are personal. To support my interpretations and conclusions I have provided as much of the data and my reasoning about this data as possible. I have also tested my interpretations and conclusions with my colleagues (themselves being trained action scientists) for disconfirmation. In reading my story, others may reach different conclusions about what took place. I hope, in being true to my science, that I have provided enough information to also allow for the testing of these alternative theories.

CHAPTER 8

SETTING THE STAGE FOR THE LONG ROAD AHEAD

Any new experience is something of an adventure for the person who embarks upon it. We tend to enter those experiences which are planned (versus thrust upon us unexpectantly) with varying emotions, attitudes, and predispositions depending on our previous experiences and the realities we are living at the time. We also enter with a level of anticipation and/or excitement and/or concern, etc., perhaps with numerous questions, and often with certain presumptions about what will or may occur and how we should act in the situation. These initial conditions, our states of mind and ways of seeing and interpreting our world are our "frames" on reality.

Peter Senge (1990) explores this notion of "framing" in his concept of "mental models" which he defines as "...deeply engrained assumptions, generalizations, or even pictures or images that influence how we understand the world and how we will take action" (Senge, 1990, p.8). Such mental models may be simple assumptions such as "a bride should always wear white", or they may be very complex theories; for example, one's perceptions about power and authority.

It has been argued that understanding and reflecting upon frames or mental models is central to the re-education process (Putnam, 1990). Active frame reflection is also critical to the collaborative inquiry process (Joiner, 1983). Our frames determine how we "set" each new problem or challenge we are confronted with. They guide what we select to hear and see or to

disregard, and determine what we choose to focus our attention on. Because they shape our perception of our world, they are therefor extremely powerful in directing how we subsequently shape our actions. As Schon summarizes;

> When a practitioner sets a problem, he chooses and names the things he will notice...Through complementary acts of naming and framing, the practitioner selects things for attention and organizes them, guided by an appreciation of the situation that gives it coherence and sets a direction for action...
>
> Depending on our disciplinary backgrounds, organizational roles, past histories, interests, and political/economic perspectives, we frame problematic situations in different ways. (Schon, 1987, p.4)

But it is also true that;

> Often a problematic situation presents itself as a unique case...Because the unique case falls outside the categories of existing theory and technique, the practitioner cannot treat it as an instrumental problem to be solved by applying one of the rules in her store of professional knowledge. The case is not "in the book". If she is to deal with it competently, she must do so by a kind of improvisation, inventing and testing in the situation strategies of her own devising. (Schon, 1987, p.5)

Argyris and his colleagues also emphasize that when the situation being framed involves other people;

> ...then the framing will include the agent's beliefs about the intentions and beliefs of other people. The consequences of action will include the reactions of these others, which themselves

depend on how they frame the situation and on their beliefs about the intentions and beliefs of the original actor.

(Argyris, Putnam and McLain-Smith, 1985, p.51)

Our framing and meaning-making in a situation influence our decisions about how to deal with and act vis-a-vis that situation. We draw upon our previous experiences and tacit knowledge in order to make sense of the new problem or challenge we are confronted with, and in order to determine what we believe will be an effective strategy. We then implement or experiment with this strategy in the hope of being effective.

But Argyris and Schon have also found that frames are remarkably resistant to change, firstly because they are often tacit and outside our level of awareness, and secondly they are often deeply rooted in fundamental values and belief systems. Thus, it often requires repeated failure of frames and repeated experimentation with breaking or realigning unproductive frames before new ones can be designed and tested out. They have also found that critical to the breaking of problematic or unproductive frames, and the design, testing out, and adaptation of new ones, is the ability to identify and actively reflect not only on the nature of these frames, but also on the underlying values and assumptions which have created them in the first place.

I will begin my story by examining a series of initial conditions that I hypothesize to have been in place when I began the project. These initial conditions, the early frames or mental models which I held, and the beliefs, values and assumptions inherent in them, help give reason to many of my subsequent actions, behaviors, and ways of thinking.

The period surrounding the initial two meetings held in Phase One of the project (the training and diagnostic workshops) provided data which helped in

the task of tracing and surfacing some of these initial conditions and early frames. But in some cases inferences have been drawn about how I must have been thinking and reasoning about the journey that lay before me, from my thinking, actions, and behavior later in the project, or from the discussions held during Phase Three of the project where we worked collaboratively in testing hypotheses and making sense of the puzzle.

Those initial conditions that I have identified as most important, and which I will discuss in this chapter, include:

1. My motivation and readiness for learning
2. My level of confidence in my knowledge and abilities (and the basis for this)
3. My "setting" of the problem when confronted with a complex and ambiguous task
4. My framing of my role and responsibilities within a relaxed working relationship
5. My confidence in my competence to perform my tasks, role and responsibilities as I perceived these, and
6. My assumptions and values about being an effective learner.

These initial conditions begin to give meaning to how I saw the journey which lay before me, and they set the stage for exploring the episodes which follow. While each is an important piece in making sense of the learning path which I took, they are also closely interconnected. Together they are part of my vision of my world as I then saw it.

Initial Condition #1

I WAS HIGHLY MOTIVATED AND A "READY" LEARNER

I entered this project with great energy, motivation and enthusiasm. I was keen to learn. In my Learner's Reflective Story I summarized this initial state as follows:

> When the project began...I recall having felt at the same time excited, pleased, anticipatory, and quite confident regarding my ability. The timing of the project was ideal given that I was in the initial phase of my M.A. thesis research...(LRS, p.2)

The project was another in a series of learning projects and courses that I had undertaken in an effort to build my knowledge and understanding of the theory of action and the methodology of action science. The work of Argyris and Schon fascinated me and as a professional trainer and consultant I was enthralled with the potential for application in my practice. I had also decided to undertake research toward a Master's degree which focused on applying the theory of action in examining cross-cultural conflict cases. This gave further incentive to my learning since, in order to undertake my research, I would have to develop my diagnostic skills.

Initial Condition #2

I WAS CONFIDENT IN MY KNOWLEDGE, ABILITIES AND UNDERSTANDING

In short I was not, and did not see myself as a "rookie". I had a sound basis for my confidence, which I later described:

> I had participated in two previous... courses which had focused on application of the theory of action to increasing professional effectiveness. In addition, for several months I had been

> participating in a study group of five women. We had formed the group with hopes of not only deepening our understanding of the theory of action, but also broadening it's application to our personal and professional lives. So with that background, along with having done a rather extensive literature review on the work of Argyris and Schon, I felt confident of my theoretical understanding and ready to move on to the next challenge of putting the theory into practice and actively testing out my understanding. At the same time I was also very aware that there was still a lot to learn before acquiring the level of expertise necessary to the completion of my own M.A. research project. (LRS, p.2)

I had worked hard at broadening my knowledge of the theory of action. But from the above, it may also be inferred that my confidence was largely based on theoretical understanding which I had developed in a number of ways (i.e., course work, a study group and extensive reading). With this confidence in my knowledge base I expressed the readiness to "move on" in my learning, and to take on the challenge offered by the project of "putting the theory into practice" in order to build my level of expertise and ability.

I would also add that this confidence was likely bolstered in two additional ways. Firstly, by the fact that I was a mature adult and a professional who brought to this new venture numerous relevant life skills and practical field experience in such areas as training design, group dynamics, teamwork, and communication. Secondly, I assumed that my colleagues were also confident in my knowledge and abilities. I was sincerely flattered to have been invited by

Ron and Fred to collaborate with them in this project. I had been "chosen" from a pool of possible graduate students.

In one discussion during the third phase of the project, we explored some of my reasoning about confidence. But this discussion also began to introduce an important link that I made in the early stages of the project connecting confidence in my knowledge, to confidence that I would also be able to perform competently. I will explore this link later in this chapter.

Actual dialogue	Researcher's comments
SUE:...But from the very beginning I remembered, I recalled comments having been made like: "We want to try an experiment. We have this project that we want to do of which we have a number of objectives. We have considered you...because you have this much background. You have a level of understanding, you've arrived at a level of understanding that's more advanced than other graduate students, that we might have considered to participate in this, on the first day.	Retrieves what she recalled having been said in the early session(s) No data available to confirm or refute her claim.
FRED: On the first day, what did you hear...?	Asks her to try again to retrieve what was said on the first day.(i.e., data at first level of the ladder of inference)

SUE: That...Yup.	
RON: You were chosen...You were chosen because you were wise and experienced.	Gives his summary of what Sue may have understood (i.e., moves to next level on the ladder of inference.)
SUE: Or, you know, wiser than.	Adds to building an interpretation of her reasoning about what she had heard.
RON: You're not naive...	Another interpretation
FRED: And you weren't	Gives reason to her reasoning
SUE: Ah ha. But there was a lot of margin there for interpretation in terms of how wise (laughing). I mean, and how wise do I have to be?	Points to potential problem areas with her reasoning (i.e., "fuzzy thinking")
FRED:...You see for me what's interesting...is...what was your competence (confidence?) based on? And what you just said is your confidence was	Begins to inquire further into Sue's reasoning about confidence and competence

based on us telling you some of those things...I mean I remember saying those things partly. But also what you wrote here is "I felt confident of my theoretical understanding." My confidence was based on...having done a rather extensive literature review (Sue agreeing in background). In other words because of your didactic studies...and the workshops...

Partly verifies Sue's claim about what was said
Goes to directly observable data (Learner's Reflective Story) to retrieve data to help begin to build a hypothesis about Sue's reasoning

SUE: I cite a few things; the workshop, having done the course a couple of times, the reading that I'd done, so theoretical understanding, and the Fan club.

Also draws from data

FRED: Right, those three things.

Acknowledges

SUE: Yeah. So based on that I felt that I had a certain level of

Begins to propose a frame of: coursework + reading +

competence (Fred says "that's what I want to say)...	framework = theoretical understanding = level of competence
FRED: ...I'm saying, that's the frame you walked in, that if I've got these things then I should have confidence in myself...	Adds to building of frame whereby Theoretical understanding also = confidence
RON:...And we reinforced that, by saying we selected you because in fact you have had those... (CRW, pp.34-35)	Adds that her reasoning was reinforced by what they said

The next two initial conditions are closely interconnected and together they help explain and give reason to a series of assumptions that I make, and critical frames that I set in the early stages of the project related to the task which lay ahead, the nature of our working relationship, and my role and responsibilities on the project.

Initial Condition #3

IT WAS A COMPLEX AND AMBIGUOUS TASK WHICH LAY BEFORE ME

and

Initial Condition #4

OUR WORKING RELATIONSHIP WAS A RELAXED ONE, AND SPECIFIC ROLES AND RESPONSIBILITIES WERE UNCLEAR

We began the project with high aspirations about what we would like to achieve. Our goals were multiple and potentially far-reaching. In addition there were few models for how we might go about achieving these in the action science laboratory that we intended to create. Not only were the goals and tasks of the project complex and numerous, and the processes we would use to achieve these unclear, but we also appear to have established from the onset a relaxed working relationship whereby individual roles and responsibilities on the project were also left unclarified. It was within this relaxed environment, and confronted with this ambiguity that I very early made a number of assumptions and set in place a series of frames which I will now examine.

First insights into my efforts at framing the task which lay ahead and my roles and responsibilities in the project are revealed in early notes, my Personal Journal, and the Reflective Story. Personal notes taken during the first session are extensive, including a listing of project goals and objectives (outlined earlier in this paper) and an extensive reference list for reading. In the Reflective Story I summarized that:

> Our first meeting had been devoted to mapping out overall goals of the project, beginning to plot out a tentative plan of action, and beginning to establish or "feel out" our working relationship as a team. In addition a bibliography and collection of central readings was compiled. We also selected the first two

cases to be worked on, starting at the next meeting. (LRS, p.2)

Five days after this first meeting I wrote in my Personal Journal:

> Leaving our first meeting I did feel a bit overwhelmed with information...and in need of some time to "digest" and sort it all out! There had been a lot discussed it seemed and I know that the real goals of our project and the "how we will go about it all" was still somewhat unclear to me. I had taken in a lot that I now had to organize for myself...I think this is my effort at "framing" our research problem. (LPJ, p.1)

But despite this lack of clarity, and the fact that this contributed to my feeling somewhat overwhelmed, I nonetheless continued to be optimistic and positive about the project and the learning opportunities which it offered. This I express in my final journal entry of January 15th:

> I'm excited about this project. I feel that things are rolling and that I am learning a lot that is important to building my understanding of, and competency in working with this theory. (LPJ, p.2)

Feeling excited and enthusiastic but somewhat overwhelmed by the ambiguity and complexity of the project, I not only tried to give definition to the task that lay ahead (and this I will discuss shortly), but I also made a series of early assumptions about our working relationship and my role and responsibilities on the project. I saw us as working together as a "cooperative and collaborative team". I also saw myself as an "equal partner" on that team. And I entered the project with a number of critical frames around teamwork and

the role and responsibilities of team members. In my Reflective Story I stated that:

> We had agreed at the onset of our project that we would work together as a cooperative team of equals, and along with this an unspoken rule seemed to early be put into play - that each team member should be given the freedom to contribute and involve themselves at will in discussions. We were all learners and voluntary participants therefor. (LRS, p.3)

Unfortunately no concrete data are available (this session was not taped) to trace what specifically was said or done to have lead me to draw the conclusion that we were to function as a "cooperative team of equals". In follow-up discussions it was agreed though that we had been quite relaxed about specifically defining our working relationship, and the roles and responsibilities of each member. For example, in the reflective discussions Ron pointed out:

Actual dialogue	Researcher's comments
RON: (458) Was there ever any explicit discussion of roles?...I don't remember an explicit discussion of roles. And the implicit understanding of how we were going to work together... (CRW, p.41)	Tries to retrieve data about early discussions or about early reasoning about roles and working relationship.

It was in later discussions, held during Phase Three of the project, that we were able to explore some of the frames I held about collaboration, teamwork, and my role as a team member.

Actual dialogue	Researcher's comments
SUE: But I think there was a series of frames working...around teamwork...around collaboration and how I saw my role.	Advocates that she likely held a series of frames and names these
FRED: Yes, but...I don't have it yet what those frames are...okay the frame around your role was to participate actively (Sue agrees), and to give and take.	Asks for illustration of nature of frames, and proposes one.
SUE: And to contribute towards achieving objectives that we've set out . That's one frame... (later) ...My frame of team and collaboration says that I have to be an equally contributing member of this team, I have to contribute in moving towards that goal...	Expands upon her explanation of her reasoning and framing
FRED:...So cooperation means equal contribution?	Verifies his understanding

SUE: Yeah, and I don't mean that just in terms of air time. I mean each adding their skills and knowledge and perspective to help move us towards the goals that we have. (CRW, p.50-51)	Continue to work towards collaboratively building on hypotheses about Sue's early frames...

Later I was able to further elaborate on the frame around "teamwork" that I likely held throughout much of the project. It was a deeply rooted frame closely linked to personal and professional values.

Actual dialogue	Researcher's comments
SUE: (573) I have a big thick frame around what I believe a team is. So I go in. I judge that well we're going to work as a team. To me team means this...that decision-making and problem-solving is done in a collaborative way where people equally participate. Doesn't mean they're all being equally verbal, but they play an equal role in reaching certain goals and objectives. That each team members strengths are acknowledged and that they have the opportunity...to contribute and participate. Suddenly I find myself in	Again expands upon her "team" frame, and explicitly states her reasoning about this.

a situation where I'm not contributing...I don't feel I'm contributing, and I'm not sure how I can. As a matter of fact I make the judgments that I might even be blocking what we've laid out to be goals. And I think that created a dilemma for me. Because the whole concept of team is very central...I mean, in my professional life I work with team-building stuff all the time, and suddenly I'm in a situation where I think, well we'll transfer it to this context. (CRW, pp.103-104)	Explains her dilemma when her frames and her reasoning don't "fit" with the reality she is living. Expands further upon reasoning and judgments that further contributed to her dilemma. Explains deep-seeded nature of team values. Expresses same "confidence/ competence" reasoning, but this time the confidence that she would be able to competently apply her knowledge about, and experience with teamwork to this new situation.

The above discussion suggests that I held a frame about being a cooperative team member as meaning that one had the responsibility to both participate actively and make an equal contribution towards achieving perceived goals and objectives.

How I saw myself as being an equal partner on the team was also critical. I saw it as my role and responsibility to make an equal contribution in achieving our goals, and to participate actively. My concept of team was not a hierarchical one. I was a colleague in the project, and even though I was in training I did not see myself as a "student" and did not see our relationship as a

traditional teacher/learner one. In later discussions we explored what may have lead to my perception of my "equal partner" role.

Actual dialogue	Researcher's comments
SUE: (047)...So we mask the role of student, and we mask the role of worker. (Some discussion around how "mask" is too active a term)...	Advocates that certain actions or non-actions confused or made the acknowledgment of certain roles difficult.
We don't acknowledge those roles. very well. We talk about them sort of,	
but we don't really acknowledge them in the actions.	No clear illustration given
FRED:...You didn't want to be a student. You wanted to be an equal partner.	Presents a judgment about Sue's reasoning No illustration
SUE: No. I wasn't sure what I was supposed to be.	Disagrees
RON: We set it up as an equal partnership by the way we hired her.	Advocates that certain actions may have reinforced the frame of an equal partners relationship
FRED: And she bought into it.	

SUE: Yes...(laughing) I don't know what I'm supposed to produce exactly...	Agrees?
FRED: But you like not being a hired hand, (Sue says "oh yeah") and being a member of the team...and preparing for your thesis.	Further tests this hypothesis
SUE: Yeah. So I am going to participate in this project...From what I've heard and seen my perception is that I'm a member of a team, in a collaborative project. I happen to be getting paid for it, or at least paid something for it also. And for me...as a student it's extremely important for me...No question...I recognize I still have a lot to learn. Here's a means for me to learn that. It's an ideal scenario. But my role is pretty hazy... (CRW, p.55)	Shares probable reasoning at the time

Later Ron shared his hypothesis about how a relaxed working style and atmosphere was created from the onset. It was within that atmosphere, and

confronted with complexity and ambiguity that I selected to make a series of assumptions about the priority tasks which lay before me.

Actual dialogue	Researcher's comments
RON: (078) I would argue it a different way. Let me try my argument and my thinking. That we hired you, and it was clear we were hiring you. Part of the thing was though that we had no idea how much work there was to do, how long the work would take. We couldn't specify...how much to be done, when to be done, and in what format to be done. So I think that led us to be very relaxed about...We'll go as far as we can. And that set up a kind of much more relaxed, let's go as far as we can, as fast as we can...if it all works or it doesn't. It was in that sense...or explicitly that we said, we won't set deadlines or we won't set production quotients...because we don't know...And in that sense we'll play it by ear. Now I don't know what else we did there...that makes sense to me as something we did do...	Proposes another hypothesis about what may have been occurring, i.e., early actions and the underlying reasoning which may have driven these actions

(Lengthy discussion follows about how Sue bought into this despite all of the lack of clarity. Then try to go further in exploring what else might have gone on in early meetings, and what Sue did and the strategies she undertook in order to be "helpful", to do her job, and to try and sort out "priorities" of the project. Also discuss how during that process certain initially expressed project objectives seem to have "dropped off the board", i.e., never being mentioned or followed up on again...)

FRED: (182) So what were the priorities that you heard us saying?

Asks Sue to share (give data) on what she recalled hearing and how she interpreted this

SUE: Doing the diagnosis. Getting through these and then getting good write-ups of diagnosis. And me keeping journals, and reflecting. So I'm spending the time on...listening to tapes, making notes, keeping a journal, preparing for the sessions...

Provides more data on her interpretations and subsequent actions

In that first session, there was a lot of objectives that were put out. Potential objectives, you know. And I remember thinking a lot about that.

RON: So what else did we do in the first session? We hired you...we told you about the project, but we must have put in place some way of working that informed what happened for the next three, four, until we made you a student again (laughter). I don't know what we made you in the first meeting but it certainly wasn't a student...Was there something easygoing about the way we were working? My sense is that we were fairly easygoing...a very relaxed atmosphere that tends not to say; and we expect you to do this, and this and this and this. And part of that was that I don't think it was clear to us what we expected you to do...
(CRW, pp.55-57)

Invites more input from group on what may have been said and done in first session

Further questioning of early reasoning and actions

In summary, I believe the fifth initial condition was put in place as a consequence of these two preceding ones. In the early stages of the project, when confronted with a complex, ambiguous, and somewhat overwhelming set of goals and objectives, and a relaxed working relationship in which there was little explicit discussion of individual roles and responsibilities, I believe that I made a series of assumptions and "set" the problem in the following way:

Initial Condition #5

I WAS A PARTNER IN A COLLABORATIVE TEAM OF EQUALS,

AND

AS A TEAM MEMBER, MY RESPONSIBILITY WAS TO PARTICIPATE ACTIVELY AND CONTRIBUTE EQUALLY IN ACHIEVING THE TEAM'S GOALS AND OBJECTIVES.

I ALSO

SAW THE PRIORITIES ON THE PROJECT AS BEING:

GETTING THE DIAGNOSES DONE

GETTING GOOD WRITE-UPS OF THESE DIAGNOSES, AND

ME KEEPING JOURNALS AND REFLECTING ON MY LEARNING.

It can also be inferred that I entered the project with certain assumptions about, and a high level of confidence in my competency.

Initial Condition #6

BECAUSE I WAS CONFIDENT IN MY THEORETICAL KNOWLEDGE AND ABILITIES, I WAS ALSO CONFIDENT THAT I WOULD BE ABLE TO PERFORM COMPETENTLY.

I ALSO BELIEVED MY COLLEAGUES WERE CONFIDENT IN MY KNOWLEDGE AND MY COMPETENCE.

Linked to my confidence in my knowledge and experience (initial condition #2) was the confidence that I would be able to act on this knowledge, i.e., transfer the theory to action with relative ease. And because of my assumptions about the task which lay ahead, and my role and responsibilities, my standards for competency were closely linked to "production". More specifically I appear to have framed "competent behavior" as meaning that I should be, participating actively in diagnosing cases during our work sessions, producing good write-ups, doing my "homework" (i.e., writing, reading, and reflecting), and being an active, collaborative, and equally contributing team member.

Discussions during Phase Three of the project not only helped give reason to my thinking, but also uncovered some of the inherent problems. In the first case Ron and Fred likely entered the project with a "production set", which would have reinforced my framing of the task. Our initial focus was on the production of diagnoses. Examining and reflecting upon our effectiveness in teaching and learning diagnostic skills was, at least initially, of secondary importance. In fact, we likely all assumed that by producing diagnosis I would quickly learn whatever I had to learn to build my skills and competency in diagnosing.

Actual dialogue	Researcher's comments
FRED (333) You see we have a "set". It's a production set. We walked into	Shares his hypothesis about a production frame that group began

this whole thing with a production frame, bias, set. (RON asks for clarification) Do it. Produce and then we'll reflect on things (Ron proceeds to challenge this, explaining how his set was that he really didn't expect that it would be very hard for Sue to learn diagnostic skills. That she would learn this quickly, and then would go off and work on the cases)	the project with, and Ron explores this with him
RON: (357)...I'm not sure...that I ever thought that her coming to learn how to do it would be very hard...In fact I'm sure I didn't think that it would be very hard. And that would...make much more sense to me as to why we didn't make a big deal of testing her competence...(continues to discuss puzzle of the teaching model)	Shares another hypothesis about early assumptions he made about Sue's competence
SUE: (380) And I would add to that...I believe that production set leaked through in a way that caused dilemma's for me, in the sense of, are	Presents her hypothesis about how Ron and Fred's implicit frames may have influenced her thinking and

we here to produce, to get as many diagnoses through as we can? In which case let's just let this keep happening, and unless I have something really valuable to contribute, I mean (everyone laughs) let's just let it happen, okay (Ron says "Oh, I see"). That's another way of framing it maybe...	actions, and contributed to creating certain dilemma's for her
(later)	
RON: (556) I have another frame around this. That in fact what we were doing when we were producing the diagnosis, was not so much modeling how you come to a diagnosis but trying to create the product at the end so she could see what it looked like. And that explains why we didn't initially spend a lot of time on how we got to it. That we simply wanted to have it so we could show her what the product looked like	Builds upon "production frames" hypothesis
(Some discussion then follows around this, and further exploring the teaching model, or rather how	

somehow they had dropped the frame of teaching and instead were focusing on producing diagnosis)...
(CRW, pp. 40-41)

In the second case, while my colleagues were also confident in my level of competence, our confidence was based on different assumptions. We also entered the project with very different, and even conflicting ways of defining and framing "competence" in the context of our project. And finally, we were likely all unclear as to how much competence would be needed to achieve the goals we had set, and to perform the tasks at hand.

Actual dialogue	Researcher's comments
FRED: The learning is that one may not be capable of diagnosis, even if one has those...(inaudible)...In otherwards, knowing the content... maybe isn't a good place to get your "nookies" of confidence (Sue laughs)...It's like saying, you know, things change so much that just because I can do one thing doesn't mean I'll be able to do something else. I mean maybe our competence should be derived from our ability to learn...	Begins to explore the inherent dilemmas of such a frame Presents an alternative way of framing competence

RON: (104)...Two ideas occur to me; One is that I think that the assessment of her initial level competence, both on our part and hers, was probably inaccurate. I don't know that we did any assessment of her competence. We didn't pay much attention to her confidence. We had confidence in you and your ability to learn and all this kind of stuff, but it wasn't based on competence in the sense that you can do diagnosis. You were still, among all the people we could choose, among the more skillful...	Begins to hypothesize about Ron and Fred's possible reasoning around competence and confidence, and their subsequent actions
FRED: But also...one of our discussions was, who was it that we wanted to work with.	Adds more data
RON: Based on experience, and commitment to learning, and all those other things, yeah. Yeah, that's true... (later) The interesting question about level of confidence though, is that we had confidence in you because we	Agrees with this Continues to build theory-in-use proposition, adding data about their possible thinking and actions

chose you. So that was sort of an implicit thing. And we also never really discussed competence explicitly (Sue says "No"), I believe. We discussed diagnosis and coming to learn diagnosis, and we're all in this together...but we never discussed her competence or our competence. We never discussed competence, and the different levels of competence. Nor did we discuss what people should do when they get stuck, which is the second question about competence. The more important issue around competence has to do with; It's not that you won't be able to diagnose things, but it's what you do when you can't diagnose things. It's not that you won't have crisis of confidence, it's what you do when you have a crisis of confidence, and that's the other question that for me is intriguing. You didn't say when you were feeling overwhelmed, or at least did not initially say "I'm feeling

Advocates the non-discussion of certain important issues

Continues to build upon his hypothesis

overwhelmed". The thing is we didn't check that out...
(CRW, pp.35-36)

(And some time later)

RON: (443)...I'm not sure that I made assumptions that you were confident in your ability. I mean I never thought of that as an assumption...The assumption might have had something to do with that you would work in a Model 2 way. That whatever is on your mind will come out. It's not more around your ability...I mean I would have thought that you were capable.	Tries to recall nature of assumption he may have made
FRED:...And you would expect her to behave in a Model 2 way because of her previous experience?	Asks for elaboration
RON: Absolutely. How could you take 2 courses and all of this. Or that she'd be tending towards Model 2. If I would make any assumption, that	Further develops his hypothesis about how he may have been reasoning about competency and competent behavior, and

would be it. That if there's a screwup in the team you'll tell us. That you'll be a good team player the way...people that espouse Model 2 and try to practice it would be. I'm not sure that I thought about that, but if I did think about it I think that's probably what I would have thought.
(Fred goes on to agree with this idea generally and then more discussion follows about what was discussed openly, i.e., the money, and lack of clarity of recall of exactly what they may have been withholding).

assumptions that he may have made about Sue's reasoning and actions

RON: (533) What was missing from that discussion was, of course, do you feel confident that you can do what we're asking you to do.

Non-action that may have contributed to reinforcing frames and assumptions (i.e. untested assumptions)

SUE: I didn't know what you were asking me to do so why should I not feel confident?
(CRW, pp. 59-60)

Gives reason to her reasoning

These very different assumptions and frames about confidence and competence would not be discussed, tested or challenged for some time.

The final initial condition that I will discuss is a model of learning and a set of strategies for effective learning that I brought to this experience, which was:

Initial Condition #7

IF I WAS ATTENTIVE, STUDIED AND WORKED HARD (I.E., DID MY "HOMEWORK"), I WOULD LEARN WHATEVER I STILL NEEDED TO LEARN.

This particular frame must largely be inferred from my later actions, and how I dealt with problems during much of the first phase of the project, and this will also be explored in more depth in the discussions of later episodes. At the same time, given that I had gone through and been successful as a student in a generally traditional educational system, it would seem reasonable that I would assume that hard work and study would lead to "success". This frame on learning is evident in some of my earliest writings and reflections. I had a solid knowledge base and was a "good student". Any new information I received would have to be organized and integrated with my existing knowledge, and once successfully done this would move me forward in my learning. I discussed how I went about processing new information, and how I worked at learning in the first entry of my Learner's Personal Journal:

> It's funny how important it is for me to put order to information before I can tackle and begin to do something practical with it. It's also interesting how the practicality and applicability of

> information is so central for me...So immediately following our first meeting I set about rereading and then rewriting and ordering notes I had jotted down...I had taken in a lot that I now had to organize for myself...I think this is my effort at "framing" our research problem. (LPJ, p.1)

Further journal entries discussed how I had gone about organizing the vast amount of material and information that I had received in our initial session, and in undertaking my first case diagnosis I relied heavily on particular articles to provide models and guide my work stating that certain of these, "made my diagnostic task seem more possible and within reach" (LPJ, p.2).

In later discussions we examined how Ron and Fred's early "production set" perhaps reinforced my reasoning that I could learn what I needed to learn by working hard, watching closely, and doing diagnosis. The problems or limitations of both my learning frames and their teaching frames and strategies would not be surfaced and explored for some time.

Actual dialogue	Researcher's comments
RON: (658) Makes sense out of what happened. Her frame is learning, my frame at least, or our frame is produce diagnosis so we ask questions about producing them fast, different formats for producing them and writing them up. No questions, or very few about, is our method of teaching working...	Gives reason to what happened by comparing the differing frames that were at work

FRED: In fact we were assuming that it was adequate and we would discover all about the teaching of diagnosis after the fact by reflecting on what we had done. We were going to discover how we taught by watching how we in fact did it...(discussion carries on between Ron and Fred around how the responsibility had been placed on Sue to draw attention to problems when they arose and to keep track of learning so that this could be looked at later - to end of side 1/tape 1 -720)	Begins to hypothesize about early assumptions that he and Fred may have made about how they would learn to be effective teachers of diagnosis Ron and Fred elaborate on this hypothesis
FRED: (002) Okay...we produce the diagnosis. Sue would learn by doing, by watching. Sue would monitor her own learning. We would learn about teaching and learning...after the fact...and when Sue would "trot them out"...trot out the problems...	Continues to elaborate on early assumptions/frames about teaching (and learning)
RON: Another way of judging what	

our frames are/were is to look at the kinds of moves and experiments we conducted...all the experiments were around how to do it or write it up, not how to teach it or learn it.	Suggests that they get closer to actual data in building their hypotheses Advocates particular strategies No illustration
FRED: And we never, I don't think, explicitly reflected on our effectiveness in any of that.	Advocates lack of explicit "reflection on action" about effectiveness
RON: Oh, effectiveness in, is this a good way to write it up? (group goes on discussing on how they had never examined their frames. Also discuss an earlier analogy they drew, i.e., the dance analogy of; "You can watch an impressive dance performance and be awed by it, but you can't go up on the stage and do it")...	Begins to propose another hypothesis, this time around effectiveness

(CRW, pp.41-42)

While the concrete data that I have presented to support some of these hypotheses about important conditions which were in place in the early stages of the project are admittedly slim, I believe that my discussions of later episodes and some of the actions and consequences which stemmed from these, will give further credence to my arguments. These conditions would prove to be

powerful "drivers" of later actions I would take, and strategies I would experiment with during the project. In my discussions of the episodes which follow, therefor, I will often refer back to these initial conditions in tracing how I subsequently reasoned in order to act. I will also explore some of my processes of surfacing, examining, shifting, and breaking certain initial frames, which allowed me to move on to new levels of learning.

In concluding this chapter I would like to summarize these initial conditions by examining some of the inherent dilemmas which lay imbedded in them and the potentially problematic theories-in-use which they give insight to. As a highly motivated, ready learner, confident in my knowledge, abilities and understanding (initial conditions #1 and 2) but confronted with a complex, ambiguous and somewhat overwhelming task, and a relaxed working relationship where specific roles and responsibilities were unclear (initial conditions #3 and 4), I sought to make sense of my "world" (the project), act responsibly, and perform competently before my colleagues. But in doing this I in fact performed with skilled incompetence, making a series of assumptions which I largely withheld and did not test. This pattern of thinking and behavior is typical to Model 1 theories-in-use. The assumptions that I made were about:

1. Our working relationship (a "collaborative team of equals")
2. My roles and responsibilities on the project ("participate actively and contribute equally in achieving the team's goals and objectives")
3. The task and priorities on the project ("getting the diagnosis done, getting good write-ups of these diagnosis, and me keeping journals and reflecting on my learning")
4. What "competent performance" meant, and my ability to

perform competently, and

5. What a "good learner" needed to do in order to learn (i.e.,. "being attentive, studying, and working hard")

These withheld and untested assumptions invite certain questions, and they paved the way to a series of potential dilemmas and Model 1 strategies . Firstly, what if the assumptions were wrong, or if my frames and sets on the problem were different or in conflict with those of my colleagues? What if for example, we defined team differently and/or did not see the tasks and responsibilities the same way? What if my basis for confidence was built on the wrong criteria? What if I could not perform competently? What if my model of learning was faulty? How would I deal with error or conflict or uncertainty in future? In the chapters which follow I will explore these kinds of questions as I trace some of the subsequent behaviors, strategies and consequences which followed from these initial conditions, in my journey to learning the diagnostic skills of action science.

If I am to summarize what appeared to have been most helpful to my learning in the earliest phase of the program, it would seem to have been the written (i.e.,"practical") information which I received and which in reading served to summarize and refresh my memory on the theory, and some of the critical terms and concepts with which we would be working. The review and organization of this information seemed to provide a level of "security" to me as a learner and a basis from which I would take on my first task of diagnosing.

Perhaps the most obvious barriers to my learning at this early phase were not in what I did, but in what I didn't do or say. I created important early barriers in not sharing and making discussible these early frames and assumptions, my sense of being overwhelmed, and my lack of clarity around

such things as the goals and priorities of the project and our working relationship. Instead I essentially played a passive role, observing and gathering information, leaving my colleagues to assume that all must be all right, that I was competent and capable of keeping up with what we were doing and that I would learn quickly whatever diagnostic skills that I may have been lacking in. Our attention therefor focused on our tasks of producing diagnosis and learning more about the diagnostic process.

CHAPTER 9

GETTING SHAKEN AND TRYING TO CHART MY COURSE

The focus of this chapter is to diagnose and map out the first important episode in my learning journey. This episode has to do with my first crisis of confidence, a stage of "freezing up" as an active learner and collaborator on the project. The episode took place over a period of time surrounding the second training and diagnostic workshop.

As has been previously discussed, in action science and the theory-of-action approach, a good diagnosis captures and presents in a compelling way the counterproductive features (i.e., the "Model 1-ness) in the actor's reasoning and actions (i.e., their theories-in-use). Part of this diagnosis-building process is to identify and "label" these features in the available data, and to identify and demonstrate binds, dilemmas (actual or potential), and patterns of error. Such counterproductive features include for example, inferences, evaluations, or attributions which are unillustrated and/or untested, and advocacy without inquiry. The identification of such features then helps the action scientist to begin to map out how the actor was thinking and acting, and build certain hypotheses about why the actor's theories-in-use were problematic. I will apply this strategy in my diagnosis of the episode which follows.

In examining this first episode, I will map out and demonstrate what I hypothesize to be my earliest theories-in-use and the productive and counterproductive features of these theories. I will explore for example, some important learning issues, blocks, and barriers which began to emerge as a

consequence of the initial conditions which were in place, my initial framing of the project which lay before me, and the early actions and strategies I employed as a result of these. Finally, I will comment on what I perceive to have been some important teaching issues that arose in this early phase of the project.

In the previous chapter I discussed the initial conditions which appeared to be in place i.e., the values, frames, and mental models which I appear to have held as I entered into the project. I also proposed a series of hypotheses about how I appeared to be reasoning about such things as; my confidence in myself, my competence, the project and the tasks which lay ahead, and my role and responsibilities as a "collaborative team member". But as we embarked on our research project, many of these frames and ways of seeing my world began to be put to the test, and it would not take long before certain dilemmas inherent in my reasoning began to emerge.

By our second meeting my initial state of enthusiasm and confidence began to falter. Overwhelmed with the task which lay before me, and confronted with the reality of "performing", and making an equal contribution as a member of the research team, I began (privately) to question my knowledge and my competency. My discomfort also led me to begin to examine and question (also privately) some of my initial frames and assumptions. In addition, in response to having my confidence shaken at such an early phase, I took a series of actions aimed at managing my problem. These early actions and strategies would have both positive and problematic consequences.

Our second workshop (held January 24th) focused on two things; the diagnosing of a first clinical teaching case ("Louise's case"), and exploring the issue of what makes a good diagnosis. In the previous chapter I mentioned

that I had left our first workshop (January 10th) feeling, "...a bit overwhelmed with information...and in need of some time to "digest" and "sort it all out" (LPJ, p.1). I do not appear to have shared these feelings with Ron and Fred during our first session.

This sense of being overwhelmed would continue into and following our second meeting. While transcripts of this second session are not available, personal notes and journal entries provide some interesting insights into my thinking and actions during this time. For example, shortly after our second meeting, I wrote in my journal:

Actual text	Researcher's comments
Our second meeting...left me with a lot to ponder and reflect upon, and a lot of confused thoughts and feelings. I left the session with an image that has stayed with me - of a mainly passive observer at an intellectual tennis match! Things seemed to again go very quickly as Ron and Fred	Provides data about her reactions, thoughts, feelings and interpretations made about the discussion observed between Ron and Fred (i.e., the "tennis match")
bounced ideas and interpretations back and forth and I mainly observed and tried to keep up with the process. I couldn't even take notes!...such was the level of my concentration. It	Describes her actions in response to this (i.e., to mainly observe and concentrate)
was...something of a confidence shaker!	More about loss of confidence feelings of being overwhelmed

(LPJ, p.3)

In the same journal entry I talked about certain initial strategies that I implemented in follow-up to the session, which were designed to manage this sense of being overwhelmed:

Actual text	Researcher's comments
It has been valuable for me this week to reread Schon's... "Paradox's and Learning to Design", in "Educating the Reflective Practitioner" (1987). There is a lot of my experience there. I feel myself caught in a paradox in this learning experience. I'm struggling to do what I don't yet completely understand. I said to Fred at the end of the session, that I felt that they were working on a different level in interpreting the case, that they were very rapidly moving up a "ladder of inference" and somehow I was trying still to piece together the data at the lower levels (rungs)...My trust in my competence and my confidence feels...shaken. I've been thinking about that a lot. I wonder what it will take to really become competent in this method of analysis...(LPJ, p. 3)	Describes one strategy which she tried (i.e., reading). Articulates problem/barrier she is confronted with. Describes one intervention which she made in the session (Note high level of abstraction, i.e., in her evaluation of Ron and Fred's behavior she does not illustrate what specific actions or comments lead her to draw such a conclusion) Consequence = shaken confidence in competence Another strategy - of personal reflection

Later, in my Reflective Story, I expanded upon this sense of being overwhelmed and the crisis of confidence that I had begun to experience.

Actual text	Actual text
I recall that...much to my surprise, I very soon began to feel somewhat overwhelmed with information. Along with this came the first doubts about my level of understanding and overall	Shares recollection of reactions and feelings
competence...While I spent many hours between sessions reading and rereading miscellaneous articles, there was still a nagging sense that I was not "keeping up" with my colleagues. Things seemed to move very quickly in our meetings. We had	Describes one strategy that she used (i.e., to try to build her theoretical understanding), but which did not resolve her problem
agreed at the onset of our project that we would work together as a cooperative team of equals...But I quickly began to grow uncomfortable	No directly observable data to support this claim, but supports hypothesis about initial condition regarding "team"
with my role (i.e., I did not feel equal in my level of understanding or competence) and my decreasing level of participation...I do not recall having	Shares further data about reactions and feelings
articulated...these concerns to my colleagues at the time...(LRS, p.3)	Strategy of withholding thoughts and feelings

From the above it appears that, other than perhaps advocating (abstractly) to my colleagues that they were "working at a different level", I withheld most of my feelings of insecurity about my level of understanding and competency. I also begun to struggle with problems of low participation and "production" and, as I discussed in Phase Two of the project, a problem of not being about to keep up with what we were doing.

Actual dialogue	Researcher's comments
SUE: (224)...I recall... that I would be listening to you and Ron doing a diagnosis, and you would use one of the concepts, like paradox or something,...I would listen to it, and it would be a new example for me. So I would be thinking about it, kind of processing it, and then there would be another example, or concept. It was new information, and I always felt I	Goes down the ladder of inference, retracing what she recalls having happened and her subsequent reasoning.
was running along behind you know, (laughing) trying to catch up because ...it is a big leap...between I've heard of paradox before. I'm familiar with that concept. Now I'm seeing paradox in action...my understanding of paradox is being enlarged...becoming richer...I'm	Shares her feelings at the time (but again at a high level of abstraction i.e., "running along behind you) Explains how observing the use of an abstract concept "in action" (i.e. , in the lab context) increased her

seeing it used in action. (CRW, p.43) understanding

The issue of low participation would also create problems for me because of the frames which I held around the role and responsibility of a "collaborative team member" as actively and equally contributing to the team achieving their goals and objectives:

Actual dialogue	Researcher's comments
SUE: (031)...I think a big part of the dilemma had to do...with what I had perceived to be my role and responsibility, and yet not feeling confident that I could assume that...	Begins to share her perspective/ hypothesis about the nature of the "confidence/competence dilemma"
FRED:...What I hear you saying there is..."I've wanted to participate, I promised to participate, damn it I'm not participating the way I would like to be participating.	Shares his interpretation of what Sue has said
SUE: In order to feel competent I have to be able to actively participate...but I don't think I understand enough. I feel lost... (continues)	Elaborates on her hypothesis

RON: Is there another part of that? Not only did you expect yourself to be more competent, but you saw us as somehow expecting you to be more competent? So that to acknowledge that you were not as competent as either you or we might have expected was a big risk?	Builds on hypothesis by proposing another set of conditions that may have been operating i.e., her assumption that Ron and Fred expected a higher level of competence. Points out additional part of the dilemma she may have perceived herself to be in.
SUE: Yup....I think that's a big part of it, Yeah. (CRW, p.33)	Agrees that this additional condition was likely a part of the dilemma as well

From the above data I would like to present a series of theory-in-use propositions about my thinking and actions and some of the inherent problems, potential dilemmas, and Model 1 characteristics of my early theories-in-use. In the previous chapter, I hypothesized that I began the project with a number of initial conditions set in place (i.e., governing variables, values, mental models, and frames). Central to these initial conditions were several fundamental assumptions, including:

1. Because I am confident of my previous knowledge and ability, I should be able to perform with a certain level of competency
2. I believe that my colleagues are also confident of my knowledge and ability and expect that I will be able to perform competently, and

3. We (i.e., the three people undertaking the project) have the same understanding of my tasks, role and responsibilities on the project, and what it means to perform these competently.

But from the onset, these assumptions appeared to also have been built upon other, potentially problematic assumptions, and these were:

1. That my confidence is based on theoretical knowledge (i.e., versus practical application of this knowledge), and
2. That I have defined "competence" as:
   -collaborating and doing my share of the work as an equal team member
   -"keeping up"
   -producing diagnosis at high standards (which I see as a priority task)

As we entered into the active work of our project I quickly began to confront certain problems, as my initial reasoning and my assumptions began to be put to the test, and as I began to explore and design strategies aimed at managing my problems. From the data which I have presented, I would like to propose the following theory-in-use maps to summarize my thinking and my initial actions:

#1

SITUATION OR CUE

When I begin to feel overwhelmed with information, and unclear objectives and priorities,

this leads to the following

REACTIONS AND ACTIONS:

1. I begin to question my knowledge and my competence.
2. I withhold many of my concerns and my feelings of being overwhelmed or only make highly abstract references to these.
3. I read and individually do a lot of homework outside of sessions.

#2

SITUATION OR CUE

When I discover that I cannot "produce" (i.e., perform), and participate at the level I expect and that I assume my colleagues expect, this leads to the following

REACTIONS AND ACTIONS

1. I continue to lose confidence in myself and question my competence.
2. I withhold most of these feelings and this questioning.
3. I try to "keep up" by listening, keeping a lot of notes, reading, and continue to do a lot of solo study and work outside of sessions, and
4. I become increasingly more silent in sessions and participate less and less in fear of making errors and showing (confirming) my incompetence.

AND,

THE CONSEQUENCES OF MY THINKING AND MY ACTIONS ARE:

1. My problems are largely unresolved (i.e. , I continue to lack confidence and feel overwhelmed).
2. My colleagues do not understand my problems and cannot help.
3. There is low risk-taking and limited learning on my behalf.
4. My hard work and study does help build my theoretical knowledge.

So in my efforts to perform competently, and to build my confidence, I employed a series of strategies which made sense to me as a good student, a motivated learner/practitioner, and a responsible "team player". These strategies included; studying diligently, not blocking the process if I felt that I could not make a positive contribution (i.e. withholding and not "burdening" my colleagues with my own problems and concerns), being attentive, etc.

But my reasoning and my strategies were, in Model 1 terminology, largely "self-sealing and self-protecting". In the first case, as long as my feelings and concerns were either withheld or only shared in a highly abstract nature, my colleagues could not help me in finding a more effective way of managing them. The problematic aspects of my reasoning would remain unquestioned and largely untouched. In addition, the ineffectiveness of both my learning strategies and Ron and Fred's teaching strategies would also remain largely unquestioned, even if these were not producing the consequences we all desired. All of our learning was limited, my problems would largely continue, and my problematic theories-in-use would begin to lay the ground for what would come to be a critical dilemma and block in my learning journey. I will refer to this in future chapters as **"the confidence/competence dilemma"**, which is:

->If I participate actively I may make errors, show myself to be incompetent, and continue to lose confidence, but

->Both my desire to learn and practice Model 2 behavior, and my definition of my role and responsibilities as a collaborative team member, says that I must participate actively (and equally) in order to perform competently and responsibly, so,

->If I don't participate, I am also not competent, my confidence will continue to decline, and my learning will be limited.

Aspects of my theory-in-use would also set the stage for what would soon become a recurring cycle of counterproductive behavior which I will refer to as "The Production Fear Cycle" in my discussion of later episodes. But my dilemma and the discomfort that it caused me, and my lack of success in finding satisfactory solutions to my problems, would also result in attempts to reframe my learning problems, to try several strategies to overcome these, and for my colleagues to also subsequently explore some new strategies of teaching and working. These will be the focus of the discussion of the episode which follows, "Exploring Avenues to Effectiveness; Finding Some Bridges and Gateways, and Getting Trapped in Dead-end Streets".

During this episode, other than having refreshed and perhaps minimally built upon my theoretical and technical knowledge, I did not appear to have made any significant advances in my learning. What appeared to have most hindered my learning was once again my silence, along with the fear of production. In withholding and not sharing my feelings of insecurity, loss of confidence, and my sense of being overwhelmed, these could not be explored collaboratively and my theories-in-use challenged and questioned, opening a pathway to new and more productive ways of thinking and acting.

CHAPTER 10

EXPLORING AVENUES TO EFFECTIVENESS; FINDING SOME BRIDGES AND GATEWAYS, AND GETTING TRAPPED IN DEAD-END STREETS

The following episode will trace a stage in my learning which spanned four of the Training and Diagnostic Workshops held in Phase One of the project (i.e. TDW three to six inclusive). In examining this episode I will focus on two parallel processes which were occurring, one related to making some significant advances in my learning, and the other related to getting trapped, and building important barriers to learning. In the first instance, in the section entitled "Slowing Down the Pace and Focusing on Skill Training" I examine my acquisition of new skills, knowledge and insights about diagnosing, and the diagnostic process. I will also look at certain behavioral changes I made as I began the process of exploring new strategies and avenues to effectiveness. In the section "Unfreezing/Refreezing and the Production Fear Cycle" I examine certain critical issues, problems and barriers which arise related to my learning how to learn, and trace my ongoing struggle with the "competence/confidence dilemma" and the fear of production.

Slowing Down the Pace and Focusing on Skill Training

In our third meeting there was (for me) a noticeable shift in the teaching strategies being employed by Ron and Fred. What was significant was that I

perceived a change in the "tone" of our session and our approach to working together. More specifically, when Ron and Fred discussed difficulties they had been having producing "good" and/or "complete" diagnoses, when they made explicit their reasoning about what makes for a good diagnosis, and when they explained more explicitly the steps they had taken in arriving at their diagnosis, I interpret the working environment to be more relaxed and supportive, feel our interactions and pace of working had "slowed down", and sense that our objectives were clearer (i.e., that there was a better sense of where we were going). These perceived changes appear to have cued a series of new reactions and action strategies. I appear, for example, to regain a level of confidence, I more actively "engage" as a learner and a participant, I begin to discuss more openly some of my problems and learning difficulties, and I acquire some important new knowledge and skills. I began to discuss the changes that I perceived, and my reactions to them in a journal entry the day following our third session:

Actual text	Researcher's comments
It was a great session yesterday. For starts the general "tone" of the session was relaxed and supportive which helped me to feel more comfortable.	Advocates a perceived change in tone of session and illustrates (abstractly only) nature of the change and effect on her.
In addition we were much more directed, it seemed, with regards both to our objectives for the day, and the process used. Finally, the interactions were slowed down	Continues to illustrate nature of perceived change... Transcripts do not illustrate any explicit discussion of process and objectives, but dialogue appears

(so it seemed) considerably as compared to last week. We were all taking responsibility for checking the process being used and for putting the pieces together in trying to build upon our understanding of both what makes for a good case diagnosis as well as how we were reasoning in order to build upon the diagnosis. I've learned a lot this week. There were even a couple of "ah hah's" for me during the session - once when Ron explained his diagnostic technique of prototypes, and once when Fred responded to my request (I think it was mine) to tell me how he had reached a theory. It was also extremely valuable to have the results of our previous session to study. Having diagnoses visually presented seems to be very important for me... (LPJ, p.4)	more congenial, with more small talk, and laughing, and interactions are slower. Advocates but illustration is again abstract. Advocates and begins to illustrate new learning's. Transcripts confirm this Advocates importance of written data in her learning.

In the above quote I also refer to a few types of learning or ways in which I built my understanding, about what "makes for a good case diagnosis", about

the reasoning and the steps one may take in reaching a diagnosis, and about using a "diagnostic technique of prototypes". Returning to transcripts of this session is helpful in further exploring the nature of my "technical" learning and how this occurred.

This third session opened with Ron expressing difficulty he had experienced in writing up the case diagnosis on which we had worked during the preceding session. One consequence of Ron's strategy of explicitly discussing his problem is that I "re-engage" and become actively involved in a lengthy discussion (which follows), in which we share, test out, and explore some of our theories and reasoning about "completeness" of diagnosis, and what makes for a "good" diagnosis. In this discussion I also begin to share some learning issues and concerns I am having.

Actual dialogue	Researcher's comments
RON: I found this actually hard to write up. It seemed to me that even though it was relatively clear I thought, in the conversation, when I came to write it up I wrote different things from what I'd made in my notes, so that I think	Advocates a difficulty / problem and begins to explain
we do need to go through it and say to what extent does it reflect what we said and how might we lay out those things - 'cause I'm not convinced...that it comes out in the best way - that's the point. So let's see if it is what we'd like to see, and if not how to	Suggests a strategy of group collaborating on exploring this

make it so. Let me try that again. Two things; is it a good diagnosis, and is it presented in a way that's useful.

SUE: Ah ha

(Continues...)

FRED: I want to give you a hypothesis, just as a place to start. A good diagnosis...does not have to be complete...I think a good diagnosis starts an inquiry process going at some key places of "stuckness" or inconsistency...we should be careful of trying to be extraordinarily complete on all the cases...and work towards articulating inconsistencies that we see within the case, and try to write that up in a way that makes good sense - that we feel is valid and accurate, and that could be one starting point. What do you think of that?	Advocates a hypothesis about what makes for a "good diagnosis" and begins to expand upon this (i.e., illustrate) Inquiry

SUE:...When I thought about the last time we were together, I feel almost

nervous having as an objective having a complete diagnosis, given the fact that we don't have the person here to test what we're coming up with. It makes me feel very uncomfortable with even saying that should be a goal - to have a complete diagnosis...	Begins tc share her reactions (i.e., discomfort) with "completeness" criteria in diagnosing, and illustrates why this is a problem for her...
FRED: Why, why, what is it about, what is the uncomfortable part?	Asks her to explain further her reasoning
SUE: Because I don't...because I have trouble with how could it ever be complete without having the opportunity to present what we've come up with to the person who's generating the case.	Provides further explanation
FRED: But it's not complete in that sense. It's not complete. If the criteria is that you want to test it with your client... (later) I wouldn't go that route...the criterion	Begins to challenge Sue's criteria of "completeness" and begins to present an alternative.

that I'm suggesting is that we articulate inconsistencies, for example...

RON: (051) I think your using "complete" in different ways (explains)...

Shares observation that the two may be defining or "framing" compete differently, and goes on to illustrate...

FRED: (to Sue) I'm saying we shouldn't use your criteria because we can't do it, but we can use this criterion of searching for inconsistencies. And if we wanted we could be as complete as we can on it.

Advocates that Sue's criterion for for completeness (i.e. the way she is currently reasoning about it) is not useful and productive and goes on to present an alternative

RON: But by complete you mean as many inconsistencies as we can find.

Seeks to verify his understanding of Fred's alternative criteria of "completeness"

SUE: Ah hah. Which is different than the way I was looking at it which was, sort of, coming to a conclusion in the diagnosis.

Acknowledges differences in criteria (i.e., different frames) and further explores what her reasoning around this had been

Fred: No, I hear you say, that we do

that and then we test it. We can't test it. We don't have the client. It's not a criterion we should use...	Shares his judgement that Sue has "changed her story" and begins to illustrate by providing his understanding of what he had heard her say earlier. No response from Sue.
RON:...It seems to me a criteria for diagnosis is that it is testable. It's not that it is tested...I disagree with Fred, I think that initially we should go for as complete as we can and then try to figure out what's the most important part of this. And then I would say once you have that, then you want to test it with the client to build on it...	Intervenes presenting a different criteria and begins to illustrate.
(discussion and debate continues until Fred says that group may be getting "bogged down" in definitions)	
SUE: But in order to maximize the testability of a diagnosis means, in putting together the write-ups of diagnosis, means presenting all the	Adds to hypothesis-building about completeness and begins to illustrate

data that you possibly can on where your hypotheses have come from...I was just trying to think about what I had said at the end of the meeting the last time which was, myself feeling that I was missing a lot of steps in understanding a lot of the diagnosis... Because the level that you two were operating on in your diagnosis was at a different level than I'm working on. You were, I think I said; you move up the ladder fast, where I still need to take the steps. Okay? So I'm thinking if it's a good diagnosis then, for example, the person who has written the case should be able to really look at that diagnosis, or hear that diagnosis, and <u>really</u> understand where it comes from. Which means having all the pieces of the puzzle.

Tries to retrieve data from earlier session to further illustrate her point (using herself as the example)...

Continues to share more of her thinking and reasoning about good diagnosis and testability.

RON: I think the other point you were making was that we didn't seem to be providing all the data all the time to

Shares his interpretation of Sue's comment about them "moving up the ladder fast".

support ...where we came from".

SUE: Because you, I mean, the two of you perhaps didn't need to do that. (hear Ron in background making sounds of possible disagreement and Sue starts to laugh). Perhaps!! I don't know...

Is this laughter a withdrawal (or self doubt) in response to having her interpretation confronted?

RON: I think that's a good question.

Acknowledges the validity of Sue's question

FRED: Well that's interesting because I would have argued that we always did that... Maybe we didn't... So when you see us not doing that, it would be important...and helpful to try to call us on that and we'll see whether it's us or you. And if it's you maybe we can help to see it. And if it's us than we have to look at ourselves, 'cause then we're generating data that's going to get us into disconfirmation... that really will be a hunch and we should bracket it quickly and not continue to roll with it.

Advocates that it will be helpful if Sue stops Ron and Fred on-line and shares her interpretation that they are not providing enough data (i.e., shares her left hand column!).

SUE: (114)Hmhmm. Cause the other thing I wondered was if it was a case that the data wasn't always being put out, or if it was a case that the data was being put out but simultaneously you were putting together a number of different hypothesis and that's what was hard in putting the pieces together. That's what I found hard... That there was a lot of mapping going on.	Begins to publicly question her judgments and interpretations i.e. is the problem theirs (not putting out enough data) or hers (not keeping up).
FRED: We should always be able to connect it to what Louise wrote on that paper. If we don't than we're doing something we shouldn't be doing. Agreed? (continues...)	Reiterates importance of always connecting hypotheses to data. (Advocacy followed by inquiry)
RON: And the test, I think is, we may do it in conversation and not be aware of it, and we should learn that... we should also be able to point to the case. If we can't, then the question is do we still believe that and if so why	Elaborates on Fred's point.

would we believe it if we can't find any data in the case to support it. And then if you can't, then you say it's a hunch which I can't find data for and...that's testable in that format...

(Ron and Fred return to working on Louise's case, discussing both diagnosis of case, and how best the diagnosis may be organized ex., to be able to present clearly, to be most helpful to a client, to be best able to test...) (TDW, pp.1-5)

So in summary, when Ron and Fred make more explicit their reasoning about problems they are having defining "good" diagnoses and in presenting these, and their reasoning about the "completeness" of diagnosis, I shift from being a silent observer to an active participant/learner, and I begin to publicly share some of my thinking and my concerns.

In the discussion of the case which followed we worked carefully at connecting our hypotheses to data, and explored various ways in which the diagnosis could be written up and presented. We also frequently returned to the issues of testability, completeness and the criteria for a good diagnosis. In closing the case Ron agreed to do a write-up of our diagnosis (of "Louise's case").

What is important about this discussion is the "slowing down" of our process, and the shift from production of diagnoses to the in-depth exploration of some important technical issues which had arisen concerning the production of compelling diagnoses. While we did not reach a clear and shared definition of a "good" or "complete" diagnosis, and would not until much later in the project, the need to examine more closely and better understand how we were going about diagnosing is brought to the forefront of our activities. I also have an opportunity to hear some of my colleagues reasoning about diagnosis and to discuss this, and my perspective and reasoning was challenged and changed to some degree. As I will hypothesize in the section which follows, the discussion was also important because it demonstrates my "engagement" in the process, a new confidence, and an increased level of participation as a learner and a collaborator on the project.

In the diagnosis of the next ("Joanne's") case, our strategy would be specifically defined before beginning the process of diagnosing. Ron had proposed a "cold start" experiment which would give us an opportunity to explore how we were going about diagnosing and interpreting the case (i.e., our reasoning). During our discussions I would find Fred's explanation of his reasoning and the steps he took in building a mapping of a problematic theory-in-use that he proposed as being critical to the diagnosis of the case, and Ron's demonstration of the use of prototypes in diagnosing, particularly helpful in broadening my understanding of the diagnostic process. I later reflected on these learning's and what I had found to have been helpful during that session:

> Fred was the first to offer his diagnosis, a theory-in-use proposition which he sees as central, and which is presented in a mapped format of which I am not familiar...Fred's explanation,

his mapping out of his reasoning in diagnosing the case, enlightened me to a very different way of looking at, or "framing" the inherent problematics of the case...His careful restructuring of his own reasoning process gave me an alternative perspective on problem-solving. Ron's presentation of his diagnosis introduced another learning "ah-hah" for me in the form of a new understanding of "prototypes", since his diagnosis had consisted of demonstrating a prototype dilemma central in the case. In initially spotting this prototype dilemma...he then explained how he used this as a guide to what to look for in building his diagnosis. Through our discussion I was helped not only to better understand the concept of prototype through it's practical application to this case, but also another new way of approaching diagnosis. The prototype becomes another important tool that I am able to add to my repertoire of skills and knowledge...While the concept had been familiar to me previously, seeing the prototype model used "in action" this way had given it a new meaning for me and greatly deepened my understanding. (LRS, p.8)

The transcripts of this session also provide helpful data in building a hypothesis about what I learned and what had facilitated this learning.

Actual dialogue	Researcher's comments
RON: (295) So, our strategy now is to do what? Let's try to be clear about that.	Seeks clarification of strategy to be used

FRED: You suggest...

RON: (jokingly) This is a test of your competence Schwartz (Sue laughs). This is a timed test...the reason for suggesting this, as I recall, was to try to give us a chance to see what we do early on in the diagnosis. So we pick a case when it's "cold"... Let's spend ten minutes on it on our own and see where we are.

Proposes "cold start" and shares his understanding of the rationale for trying this new approach, and the process they will use

(later)

FRED: (307) Did he say yes (group laughter). Okay, first I start...

(begins to share his first hypothesis and initial diagnosis of case)

Advocates a hypothesis and his reasoning behind this

RON: (347 - a few minutes later) Can you talk a little bit about what you saw yourself doing to come up with that?

Asks Fred to go down his ladder of inference and explain the steps he took in arriving at his conclusion

FRED:...Yeah. I, hmm, I looked for her words (then goes to case)...her pattern of response...

Begins to retrace his reasoning process working directly from the data in the case

RON: So you read the sentences and looked for wherever you saw, and then built a theory-in-use proposition, or a set of theory-in-use propositions?	Tests his understanding of Fred's explanation
Fred: I looked at what she said at the espoused level, her statement of the problem...whether there was a consistency. Whether she would come back to her diagnosis. So I noted that in the beginning, focusing on what she was saying. Then...I kept looking for what she would actually do...what was in her left hand column...if she would stay consistent with that...(continues to explain, the process he used, working closely with the data in the case) Next. Is that consistent with yours?	Elaborates on his explanation of the steps he took and his reasoning in doing the diagnosis Inquires whether others shared his thinking and conclusions
RON: (Sue humms) Not inconsistent. I didn't get quite to the same place...What I think I did was I went to a prototype that I have in the back of	Begins to share his reasoning, the steps he took in diagnosing the case, and particular tools, and models he used.

my mind which is...(goes on to first explain a prototype he recalls from one of Argyris' classes, and then shows how this could be applied to the diagnosis of this case. He then demonstrates an intervention that he could imagine Argyris making with this case. Next goes on to explain, discuss, and demonstrate with the data some insights, hypotheses, and questions he had about problematic frames around such things as the "social virtues", and a problematic "technical theory of learning" that the client likely held)...So...in thinking about how I build a diagnosis, one was to connect (some time later)

Presents another way of framing problems in the case and explains his reasoning about this

Begins to go "meta" in hypothesizing about the reasoning process he uses in diagnosing cases

And your diagnosis Sue?

SUE: Hmmm, I didn't get that far (laughs)

Replies that she didn't reach a diagnosis and offers no further explanation (withdraws ?)

TDW, pp.11-13

My problem of not being about to produce a diagnosis, the strategies I employed to deal with this problem, and the consequences of my reasoning

and actions will be explored further in the next section. But the above would seem to support the hypothesis that by Ron and Fred "slowing down" our process of diagnosing "Joanne's case", by going down the ladder of inference and explicitly retracing their reasoning and the steps, processes and tools they had each used in working out a diagnosis, significantly contributed to my learning. In retrospect one might hypothesize that this teaching strategy may have better "fit" my models and frames about a collaborative team approach, or helped to demystify the challenging task of diagnosing, or simply demonstrated that there was no simple or "right way" of managing my problem thereby validating my state of "not-knowing" such that I could feel more comfortable to publicly share this state and my errors.

Later in the same session I reflected "in-action" on my learning and the strategies which I felt may have contributed to this learning.

Actual dialogue	Researcher's comments
SUE: (650)...It was really helpful to hear, for you to go back to "and how I got there" because that's filled in that gap that I was talking about last week. Because, you know, your talking about prototypes, I'm not that familiar with prototypes. So it was interesting to see you explain the problem solving that you used, because I never would have thought of that. And it's a different way of looking at it.	Advocates that Ron and Fred sharing their reasoning and the steps they took in diagnosing, gave her new insights into how one could go about it differently. Begins to illustrate her learning's further citing the example of prototypes.

Because, yeah, I was looking for pieces and the pieces weren't pulling, I mean I wasn't able to come up with my statement of the problem.	
FRED: She didn't have the prototype.	Proposes that Sue was not familiar with the concept of prototype.
RON: Yes, but it's interesting that the prototype represents a kind of problem that you see often enough, that you classify it as a prototype...(Goes on to explain when Argyris used it and how).	Agrees and further elaborates on how this concept can be used in diagnosing.
SUE: (683) Which I've read... and now when you talk about it I can recall it, but I didn't automatically (TDW, p.16)	Advocates that while their discussion of prototypes helps her retrieve some understanding of the concept, she was unable to recall it "in action" (and therefor use it)

So, unlike the earlier episode in which I felt overwhelmed seeing and hearing theory and concepts used "in action" by Ron and Fred, in this later session I appear to have broadened my knowledge base and my understanding of the diagnostic process and particular concepts and methods. This learning, appears to have continued into the fourth session where I largely

assume a role of active and engaged listener, watching and following Ron and Fred as they continued to experiment with, and reflect upon their use of different tools, strategies and techniques for doing diagnosis. I made very few interventions throughout the session, but I later summarized in my Learner's Reflective Story what further knowledge and insights had been important for me, and my perspective on how we were working together:

Actual text	Researcher's comments
Our general tone and working pattern as well as my own comfort level	High on the ladder of inference
continued into our fourth meeting. A priority seemed to be placed on "team-building" i.e., having us all feel at ease as a working group. While there was certainly ongoing emphasis on connecting our theories, propositions, etc. to data, the rigor of the preceding meeting seemed to have diminished. Nonetheless, in the process of working on... our second case diagnosis I again gain some new knowledge and insights, this time around defining when a client's theory is "technically lacking", and using the	Shares abstract interpretations and reasoning about the tone of the session, and her (unillustrated and untested) attribution of a team-building priority. Only abstractly illustrates what was said or done to lead her to make these inferences
D.I.P.E. cycle to work on particularly tricky or puzzling cases	Advocates specific new learning's

(i.e., in finding internal inconsistencies in the client's theory-in-use). I gain these insights when once again Fred expands upon or makes more connectable to data his... reasoning behind the case diagnosis (LRS, p.8)

Gives an example of what was done that contributed to this learning

What is clear from the previous writings is that I continued to frame our working relationship differently i.e., more collaborative, relaxed, and "team like". I also appreciated Ron and Fred continuing to be more vigilant about sharing on-line their reasoning about how they are going about diagnosing the cases under study, even if I perceive that this is not being done with the same rigor as in the earlier session. While I explicitly identify two types of learning that had been particularly significant to me (i.e.,"technically lacking" theories, and using the D.I.P.E. cycle in diagnosing difficult cases), in the session Ron and Fred in fact experimented with a wide range of diagnostic approaches.

One might hypothesize that one of the consequences of me beginning to share my problems and concerns in the third session was that Ron and Fred in turn began to more actively question and "go meta" on shared problems we were having in producing compelling diagnoses, and to perhaps question their teaching strategies. In the process, we all began to discover and explore gaps in our knowledge and our reasoning, and we all learn.

Some of the learning's and insights that we had about diagnosing were well summarized when Fred and Ron went "meta" on the processes which they had been using in the cases discussed during the two sessions:

Actual dialogue	Researcher's comments
FRED: (222) Now...going "meta" on how we do diagnosis, it seems that what I do and what we do often is we use different frames for doing diagnosis, to illustrate. One frame might be; the D.I.P.E. frame. A second frame might be Model 1 / Model 2...So once we choose a frame, then we go to the data and in fact use that frame to direct our attention to different bits and pieces of the case. So initially we took the frame, the D.I.P.E. one...and I used the boxes to go through...and then connected it to; this is D, this is I. Then as we went along I said ...heh we could take another frame and analyze the case in terms of Model 1 / Model 2. In fact partly that's what I think we were doing when we were looking at inconsistency...(carries on with Ron joining in to discuss processes of diagnosis that were used)	Begins to actively reflect on their process of diagnosing, and to hypothesize about how they may be reasoning as they undertake their diagnostic task Also retrieves some data about what he/they did "in action" Joint building of hypothesis about their reasoning and their actions in diagnosing

RON: (273) See I can see...at least five different strategies we can use...One is the D.I.P.E, which I think is what we brought to the last case at the end as a way of understanding what we do - mapping it out and asking a set of questions. The theory-in-use is often the way we start, because we can find in the theory-in-use things that are screwed up. What you started to do right at the very end is what I would call "Model 1 governing variables". You looked for behavior which is consistent with Model 1 variables and not consistent in the way of the coding scheme, which is another, like you can code the case and say "there's an attribution that's un", but I don't think we did that in this case at all, is my recollection. We didn't do any kind of discrete coding... The last one that we didn't do in this much I don't think, is the prototypes...(Fred agrees and discussion continues...)	Advocates a range of strategies which could be used and begins to illustrate by drawing on examples of where they have used these in the previous diagnostic work they have done Continues to share his reasoning about diagnostic strategies and his assessment of how and where they have used or not used these

Ron: But those would be five different ones, I think. The D.I.P.E. is a fairly complete one because it picks up a lot of the case. the Model 1 governing variables which is what you were using before...The coding...I don't think we did much of that here. The prototypes would be the illustration from the previous case...And the theory-in-use propositions is the way I thought you started it, sort of; "when she sees this, she does this, when she thinks this, she says that", kind of thing. I don't know that there were others...	Presents a summary conclusion of his understanding of what they have discussed about the diagnostic strategies they have used
FRED: (313) Where's the self-sealing, the self-fulfilling?	Introduces another strategy and inquires about it's use
RON: Well lately we've been anchoring that into diagnoses that aren't tested	Advocates where this strategy "fits"
FRED: Okay... (a bit of discussion about this follows)	Agrees

RON:...The other thing that came up here is "bypass" (then he and Fred talk some, trying to recall in which case they saw this happening)...	Proposes another strategy
FRED: (345) It's talking about, in an open fashion, what's in your left-hand column. And that's another heuristic... "what's in your left-hand column". But it's talking about what you see as the critical problem. It's bypassing somehow what you see as the threatening issue. In this case what's threatening is...(carries on exploring this theme, along with Ron, in current case and previous, along with trying to clarify their definition)...	Elaborates on use of "bypassing" as a further strategy to apply and begins to illustrate it's use in current case

(TDW, pp. 25-27)

Personal notes taken during this session are very detailed and extensive. This may suggest that I in fact (though little specific data is available to prove this) probably made some other significant learnings during this time, about diagnosing and various techniques, strategies, and approaches which could be applied. My existing bank of knowledge and information was certainly expanded, and this would be useful in my future efforts at diagnosing. I recall for example, that I often referred to the notes from this session to assist and

guide me in diagnosing future cases. And later, in the Learner's Reflective Story I discussed how the session had helped me to see, and begin to use new problem-solving strategies and approaches in later diagnostic efforts. More specifically, I advocated that Ron and Fred "going meta" to look at how they were going about diagnosing, and the different frames they were using:

> ...would prove to be again significant in my learning to diagnose...in my approach to future cases. Specifically, it would help to "free" me to work more intuitively, selecting and trying out whatever frame felt appropriate and "running with it" until I was able to construct a useful map, or it proved to be no longer helpful in capturing in a compelling way the central problems of the case. (LRS, p.9)

My perception of myself in our working/learning relationship had changed. I was demonstrating a new confidence my knowledge and my intuitive capacities which was helping me "unblock" and try some new approaches to diagnosing the cases under study. The change was also "unfreezing" me to participate more actively and publicly share some of my problems and concerns. By doing this, Ron and Fred are able to help me with these. This new confidence and changed perception of myself will be explored further in the section which follows.

Despite my new learnings and the insights I had as a result of discussions in the session, I would continue to confront difficulties in actually producing a compelling write-up of a diagnosis. This problem of producing compelling case write-ups, and differentiating between a good diagnosis and a good presentation of a diagnosis, would be the focus of lengthy discussions in session five.

Having not been able to produce a write-up of the "No-name case" which had been the focus of our discussions in session four, in session five Ron and Fred worked closely with me in exploring different ways of mapping and presenting my diagnosis. Their focus was on helping me to make the written presentation of my diagnosis "cleaner" and more concise, and to more clearly and explicitly connect my hypothesize to data (i.e., working down the ladder of inference). I later summarized our discussions and some of the learnings and insights I felt that I had gained, in my Learner's Reflective Story:

> The discussion was a very helpful one in deepening my understanding of the process of developing clear lines of reasoning in presenting a case diagnosis. As we slowly worked through my notes, taking one piece at a time, I was helped in seeing new ways of building and reducing maps (ex. from six column to three or four) and alternative ways of organizing data in order to capture clearly the client's counterproductive reasoning. I am also made more aware of the importance of presenting in a compelling way counterproductive consequences of the client's action. Finally, I gain some important insights into ways in which smaller maps may be more useful in helping clients redesign alternative strategies... (LRS, pp.10-11)

In addition to discussing and demonstrating different ways that the data could be organized, Ron and Fred also encouraged me to explore different models of mapping diagnoses. Strategies which I might find helpful were also discussed, and I began to reflect upon those models and approaches which I felt most comfortable working with.

Actual dialogue	Researcher's comments
FRED: (607)...Maps can be complicated or simple. I mean...if you have a lot of data, and you can map it, then it will be a more complex map...You have several models...	Begins to explain his theory on using maps in diagnoses Prepares to illustrate
SUE: Yeah, I went through Action Science, and...I looked at a few different models...	Says that she has seen such models and indicates her sources
(FRED goes on to point out models that Sue has access to, and there is some discussion about which type Sue feels more comfortable with)	Expands on his explanation of the range of models that are available to Sue and invites her to discuss which might be most helpful to her No response from Sue
FRED: (635)...Do you find the Putnam map easier? (Sue says "Yes") Then use the Putnam map until you get some clarity with that...start with what comes easy...as a strategy... that's the guideline I would start with. Start with the simple pieces...but also go for the counterproductive	Introduces a specific model and begins to explore how it may be useful to Sue as a strategy for building her diagnoses

reasoning. And that can be
sometimes four lines, sometimes two
pages...
(Two go back to looking over the case
and Sue again retracing what she
had tried to do and how she could
have reorganized what she wrote...)
(TDW, pp.68-69)

One confirmation of the learnings of these sessions was that I did produce a more substantive and more compelling write-up of the "No-name case" diagnosis, which we further refined and finally concluded in session six.

It would seem clear from the data, some of which I have presented, that all of us were employing certain new strategies in these four sessions. Ron and Fred, for example seemed to adapt more active "coaching" roles in helping me work through some of my problems and concerns, and this was helpful to my learning. In focusing on myself as a learner, the results of some of these new strategies and the actual or perceived change in our working style, were some positive learnings about diagnosing and about presenting compelling write-ups of diagnoses. Most significant in this episode is that I frequently "unfroze" and more productively engaged as a learner i.e., I say what I am thinking (my "left-hand column"), share some of my problems and concerns so that these can be explored, and I appear to have been less overwhelmed. I also demonstrated an ability to directly transfer and apply certain learnings, in the production of a written diagnosis.

In summarizing, I will present a mapping of what I hypothesize to have been some of my thinking and actions over this episode. In the section which follows I will further develop this hypothesis by proposing other theories-in-use which I believe were also at work during this episode in my learning journey. I will also explore the logic of these theories-in-use in light of my early frames and the initial conditions which were in place from the onset of the project:

SITUATION OR CUE

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When I perceive that the objectives of the session and the process to be used is clearer, that the working environment is more relaxed, congenial, and supportive (i.e., Ron and Fred admit that they are having difficulties and begin to explore these).

And,

when the "pace" of the session is slowed down (i.e., my colleagues engage in a process of publicly reflecting "in action" on the reasoning behind their use of certain diagnostic tools, techniques, models, and strategies, and I am assisted in doing the same),

this leads to the following

⬇

REACTIONS AND ACTIONS

1. I relax and "engage" as a learner, participating (or listening) more actively.
2. I begin to share some of my problems and concerns.

AND,

THE CONSEQUENCES OF MY THINKING AND MY ACTIONS ARE:

⬇

1. My colleagues begin to discuss and explore some of my problems and concerns with me, and we begin to work at finding possible solutions
2. I learn, or build upon my knowledge of, completeness and compellingness of diagnosis, and of certain tools, strategies techniques, or frames which can be used in diagnosing including;
   - -prototypes
   - -using the D.I.P.E. cycle
   - -technically lacking theories
   - -Model 1 governing variables
3. I begin to experiment with these new learnings
4. I become more skilled at producing a write-up of a diagnosis
5. I regain a level of confidence in my knowledge, and my abilities

In summary, what appeared to have been the most helpful to my learning during these four sessions was the opportunities which I had to see theoretical knowledge demonstrated, expanded upon, and explored "in action". In sessions and in my written reflections, I frequently referred to the value of "slowing down" our diagnostic work, and seeing concepts, models and theories used, and their application explained or demonstrated "on-line" by Ron and Fred as they publicly reflected on the steps they had taken, strategies and techniques they had used, and the reasoning behind the approaches they had

taken in diagnosing particular cases. Seeing written presentations of diagnoses, such as different mapping techniques, also gave me insight into various ways that data could be organized to build more compelling theories and hypotheses. Occasionally "going meta" to look at how we were going about diagnosing appeared to have also deepened (and broadened) my theoretical understanding of the diagnostic process, and gave me new insight into the practical application of this knowledge (i.e., the "how-to's of putting the theory to work).

In addition to a slower pace, the consequence of what I perceived to be a more "relaxed and supportive" working environment was for me to frequently, but temporarily "unfreeze" as a learner, more willingly acknowledge my vulnerability, restore my confidence, and more actively engage and participate. But I would in fact go through several phases of "unfreezing" and actively participating, and then "refreezing" and withdrawing as a learner during this episode. These phases, and some of the important barriers and problems which acted to hinder my learning will be explored in more depth in the section which follows. Here I will trace my continued struggle with issues of confidence and competence, and my deeper entrapment in the "production fear cycle".

Unfreezing/Refreezing and the Production Fear Cycle

In the previous discussion of this episode in my learning, I examined how a perceived and/or actual change in our working environment, and certain productive features of my theories-in-use, led to me acquiring some new knowledge, insights and skills about diagnosing and the diagnostic process. In

this section I will examine this same episode, but this time with the intention of exploring some critical issues which arose related to my learning how to learn. I will particularly be focusing on problematic thinking and actions, and the consequences of this i.e., the "Competence/Confidence Dilemma" (introduced in Chapter 9), and my entrenchment in a counterproductive (i.e. Model 1) pattern of behavior related to a fear of production (the "Production Fear Cycle"). I propose that during this episode, I repeatedly went through phases of "unfreezing" and engaging and participating more actively as a learner, and then "refreezing" and implementing a series of Model 1 strategies, which were self-protecting, self-sealing, and in detriment to my learning. Some of these strategies were introduced in Chapter 9, and explored in the following discussion. They include:

1. Not communicating my concerns and my feelings of being overwhelmed,
2. Trying to "keep up" by listening, keeping a lot of notes, reading and working a lot (solo) outside of sessions, and
3. Becoming increasingly more silent in sessions and participating less in fear making errors or showing (confirming) myself to be not competent.

In Chapter 9 I also presented some initial consequences of this thinking and actions in the form of the "Competence/Competence Dilemma" which were:

-> If I participate actively I may make errors, show myself to be incompetent, and continue to lose confidence, but

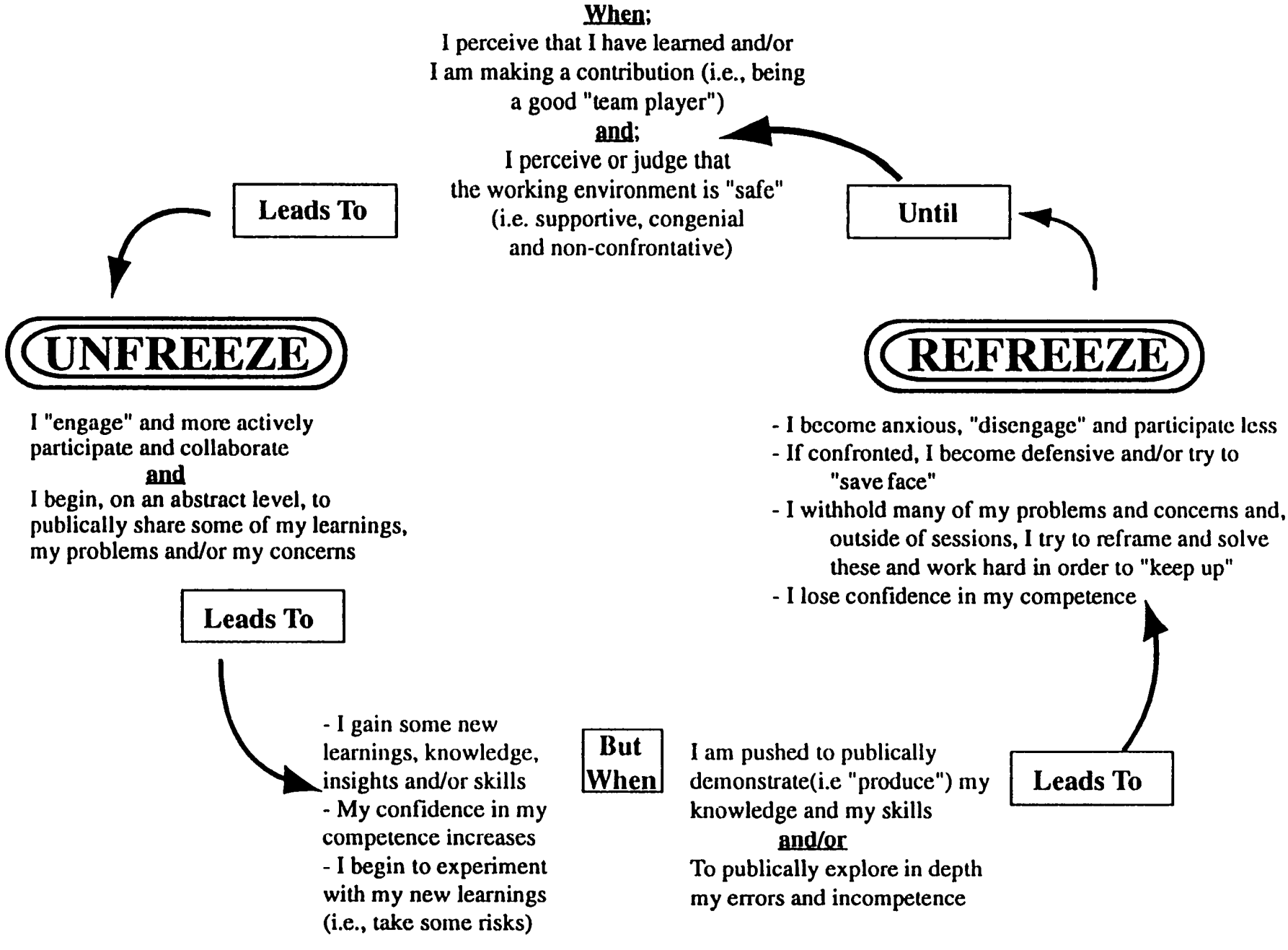
-> Both my desire to learn and practice Model 2 behavior and my definition of my role and responsibilities as a collaborative team

member says that I must participate actively (and equally) in order to perform competently and responsibly, so

-> If I don't participate, I am also not competent, my confidence will continue to decline, and my learning will be limited.

In this discussion, I will continue to explore this dilemma and my fear of production, in building my hypothesis about the following counterproductive cycle of reasoning and behavior which I will refer to as "Unfreezing/ Refreezing and the Production Fear Cycle".

Before returning to the data in order to elaborate on my hypothesis about this cycle, I would like to present a mapping of it (see the page which follows). It is the breaking of this cycle (which will be discussed in Chapter 12) that will contribute to the most important "double loop" advances in my learning on the project.


When;
I perceive that I have learned and/or
I am making a contribution (i.e., being
a good "team player")
and;
I perceive or judge that
the working environment is "safe"
(i.e. supportive, congenial
and non-confrontative)
Leads To
Until
UNFREEZE
REFREEZE
I "engage" and more actively
participate and collaborate
and
I begin, on an abstract level, to
publically share some of my learnings,
my problems and/or my concerns
- I become anxious, "disengage" and participate less
- If confronted, I become defensive and/or try to
"save face"
- I withhold many of my problems and concerns and,
outside of sessions, I try to reframe and solve
these and work hard in order to "keep up"
- I lose confidence in my competence
Leads To
- I gain some new
learnings, knowledge,
insights and/or skills
- My confidence in my
competence increases
- I begin to experiment
with my new learnings
(i.e., take some risks)
But
When
I am pushed to publically
demonstrate(i.e "produce") my
knowledge and my skills
and/or
To publically explore in depth
my errors and incompetence
Leads To

In the previous section I began to discuss how, following an initial crisis of confidence and "freezing up" that occurred in session two (and which is explored in Chapter 9), I appeared to have regained my confidence, engaged, and more actively participated or "unfroze" in session three of the project. This shift was a significant one and so it is important to trace what may have contributed to my making the shift, and what occurred as a result of my "unfreezing".

In my journal entry following session two I stated that:

Actual text	Researcher's comments
It has been valuable for me this week to reread Schon's section on "Paradox's and Learning to Design" in "Educating the Reflective Practitioner".	Describes what she perceives to have been a helpful learning strategy
There is a lot of my experience there. I feel myself caught in a paradox in this learning experience. I'm struggling to do what I don't yet completely understand. I said to Fred at the end of the session that I felt that they were working on a different level in interpreting the case. That they were very rapidly moving up a "ladder of inference" and somehow I was trying still to piece together the	Discusses how her reading has given her certain insight on her problem States her framing of her problem Advocates having made one intervention aimed at communicating her problem (high level of abstraction) Data from transcripts verifies this intervention

data at the lower levels (rungs)...I wonder what it will take to really become competent at this method of analysis and feel confident in my own abilities... (LPJ, p.3)

Questioning of competence and confidence

In Chapter 9 I also discussed how I had withheld many of my early feelings of insecurity about my level of understanding, my competency, and not performing appropriately as a "collaborative team member", and how I recalled having, "...spent many hours between sessions reading and rereading miscellaneous articles" (LRS, p.2).

While the available data is not extensive, from the above it might be deduced that in the period between sessions two and three my attention was being focused on framing my learning problems, and struggling with issues of confidence. My strategies during this period appear to have been mainly to have read extensively, and to have worked independently and outside our sessions at making sense of, or solving my problems. If it was true, as has been proposed in my discussion of initial conditions, that my early frame around learning stated that if I worked hard, studied, and was attentive then I would learn whatever I still needed to learn, then this alone could give reason to my "engagement" and unfreezing at the onset of session three. I had done my homework, I had some new insights, and now I should pay attention and this would help me either learn whatever else I needed to learn and/or to resolve any problems that remained. The fact that Ron (the "expert") also publicly questioned his competency in sharing his problems in undertaking the task of writing up the case we had discussed, may have also helped me to

unfreeze and engage by somehow "validating" my uncertainty. And finally, (as I also previously discussed) my perception that the working environment had changed to one which was "slower", more relaxed, congenial and supportive (i.e. more "team like"?) would likely have helped me stay engaged, at least for a period of time.

The strongest data to support my claims are the actual transcripts of discussions held during these four sessions. Through retrieving passages of dialogue, I will trace my movement around the cycle, from freezing and withdrawal or defensiveness, to unfreezing, engagement, collaboration (and learning).

Recall that at the start of session three Ron expressed his problems with producing a compelling case write-up. I immediately engaged and became an active participant in the discussion which followed.

Actual dialogue	Researcher's comments
RON: (225) My suggestion is that I don't like the way this is written up and I want to restructure it. I like the idea of beginning with, what's the problem as the client states it...I would then, I think, like to go to; What's the problem from our point of view...The rest of the write-up I'm less clear about... (group then begins to build upon his write-up)	Communicates problems he has had producing a good case write-up (i.e., questions his own competency in this area)

SUE: I don't feel completely comfortable with the second one. The fact that it was a personal conflict.	Sue joins in (engages) and begins to share her diagnosis
And I'm pulling that from 19...	Begins to illustrate with data from the case
FRED: (251) That makes sense to me. That there's an inference from 19 to the statement of the problem, is what you are suggesting I think.	Agrees with Sue's proposal
SUE: Yes, I don't feel that the way it's written now or the way it's presented now captures the problem. That we might be inferring too much. I mean for sure somehow her feelings about the individual are making it difficult, are intervening in her, hum.	Begins to explain, but abstractly, with no illustration
FRED: She sees it as a barrier	Builds on Sue's comment
SUE: Yeah	Agrees
RON: Are you saying that we're making too much of an inference at the way she states it there as a	Tests his understanding of the problem that Sue has introduced

problem or that we haven't gone far enough? Because I think I would want to add to it as I read it now.

SUE: Yeah, I would want to add to it.

Agrees, but no further illustration

RON: And the addition would be something like....(active discussion involving all three then follows around statement of the problem)

Three then begin to actively build a hypothesis about the client's problem

SUE: (later)...I guess the thing is, I feel uncomfortable with where we're carrying `personal conflict'. I'm also thinking about language, you know. Because when someone uses a term, she never says "I'm having a conflict with <u>him</u>", she always says, in 19 she says "because a personal conflict", because <u>a</u> personal conflict. And then in 47 she says, "or because of a personal conflict", and I have a funny feeling that we might be going too far in assuming that the problem in their relationship is at a conflictual level.

Begins to discuss a new problem she is having with their diagnosis and begins to illustrate this working from the data in the case

The conflict could also be within herself and her own feelings... (Group carries on discussion linking new ideas to data and testing various hypothesis, and trying various ways of mapping. Most of the dialogue is between Ron and Fred, but Sue appears quite attentive, occasionally commenting and verifying information) (TDW, pp.6-13)	Presents another way of interpreting the data or framing the problem

After some discussion of Ron's diagnosis we moved on to the "cold start" experiment with Joanne's case, with Fred first giving his diagnosis. I continue to be actively engaged, and I was highly attentive during the lengthy discussions which followed around Fred's diagnosis, and the reasoning and the steps he had taken in arriving at it. My learnings and insights gained about diagnosing during this discussion have been summarized in the previous section.

I was then invited to present my diagnosis, and my subsequent strategies began to demonstrate problems I was having with "production". When asked to publicly demonstrate my work, my reaction is to "freeze up", withhold my production, my errors, and my "unknowingness". I also perform what appear to be a series of defensive, face-saving routines.

Actual dialogue	Researcher's comments
RON:...And your diagnosis Sue?	Asks Sue to present her diagnosis

SUE: Hmmm, I didn't get that far (laughs)	No production (withdrawal?)
RON: What did you do?	Asks Sue to share the process she used in trying to reach a diagnosis
FRED: It would be interesting to see what you did get and what you didn't get (Sue says "ah ha") as you try this stuff out.	Again encourages Sue to share data about what she was able to produce
RON: Or what you tried to do.	Further encouragement
FRED: Or what you tried to do, yeah.	Agrees
SUE: I (pause), I looked at and broke down her statement of the problem. And then I started in a process of putting the pieces together to see how we could state the problem, but it was still at the stage of putting the pieces together.	Begins to explain (abstractly) the steps she took in trying to build a diagnosis Face saving?
FRED: What did you get? What's your production?	Asks her to produce whatever she was able to come up with

SUE: Hmmm. I don't know if I can articulate it as a production even.	Still no production (no data)
FRED: So you didn't get?	Tests his judgement that Sue was unable to produce a diagnosis
SUE: Nope (pause) I didn't get to the point of a diagnosis (Fred interjects with "what are your notes? Give us) I didn't get to the point of a diagnosis.	Refusal to publicly present what she has Defensiveness?
FRED: Are you willing to give us just the words or fragments you got?	Asks her again to share whatever she has produced
SUE: Hummm	No response (stalling?)
RON: I don't know what Fred's notes look like, but mine don't look as coherent (Sue laughing) as the sentences, I think, came out so.	Is Ron trying to "save" Sue, to give her some time, to save face, to ease off the pressure of confrontation?
SUE: It's going to be a problem (puffing).	Advocates that sharing what she has will be difficult, but does not elaborate on why this is so
FRED: The fragments you have would be a window to your thinking.	Gives reason for what end may be

	served by Sue's sharing of her production pieces
SUE: I know.	Says she understands this reasoning
FRED: So, that might be helpful to all of us when we reflect on where, how you're learning.	Elaborates on how Sue sharing her production may be helpful to all of them in better understanding Sue's learning
SUE: Because I was pulling out what I thought were some inconsistencies in what she had said and what I saw happening in the case, and I started just by going through and underlining and making comments. Hmmm, what was going on in her left hand column. Okay? Statements like... (gives a few examples) And I was just trying to piece together inconsistencies, and that's where I was at.	Again begins to explain what she <u>did</u> versus what she produced Some illustration
FRED: Okay. And you weren't finding them.	Suggests that she was stuck
SUE: Yes I was finding them.	Disagrees (Defensiveness?)

	Still no production of what she has found
RON: Give us some of the things you found.	Asks her to produce data to demonstrate what she found
SUE: Hmmm. Okay, let me think.	Agrees and asks for some reflection time in order to retrieve this
FRED: I said you weren't finding them... (Sue says "ah ha"). So now your saying you were, so what's your data?	Confronts Sue on a discrepancy between what she has previously said and what she is now saying and again "pushes" her to produce data
SUE: That's what (laughs), that's what I have to dig for. Hmmm(pause)	Is this stalling, face saving, avoidance? Still no production!
FRED: 'Cause let me tell you. Well, I'll let you finish.	Last chance!
SUE: Maybe you can tell me (haltingly).	Asks Fred to share what he is thinking (withdraws)

(TDW, pp.13-15)

But the discussion which followed gradually "unfroze" and again "re-engaged" me as Fred explored the reasoning and strategies we appeared to have each used in diagnosing the case. I then largely assumed the role of active observer as Ron and Fred further developed the diagnosis, trying out

different approaches, ways of mapping, etc. In conclusion, they summarized the insights and learning's we had about diagnosing during the session. The session finished with me again reflecting on my difficulties in "piecing together" a diagnosis (but not on my issue of production). In response, Fred commented on how complex and difficult it was to diagnose. My problem of production, as is demonstrated below, was not discussed further.

Actual dialogue	Researcher's comments
SUE: (tape unclear)...captured inklings I had but I wasn't able (laughing) to piece that together yet, you know? I mean, it makes perfect sense the mapping that you've presented, but I wasn't at that point. I mean, I was finding this very hard, to put to a map because .	Reflects on her problem
FRED: It is hard! You've go to be careful of expecting, well maybe your not but. It is a complex activity (Sue says "yeah"). Whether it's hard or not, maybe easier for some people to do, but I think it's a complex activity...	Shares his thinking about the complexity of diagnosing. Is he also helping Sue "save face"
(Discussion then returns to concluding the case and summarizing the day's learnings. Sue is mainly silent for last part of session which	Sue is "off the hook". No further production is requested for the time being

closes with Fred agreeing to do the

next case write-up)

(TDW, p.17)

While we never explored what may have been Fred's reasoning behind these comments, I am left wondering if, sensing my discomfort and lack of confidence, his comments were made in order to help me deal with my failure and lack of competency in this area. Later, in my Learner's Reflective Story I tried to make sense of what had happened. I experimented with one of my learnings in developing a prototype to capture a teaching/learning dilemma that I believed we had collaboratively created in an otherwise very productive session:

> What would lead us to believe that Sue could be helped to develop confidence and take more risks, by agreeing with her that learning this was a difficult process, and telling her to have more confidence and try? (LRS, p.8)

As I previously discussed, session four began with Ron clarifying the objectives and process we had agreed to use. From there Fred went on to share his write-up of the previous session's diagnosis, carefully explaining the steps and processes he had used to arrive at his conclusions. Once again I was actively engaged in the discussion, and at the end of Fred's case I was invited to write up the next diagnosis. In our short discussion about this, I once again demonstrated my tentativeness when confronted with a pressure to produce.

Actual Text

FRED: Yeah, okay, so now we're on Verifies if all share the same

the same wave length in terms of the case right? (Ron agrees)...	understanding of the case diagnosis
RON: Now, can I just clarify who's going to write up the summary of this case? Looking at Susan (laughs). Do you want to try this one?	Seeks to clarify who will undertake write-up task Acknowledges implicit message he has just given to Sue, i.e., that she should do it
Sue: It's my turn huh. (also laughs)	Agrees to undertake the case write-up "production"
FRED: It will be a good case to start with because I think it's relatively straightforward.	States his evaluation that it is not a complicated case and therefor a good "first try" In my Learner's Reflective Story I later recalled that the meaning I had attributed to this was: "This is an easy case we're giving you, so you shouldn't have problems doing it." (LRS, p.9)
SUE: I can try to (inaudible)...	Tentative acceptance of her task
FRED: Not that you can't do a more complicated one.	Fred adds that in giving this case to Sue he does not want to imply that she is not capable of doing one which is more difficult

SUE: Ah ha.

FRED: Yup?

SUE: Okay.	Agrees to do the write-up
(Group begins a lengthy discussion of the case... This appears to be the most collaborative group diagnosis process to date, i.e., with active problem-solving and exchange of ideas. Sue is least verbal, but frequent acknowledgments tend to verify that she is following process closely).	Engages in the group's work at hand

(TDW, p.13)

At certain points in the session I interrupted Ron or Fred's interventions to ask them to better explain how they were reasoning or what had lead them to their conclusions. For example, during a discussion about "bypassing" strategies I say:

Actual dialogue	Researcher's comments
SUE: I'm not getting how this is connecting with bypassing. I'm not getting the whole idea. I'm off.	Publicly states that she's having a problem understanding the idea of "bypassing" in the diagnosis
FRED: Okay	Acknowledges

RON: My concept of by bypass is...(Goes on to explain with Fred joining in)	Share their knowledge and explain their reasoning about this concept
(later)	
FRED: You've got that about the commonalties there? Because that's a nice piece for us to have Sue.	Tries to verify if Sue now understands Adds that this would be a good piece to include in the write-up of the diagnosis
SUE: Hmm?	Indicates that he should repeat
FRED: You've got that about the commonalties in this bypassing stuff?	Tries again to verify if she has understood
SUE: Hmm, I hope so. Ah ha (TDW, pp.28-29)	Expresses uncertainty, but does not ask for further explanation

As I discussed in the previous section, it was during this session that we also went "meta" on our diagnostic processes, and in which I made some important learnings about diagnostic techniques, strategies, and tools. But following the session, when confronted with the task of producing a write-up of the "No-name case", I would suffer a major "production crisis". I later discussed this in a journal entry:

Actual text	Researcher's comments
This was to be my first attempt at writing up the case diagnosis. The	

process would prove to be a long one...In re-listening to the tape I quickly found myself feeling very lost in information and struggling to try to develop some clear line of reasoning. I spent hours, listening and re-listening to sections of our dialogue, writing notes, and then ordering and reordering the data I was gleaning from our conversation...Finally, I resolved just to get all the important and central information down. I would need to talk to Ron and Fred about this. I would need to have their insights into how to structure the paper such that the diagnosis was more compelling. It wasn't in this state! That I knew for sure. (LPJ, p.5)

Provides data about her thinking and her reactions of feeling overwhelmed

Describes her strategies of "working hard" on her own (i.e., outside of sessions)

States that she will need to share her problem with Ron and Fred so that she may be helped to find a solution (i.e., produce a compelling write-up)

The above demonstrates how, my initial strategy for dealing with my problem was once again to work hard outside of the session. What is different though, was that this time I expressed the need to communicate my problems to Ron and Fred, and to solicit their help. Session five began with an exploration of my problem of not being able to produce a diagnosis. In the discussions which followed I appeared more willing and open to discuss, at least on an abstract level, my problems and concerns. I also gained some important

learning and insights about diagnosing and producing compelling write-ups of diagnoses (and this has been discussed in the previous section). What is most interesting about this session though, is the way in which my dilemma with "production" became strikingly apparent, as the discussions which follow demonstrate. In these discussions I perform a repetitive behavioral "dance" of avoidance. In my interventions I share only what I did, or the processes I used in trying to produce a diagnosis, and I describe this in a highly abstract way (i.e. I present little concrete data). What I avoid, is publicly demonstrating what I was able (or unable) to actually produce. I therefor avoid making my errors public. I demonstrate this behavior several times even when it is confronted, and when I am asked repeatedly by Ron and/or Fred to show concretely what I produced, so that they could try to help me explore solutions to my problems.

Actual dialogue	Researcher's comments
FRED: I suggest we start with Sue for a short time reflecting on some of the difficulties...or whatever issues...and we can try to talk about them abit , and try to be helpful.	Suggests strategy for helping Sue
RON: We'll look at that with respect to you writing up what you had to write up...	Specifies
FRED: Does that make sense to you?	Inquiry (for Sue's agreement)

SUE: I would be very happy, eager to discuss that...I mean one of the issues might be that it's the first time I've written up a case, but I found this really hard to do, and I'm still not terribly satisfied with it. What I found hard to do was just...Trying to get some clarity...I know that probably a part of that is just again the lack of familiarity with the different ways that we diagnose. But it was just a struggle. It took me hours to try and just get the information down which is ultimately what I did...just get the information down in some kind of order, you know. Hmmm, but that seems to be something I'm struggling with...in an ongoing way, to...reduce the data...On the tapes the discussion was...about a hour and a half anyway. So I was trying to get through all that. And although I knew deep down that it wasn't a terribly complicated case... I still struggled with getting to the essence.	Begins to present her problem, and tries to uncover possible reasons for her difficulty (i.e., lack of experience) Discussion remains very abstract (high on the ladder of inference) No concrete data is given Again infers that lack of experience may be a source of her problem Describes some of the strategies used with no success (again very abstract)

FRED: (045) Well, I think the way to deal with this is to take us to the case, show us maybe where you were having difficulty, in getting to essence, and we can look at that.

Suggest that Sue provide concrete data to demonstrate her difficulty, and they can all examine this

SUE: Maybe to start with, the "getting to the essence" was just the form. Like, how do you put this on paper? Because it's one thing that we haven't really talked about very much. We've been playing with a lot of different forms...trying out a lot of different forms. But it seems that each time we took on a case...there was a whole other discussion that we got into in terms of what are the kinds of frames that we are using, how do we capture those frames and then translate them onto something that's really readable and workable? It's still a big mystery to me.

(A discussion then follows at some length around mapping)

Again tries to frame nature of her problem, but this time about presenting diagnosis

Again abstract and no concrete data is offered

Overwhelmed with information again?

RON: (later)...Can I suggest that we go to what you wrote rather than talking about it?	Again asks Sue to produce concrete data about her problem
SUE: It's just that, you know, the problem to me is...It seems when we're writing this up we want to have some kind of flow to our reasoning, you know? To have a flow that is workable to how to we get to this conclusion and...I don't have a grasp of that flow yet...	Again avoids production! Remains abstract
RON: (121)...One flow would be; what's the client say the problem is, what's the client say the strategies are...(goes onto explain further and then to discuss other alternatives. Then the three go on to discuss ways of presenting a good write-up of a diagnosis, and the difference between what is a good diagnosis and what is a good write-up of one) (Some time later)	Tries to suggest some strategies that Sue might try

FRED: (198) I think we should go to where you were having trouble. Don't you? And work from there. An interesting question.	Again tries to bring Sue back on to issue of producing data about her difficulties
SUE: I put that on the table because that was the big trouble...	Says she has presented her difficulty
FRED:...Let me see if I got, I'm not sure that I got what your saying the big trouble is. The big trouble is how, what format to use in writing up the diagnosis? (Sue agrees). I think what I want to say is use any format now that you can to make	Tries to verify by presenting his interpretation Presents a solution/strategy for dealing with this
SUE: But I think the problem there is...I mean the diagnosis rang true to me but what happened was that our arguments did not flow. I mean...the whole nature of doing a diagnosis in a group like this is that people get new insights, so they throw in a new insight, and then you take that insight and you say, "where do I fit that one?"	Is this face-saving in trying to pass the blame for her incompetence to the group, i.e., blaming them for overwhelming her and not presenting clear arguments?

FRED: And the heuristic that I was encouraging you to follow is, if you can't put it in, leave it out for the time being. Make a note of it. Keep it there but leave it out of the diagnosis for the moment...	Presents one strategy for dealing with confusion and being overwhelmed with data
SUE: You see what I ended up doing is that I wasn't sure what could be dropped because there was a lot of data there, so I wasn't sure that I felt comfortable in knocking any of that data out so.	Again expands on her problem of being overwhelmed with data (defending her incompetence?)
FRED: But that's what I'm saying to you. I want to put the burden back on you. I hear you putting the burden on us. (Sue says "No" in background) And let me tell you how (Sue says "okay"). And let me tell you how to get out, and don't feel threatened (Sue laughs). You say, I'm having this difficulty and I don't know what to do. I'm saying, you say you don't know what to select and choose. I'm saying	Confronts Sue on a strategy he sees and the counter productivity of it, and presents an alternative

make a decision about what to select and choose. Write it. And then we'll look at what you've produced, and from there work to say things to you about how come, and get your reasoning about, what was left out. That way, I think, we could be more helpful to you...cause I don't know how to be helpful to you now. Because, I don't know what you left out, I don't what you left in.

Advocates that he needs Sue to produce data about her problems if he is to be helpful
Some illustration of why this is so

SUE: (laughing) I don't think there's anything left out...

FRED: You see what I mean when I say that if you produce it and say, here's a bit of data I left out, I think it should have been in, we can look at it together and something, presumably will emerge. If it's left as; "I don't know what to leave in and what to put out", then I can't say anything either.

Elaborates on how Sue's strategy of withholding and not producing concrete data is counterproductive to him being helpful to her

RON: (246) Can I just try to

Begins to share his interpretation of

summarize what I thought Fred said, or at least my understanding of it? That when you confront a difficulty, if you can provide data about what choices seemed difficult, then I think it's easy to work. And the other suggestion I thought was, rather than get sort of paralyzed by the difficulty, flag the difficulty and what the dilemma was, and then make a choice so that you can go on...The other observation is that we spent an awful lot of time, it seems to me, talking about diagnosis at the level that's not connected to the paper yet, and I want to urge us again to go to the paper and see.

(Other two agree and then return to reading over and working on the case individually for some time. Fred starts to talk about how he structured his thinking in doing his diagnosis and comparing it to how Sue has written up the mapping of the diagnosis, pointing out what might have been

what Fred has said. Presents another way of "framing" Fred's argument, and elaborates on this

Shares his evaluation that they having been spending a lot of time having abstract discussions that are not connected to data and that they should work at changing this

done differently, and where, specifically Sue seems to be on the right track. Ron begins to then show how a "tidier" and more compelling map may be constructed. Discussion continues mainly with Ron and Fred in "helper" roles but with all exploring what would be to most compelling way to present the diagnosis)

SUE: (062)...So in this case, the problem stated by the client, then we map it...and in the map are the problems as we see it.

Again discusses what she will <u>do</u> versus what data she <u>has</u>

FRED: Why don't you do it now. I'd like you to do it...

Again asks her to produce

SUE: Hmmm (laughs nervously)...I picked up on your comments about...internal and external cues and grouping them together, which is a new one for me...I can look at the mapping now and see it in a different way. In that one way that I could write

Further avoidance of on-line production

up this case that would make sense to me and maybe would be more compelling, would be to write it up in a mapping format. To stay with that, but in a cleaner format which is with three columns and integrate the internal and external cues in column one	Provides some data on what she intends to do (i.e., the strategy she will use)
FRED: I think the piece that you want to add is the consequences...	Adds another piece of information she should include
SUE: Oh yeah, that was the big thing...what's missing in the map, that would make it compelling is the consequences column which isn't here... (The session concluded with further discussion about producing and mapping compelling diagnoses. In addition Ron suggested that it may be interesting to try some experiments)	Acknowledges importance of this. Still no actual production of her diagnosis
RON: One experiment is to try and write up our reports on the case in	First suggestion of trying out some

different formats to see which format works best...Another way though may be to say, okay can we take the diagnosis from...some case, and go from it to what would we say to the person if they were here... (Session closes with Sue agreeing to rewrite the case) (TDW, pp.62-73)	"experiments" in their practice No data is available to suggest what may have been his reasoning for suggesting this

So while this session was important because of the many new learning's I gained about diagnosing and producing compelling diagnoses, and because I actually built my skills in directly applying my new knowledge, it is also clear that I have become trapped in a repetitive pattern of error in my strategies for dealing with the confrontation to produce data about my own problems, incompetence and ineffectiveness. Despite the increased skill that I demonstrated in the final write-up of the "No-name case" which I produced in session six, and the increased confidence that I expressed in my "product", my tentativeness, and strategies of face-saving, withholding, and low risk-taking still remained largely unchanged, as is demonstrated in the following introductory discussion in session six:

Actual dialogue	Researcher's comments
SUE: (012)...I think it makes more sense. I think it's more compelling now. Hmmm, I believe I've captured the essence of what we discussed, the diagnosis that we did. I may still	Expresses a level of confidence in her write-up

be missing some details. But...in doing it this way it felt more workable to me. And I felt when I finished it that I could work with this, which I didn't feel with the first version. So it's not that there's anything new and surprising, it's just that it's been reformulated...The one concern I did have is...that maybe I still have too much stuff in each box.	Unsure and tentative (i.e., "It's not the best, but it's better!") Expresses one problem Abstract illustration
RON: I suggest that we go through it (Fred agrees and then group goes on to look at original case and write-up. Ron then starts off by pointing out part of discussion which isn't being reflected in write-up, and Sue agrees that it was left out but that she had intentionally done that because the discussion had been confusing and inconclusive for her. Group discusses this for awhile).	Suggests that they work with the available data which, this time Sue provides Points out data which has been excluded or withheld Sue acknowledges this and defends her actions with the reasoning: "If I'm not sure or clear about something, I don't put it out" (i.e., I don't produce).
SUE: (069)...Yeah, there's one other thing here and that is that I felt that	Adds information about incompleteness in her write-up

there was more that I could have put into the consequence column, but I would have been doing that on my own.	Low risk-taking again
FRED: You mean interpreting?	Verifies what she means
SUE: Ah ha.	
FRED: You would have been doing that on your own?	Asks Sue to explain further, or clarify what she meant
SUE: In that I wouldn't have been drawing that from our discussion. We didn't get really far in the consequences. (TDW, pp.74)	Again shares that she was reluctant to include anything that she was not sure of (i.e., that they had discussed explicitly)

Throughout the remainder of this session I was continually pushed by Ron and Fred both to make the written presentation of my diagnosis "cleaner" and more concise, and to more clearly connect my hypotheses to the available data (i.e., working down the ladder of inference). We would work in close collaboration in fine-tuning my diagnosis. My production issues, and the counterproductive strategies related to these were again left unconfronted though. But later episodes will demonstrate how these four sessions had laid the groundwork for all of us beginning to question our strategies and how we

were framing our problems, and for exploration of new ways of thinking and acting.

I will conclude the discussion of this episode by summarizing what appeared to have been the counterproductive thinking and actions that created important barriers to my learning during this four-session period. In the first case, my initial confidence in my theoretical knowledge and in my ability to be a good "team-player", and my assumption that I would subsequently be able to perform competently and fulfill my role as an active "equal partner", and make an equal contribution (Initial Conditions #1, #2, and #5) would create problems when this did not prove to be the case. In holding such frames, and a further set of initial assumptions that said that by being attentive, studying, and working hard, I should be able to learn whatever I still needed to learn (Initial Condition #7), my "logical", but Model 1 strategies for dealing with my failures and my incompetencies, were largely to withhold these, remain silent, and continue to study and work hard at further building my theoretical knowledge, and at framing my problems and trying to solve these. The fact that I assumed that my colleagues shared the same frames around competence and were equally confident in my competence to perform (Initial Condition #7), would further reinforce and give reason to my thinking and my actions. It was also a complex and ambiguous task (Initial Condition #3) in which I "set" our priorities as; getting the diagnoses done, getting good write-ups of these diagnoses, and me keeping journals and reflecting on my learning (Initial Condition #5), and I further assumed that Ron and Fred also saw the priorities in the same way. Finally, the fact that this was not explicitly discussed or questioned in these early sessions, further reinforced and gave reason to my counterproductive theories-in-use. We explored some of these issues in our discussions during

the third phase of the project. This final data gives further reason, I believe, to my hypothesis about my reasoning and actions during this phase of the project.

Actual dialogue	Researcher's comments
FRED: Well, I assumed she wasn't feeling overwhelmed. Or was managing it. Why would we check out whether or not she's feeling overwhelmed?...	Shares his reasoning at the time
RON: We would not have had to check that out...but we could have had a discussion about how well things are going. Is this working? Is this working for you?...I think it was quite awhile before we went, and said; "Is this process working? and, "Is it working for you?" "Is it working for us?" With respect to our working together and those kinds of things. That came up much later...(Sue agrees)	Advocates another teaching strategy that could have been used, and illustrates this Tries to retrieve data about when their strategy changed
SUE: And what I'm thinking about now is the "silent student" dilemma...I was very silent. I didn't express these sentiments. And the way we dealt	Uses a prototype (the "silent student") to try and diagnose her behavior

with that was...the two of you carried on. Why make the assumption that she's having a problem of confidence if she doesn't say she's having any problems...Why should we make those assumptions if she doesn't say anything...But in this case...I created a dilemma for myself, and then how you dealt with it also fed into that dilemma it would seem. We were stuck there, until the point that I got pushed, or I pushed myself and/or you pushed me. I'm not sure at what point that I started expressing...I think it was about our third or fourth meeting...

Shares a hypothesis about the consequences of her behavior

Advocates that Ron and Fred's actions acted to reinforce her counterproductive thinking and actions

Advocates different strategies that would result in a change in her actions, and tries to retrieve where this occurred

RON: Well it came...when you got to have to produce something, then you could no longer avoid the issue of saying "I don't know what to do" or "I'm worried" or whatever (Sue agreeing in background)

Proposes where he believes the change happened

SUE: But that was a long time. That was about the fourth or fifth meeting

Provides more specific data on where this shift began to occur

we had (Ron saying Yeah, Yeah).
That was the "No-name" case...
(goes on reflecting on this...)

RON:...The second thing though is that I don't think we were paying a lot of attention to the different levels of skill...One of my questions is "what is the model we had for teaching, and learning?" And I think it was essentially what you said was "follow me". ..We were doing it, we were doing it as skillfully as we knew how and I don't think we were particularly worried about explaining it, or teaching it as much as simply doing it. My sense of when we sat down here is we took the first case and said "what's your diagnosis" and we just built it as fast and as skillfully as we could. Implicit in that is the assumption that if you don't know how to do it, you'll learn by watching. And the other one around silence is that if you're confused about something we

Advocates non-action that may have also contributed to the dilemma

Introduces a new area of reflection i.e., the teaching and learning models that may have been at work. Proposes one, and begins to explore and illustrate it by retrieving data about their actions and the possible reasoning that may have driven these

Shares his hypothesis about underlying assumptions they may have held

do you'll probably say it. Now why would we make those assumptions?...	Begins to reflect on what may have lead to them making such assumptions
SUE: (211) And...something else that fed into that dilemma, was that we had multiple objectives and I had interpreted it as having multiple objectives in those sessions... I believe that in this first block one of the problems was; what is the priority here? Is the priority to get through these diagnosis? In which case perhaps I can live with my own silence for an even longer period of time. Because I was surprised at myself. At how long I lived with my own silence.	Adds further initial condition that contributed to her thinking and actions, and reinforced her dilemma Explains her reasoning and the consequences on her actions Expresses surprise at her behavior
FRED: You don't usually behave that way?	Asks if this is an unusual strategy for her to use
SUE: No, well it would depend upon, I mean in this...particular situation I'm surprised...when I look over my journal notes...I thought how could	Says not necessarily, but the long length of time that she held on to the strategy was surprising to her

have gone so long thinking that
outside of sessions?... (CRW, pp.32-
39)

In the previous section I explored the technical knowledge and skills which I developed during this four-session episode, and the teaching and learning strategies which appeared to have contributed to my learning. In this section my focus has been more on the critical issues and barriers to my learning which arose during this same period, and the counterproductive elements in my theory-in-use inherent to my "production fear cycle". What is clear in examining this episode is that my dilemma was not so much due to my strategies, but rather due to my reasoning and how I was framing such things as competent performance, and the basis on which I was building my confidence in myself as a competent practitioner.

While competent performance of a Model 2 practitioner would be to surface and publicly explore error and incompetence, my thinking and behaviors during this episode were largely consistent with Model 1. When I was unable to produce diagnoses, and perform my role as I felt I should, and/or my confidence in my competence declined, my strategies were to avoid further confrontation, withdraw (i.e., become "silent"), and act defensively in the face of error. I thereby assumed the stance of an "antilearner". It may also be hypothesized that my behaviors were reinforced by Ron and Fred's focus on our objective of producing diagnoses, and by their "follow me" style of teaching that was not explicitly questioned or evaluated for it's effectiveness.

While it is clear, that particularly in sessions five and six, I may have begun to question some of my frames, and I certainly began to change and

explore different strategies aimed at increasing my competency and resolving my problems as I saw them, it would still be some time before the radical (Model 2) shifts would occur in my thinking and my actions. Tracing how this shift finally occurred will be the focus of the two episodes which follow.

CHAPTER 11

TAKING STOCK, REFLECTING, AND STARTING TO SHIFT GEARS

This next episode will focus on a transition period of "taking stock" in the project. It was a phase that took place over a period of about seven weeks, from session seven through to just prior to session nine, during which we paused to reflect on the project to date, evaluate our progress, and reassess our objectives. We also began to explore optional strategies and ways in which we might work together more effectively in achieving these objectives.

As a unique phase in my learning journey, this episode stands apart not so much for any critical events which occurred, but rather for what resulted from the deep personal reflection that I undertook in the period surrounding the formal sessions that were held. Our discussions, and my subsequent reflections, would lead me to begin to question the very foundations of my thinking and actions over the preceding months of our project. I began a process of seriously examining and questioning not only my strategies, but also the governing variables, assumptions and initial conditions upon which my thinking and actions had been based to date. At the same time, it would seem that my colleagues also went through a parallel process of reexamining their teaching strategies. This episode, therefor, set the stage for some important changes in how we would work together in later sessions, and for events that would contribute to my making the most critical and important "double loop" advances in my learning during the project. This will be the focus of the episode which follows in Chapter Twelve.

In sessions seven and eight, we for some reason changed our method and the focus of our activity. There is no explicit data available to help explain what would have lead us to make these changes, but our attention shifted, from diagnosing cases, to assessing and discussing our research goals, exploring strategies and approaches that might help us better achieve these goals, and finally to summing up our learnings to date about diagnosing, and about producing compelling write-ups of diagnoses. I summarized our discussions during these two session period later, in my Learner's Reflective Story:

> Our seventh and eighth meetings...I have labeled as our "taking stock" period. We began...by re-addressing and discussing our goals and purposes for the research project. The discussion lead us to the following summary list of six global objectives:
>
> 1. To teach Sue how to diagnose.
> 2. In the process of teaching, for all of us to learn more about how to diagnose.
> 3. To look at what clinical teachers say about their problems.
> 4. To identify what we see to be their problems.
> 5. To write up our conclusions about problems in clinical teaching.
> 6. To write up what we learn about the process of diagnosing.
>
> In the discussion that followed we explored what we would need to do in order to meet the above-listed objectives. For example, we discussed the importance of identifying and focusing in on "critical incidents" or problems which occurred in

> the process of diagnosing, and teaching and learning to diagnose. We needed to record, and then to examine these. I was encouraged to keep up my journal.
>
> We then moved on to an extensive discussion of our understandings to date of what makes for a good diagnosis... From this discussion, we began the process of generating a list of categories of counterproductive reasoning-in-action, and diagnostic categories...This discussion would carry into our eighth meeting...(LRS, pp.12-13)

While the audio tape of session eight is not available, the transcripts from session seven, extensive personal notes taken during the two sessions, and our follow-up discussions in Phase Three of the project seem to confirm the above summary. Our new objectives were clearer and more concise than those originally stated (see chapter five). We had also begun to design specific strategies for attaining these objectives. In the above I referred to work done in the session aimed at beginning to meet our sixth objective for example, that of writing up what we learned about diagnosing. My writing of my journal was explicitly reinforced it would seem. It would also seem that there was a new interest in capturing and examining "critical incidents" in diagnosing and in our teaching and learning during the project, and in beginning to compile more information, and write more about these. There was also a lot of discussion, about whether it would be more productive to move forward, capturing critical incidents and issues as they arose, or to first go backwards and look at what had occurred to date. This was in fact discussed at some length during session seven, as the following dialogue demonstrates:

Actual dialogue	Researcher's comments
FRED:...I think we can do writing about teaching Sue diagnosis in a new and improved version if we had critical incidents...around which we look at problematic issues in doing that.	Proposes a new strategy that could be helpful in writing about teaching diagnostic skills i.e., finding critical incidents.
And I don't think we have too many of those. I think we have one, maybe two... (Tries to recall possible incidents and some discussion about these follows)	Advocates that currently don't have many such incidents, and tries to retrieve data about what they may have
All this verbia just to say we are able to write about it to the extent that we focus in on issues...And I think what will make an interesting paper around diagnosis...We have a series of incidents, problematic learning/teaching issues around diagnosis.	Further develops his proposal about how they might organize a paper about diagnosing around difficult and problematic issues in teaching and learning, using critical incidents as data
The more I think about this diagnosis issue, the more I'm starting to get excited about it. Because I think diagnosis is an important set of skills.	Expresses his enthusiasm, and shares his thinking about the importance of diagnostic skills
RON: (072) I would argue the most	Agrees and shares his reasoning for why

important, simply because it's first.

(Some discussion and debate around this follows between Ron and Fred...Then discussion follows about teaching, learning, and diagnostic issues and what could be written up in a paper or a series of papers)

Further exploration of possible projects, and future undertakings

RON: (110) That to me points us backwards, we look backwards in order to go forwards. In other words, we've analyzed five cases or whatever many cases. To do what you've just mentioned is to look back and say what's happened so far.

Begins to propose a strategy for how they could undertake their task

FRED: ...Well that's interesting...Do we want to take it forward?...Do we want to keep looking at (cases), or is the critical incident strategy, will it be productive? If we pick out one or two...

Joins in discussion of what may be the best strategy i.e., to continue diagnosing cases, or whether it would be productive to go back to looking at one or two critical incidents that have already occurred

RON: You see I see the two things that you've suggested, I see them as

Gives a summary of what he

two...Write some statements about what's a good diagnosis, theoretically, practically, skills, whatever. And then looking at critical incidents. In one sense that's a way to review what we've done so far and organize it...Trying to find critical incidents in the last three months, and organize what we've come to believe is a good diagnosis, is looking back at those cases. So it's a way of summarizing what we've done on however many cases we've worked on. So it's the taking stock and making sense out of what we've learned so far.

understands to be the two main suggestions that Fred has made, and begins to share his thinking and his reasoning about the how these may be done, and the value and the ends which may be served by employing these strategies

FRED: And connecting it to a research goal, paper, hopefully.(Some further discussion then follows around whether this strategy would address all their research goals, what may have been important incidents and events worth examining, and how all of this might be organized in their writing, i.e., of a

Adds

be organized in their writing, i.e., of a theoretical paper, a case book, etc.

RON: (Some time later)...I find myself caught. I have this urge to want to go and do the five more diagnosis from the other cases that are typed up, because I want to get more diagnoses under my belt. And yet I know I'd probably learn more by going back and looking at the diagnoses we've already done. I'd also learn stuff by doing new diagnosis...that's the push-pull for me. It's to go forward versus going back.

Expresses his uncertainty for which approach would be most productive; to go on with diagnosing more new cases, or to go back and begin to examine the diagnoses they have done, and incidents that have occurred to date

SUE: I think that one of the advantages of going forward, I mean ...from my perspective, every case that we've worked on so far has given me a new kind of insight. And the advantage therefor of going forward, is the potential to have more insights. So that when we then go back to take stock or to clean up the cases...I think I may be able to see things that I won't necessarily see right now.

Advocates that she believes that the strategy of her of going on to diagnose more new cases would be helpful to her learning, and that it would increase her diagnostic skills, so that she may be able to undertake their later project more skillfully

FRED:...Do you have a list of those insights? One, two, three, four.	Inquires if Sue has compiled a list of insights she has had to date
SUE: No, I don't have a list. I mean if I sat down and reflected on it I could probably come up with a list.	Says no, but that she could likely do this if she consciously thought about it
FRED: I think that if you could do that for us that will be great, and I want to suggest that's one of the things you should try to focus in on...if you can pinpoint, what are the critical incidents...or...Sue's insights.	Encourages her to do that and suggests that she explicitly work on retrieving the critical incidents or insights she has
SUE: Well there's the two sides. I mean there's... where I've gotten in trouble, and how I've gotten out of that.	Elaborates on what Fred has proposed
FRED: Sue, Sue that's our paper, or could be our paper, plus other things. Cause that's where we'll do some interesting stuff, I think. That could be organized...I thought I was saying that to you before. Don't let those go for	Advocates that this information would provide the basis for one of their papers and so it is important not only to retrieve but to identify "on-line" in future

you. And when you get them, flag them for us...as we go along...and then we can go back to it...

RON: You changed it slightly on me as you were talking. One was to simply flag the insights, which is now I see something I didn't see before and it solves a puzzle. But going back to the tape and listening to what's going on when the light goes on is a different kind of issue...

Shares his understanding that this would in fact involve two different kinds of activities i.e. one ongoing, and one which would be looking on data that has been generated in order to build understanding of what happened

SUE: Yeah, that's one of the dilemma's now...If I went and reflected and I looked at things that I'd written, I could start to build that. Because some of those insights have come in talking here. You know, the time we talked about prototypes?...There's the other insights that just come in the whole process of trying to put the pieces together, and trying to write them up, which is a whole other kind of insight. And often understanding of

Acknowledges and expands upon how she sees these two types of activities

those only comes in really reflecting.

FRED: The only thing I could say possibly, is as soon as you get it into awareness, mark it down and connect it up with our data. Whether it's from you rewriting something or something that happened in the meeting, or something that came to you as you're remembering the incident. Just note it...(Sue agreeing in background) And if you can say, we were talking about it in this meeting, I think so much the better...

Reinforces importance of Sue recording her incidents or insights whenever these occur, and providing whatever data she can retrieve or "capture" on these

RON: I don't know that I have a conscious teaching strategy for trying to teach Sue to do diagnoses other than let's try to do it and watch what we do...
(Another lengthy discussion follows, about what kind of information about cases, diagnoses, and diagnostic strategies would be interesting and helpful to write about, and how they

Goes on to share what is a new insight for him, of
. no conscious strategy for teaching diagnosing other than "doing it", but there is no further discussion about this

could retrieve and organize this
information)

Study of the transcripts of this session are inconclusive about whether we made any other decisions about how we would deal with "critical incidents", other than to take note of these, and try to record them as they arose. My personal notes though show that I began to compile rough notes and information about my own learnings and insights to date, and my perceptions about what might have been critical incidents and events which had occurred to date in my own learning journey. These notes would later act as a starting point for the writing of the "Learner's Reflective Story". What is clear from follow-up sessions, and from my Personal Journal is that we did decide to move forward in the diagnosing of cases. We would in fact leave session eight with a number of cases to work on outside of sessions, and in the long three-week period before we would again meet for session nine.

Ron's brief comments about the lack of a conscious teaching strategy in the above dialogue also introduced a new issue which we later explored in Phase Three of the project. The issue was that while we did focus on ways and means by which we might better achieve some of our research goals in the "stocktaking" episode, we did not address some of our "fuzzy thinking", or the inadequate frames that we all may have been holding about effective teaching and effective learning. Ron explored this further in a later discussion.

Actual dialogue	Researcher's comments
RON:...Did the stocktaking work? I mean what happened in the stocktaking?.. We have meeting	

seven and eight when we do what she calls "stocktaking", and we don't get to the big experiment on teaching and learning until meeting number nine and ten. And...it's curious to me what came out of our stocktaking. Did we miss completely...that we hadn't been doing things that were helpful to...our teaching and Sue's learning of diagnosis?...You see I don't think we came up with the fact that we had...inadequate frames around teaching and learning. Unsophisticated frames... (Discussion continues and all generally agree that the focus of the "stocktaking" had been on what had been learned to date about diagnoses and diagnosing)..	Begins to try to retrieve what he recalls having happened in the "stocktaking" episode Begins to question their theories-in-use about teaching and learning. Expresses his belief that although they may have been holding inadequate teaching and learning frames, they may not have even assessed this in their "stocktaking"
RON: (later)...One answer...is that our focus was on our learning not yours... (CRW; p.107)	Tries to give reason to their actions

It is clear though that, in the period following these sessions I began a personal process of reflecting on my reasoning, my actions, and my strategies

for learning during the previous three months. While I once again left the sessions and repeated my strategy of "working hard" on my own outside our sessions in order to increase my effectiveness and keep up, this time much of my energies and my focus would shift to trying to make sense of my problems, and to beginning to reframe some of my critical learning dilemmas and barriers. I discussed this process in an extensive journal entry written just prior to our ninth session:

> It seems a very long time since our last meeting. In the interim I have had a lot of time to reflect, to read and some time to actually work solo on a number of cases, our "homework", which we will discuss during two full days of meetings May 23rd and 24th.
>
> The past couple of weeks I have read in depth "Educating the Reflective Practitioner"(Schon; 1987). That reading, along with my solo work have provided me with some interesting insights. The first set of insights had to do with the issue of dependency, and some of the concerns and questions that I had around that. I have had some sense of discomfort with some of the feelings of dependency I have felt with Ron and Fred. I realize that at times I have felt a driving need to "please" i.e., to find the "right" answer, or finally produce a write-up of the "No-name" case flawlessly. My inability to produce at those levels/standards have resulted in either self doubt and frustration, or sometimes a sort of shut-down/avoidance reaction. These feelings were at times a little scary, when they began to overshadow my desire and drive to learn...to understand. I found it helpful firstly to be able to, at a distance, do some reflecting about my reactions to the situation.

Reading Schon, particularly his references to "Models of Coaching", and the student-coach relationship, has been helpful as I realize that my feelings were not unlike that of many other students in Argyris and Schon's workshops.

I realize also that I have had a good deal of difficulty with "mimicry" in our learning situation. In writing up the No-name case I felt that I was expected to write up the case as Ron or Fred would have. The words did not feel like my own, and yet at the same time I could not seem to produce a product which they felt was theirs either. I felt trapped and sometimes resentful about the structure I was caught in. I reacted (all withheld!) to being "formed" (as I saw it). While sometimes I was content during our meeting just to listen, sometimes my silence was also due to not knowing how to structure my ideas as they did, or present my arguments as I felt they expected. I've never tested this out. In some sessions, my "trap" was that I had to be dependent upon my coaches in order to learn, and I had to attempt to mimic their reasoning even though my reasoning to date has so much supported independent thought and action in every part of my life. But to function completely independently limits my learning...
So this critical issue of mimicry and dependency has been at least partly worked through by reading, working solo, reflecting, and I suppose building a sense of trust with my coaches...(LPJ, pp. 6-7)

The hypothesis that I would like to propose from the above written reflections, is that what was occurring during the time between sessions eight and nine was that I was beginning to questions and shake some of the key

foundations upon which many of my theories-in-use had to date been built. In my questioning I began to surface and examine some of the governing variables, initial conditions, and key assumptions that had been driving my actions up until this point in the project . I also began to see some of the inherent contradictions and inadequacies of certain of my strategies. Just as our attention had shifted from diagnoses and the diagnostic process, to reflecting on our effectiveness in sessions seven and eight, so too had my attention shifted to reflecting on my practice. I had begun to surface, examine, and record some important issues and barriers to my own effectiveness, as a learner and a "partner" on the project.

In the above journal entry for example, I began to question my unrealistic standards of competency (i.e., producing "flawless" case writeups), my loss of confidence in my competence when I could not meet those standards, my struggle with having to play an unequal role and to at times be "dependent" upon Ron and Fred as the experts, my discomfort and resentment towards trying a new and unfamiliar strategy of learning ("mimicry") because I was unable to integrate this into my reasoning about learning and "free thought", and yet at the same time realizing that this same reasoning may be limiting my learning. So in summary, my hypothesis about what was occurring, is the following:

SITUATION OR CUE

When my colleagues begin to actively explore and assess the effectiveness of our thinking and our actions

and,

My personal reflection and my reading begins to give me new insight on my problems, learning barriers, or ineffectiveness,

this leads to the following

REACTIONS AND ACTIONS:

I begin to actively surface and confront my feelings of inadequacy, self doubt, frustration, resentment, and ineffectiveness.

And,

I begin to examine and reframe my learning problems, issues, and concerns.

AND THE CONSEQUENCES OF MY THINKING AND MY ACTIONS ARE:

I "capture" new insights on such things as; my need to please, the unrealistic standards I am holding for myself (i.e., to produce "flawless diagnoses"), and my discomfort with dependency upon, and mimicry of my coaches.

These insights began to touch upon some of the basic assumptions and the initial conditions which had been in place since the onset of the project. What is critical is that in this episode my focus began to shift form producing complete and compelling case diagnoses, to my own effectiveness as a learner. In fact, for the first time on the project, diagnosing took secondary importance in my meaning-making process, as my final journal entry gives evidence:

> A second critical issue in my learning which I have already referred to, has to do with "capturing the essence" of cases in writing them up. I look constantly for models from which to work

> from but these seem sparse. What has been helpful is firstly to receive direct guidance, and the perspectives of my coaches in sorting through data to pinpoint that which is especially significant. I am learning also just by being able to see the problem from various perspectives, for example exploring ways of mapping or framing problems. Is this similar to the "Hall of Mirrors" approach (Schon, 1987)?? Nonetheless, I still feel at loss somewhat about what it takes to "capture" or present a compelling case write-up.... There seems to be some magical mix of factual data and open creativity (and intuition??) that are key ingredients. In examining the cases we will be working on, I have found that I have needed to just "cut loose" somewhat, not focusing as hard as in past on finding all the necessary pieces of data, and then trying to build them into a picture/argument. Rather I have tried introducing an element of intuition and working from there in my analysis. I'm not sure if it has necessarily been more productive, but it has helped me lower my level of anxiety... (LPJ, p.6-8)

So, while I clearly had not found the answers to my problems of producing compelling diagnoses, I did appear to have been more relaxed about doing my "homework" and able to experiment with a new, more intuitive approach.

The significance of this "taking stock" period will seem most evident in the episode that follows, in which I began to take new actions based on my new perspectives, and I began to break down and actively change many of the governing variables which had driven my actions to date, and to put in place new ways of thinking and acting.

What appears to have been most helpful to my learning in this episode was the active "reflection on our actions" that we undertook during the two sessions that I have discussed. In addition, my reading, as well as the time between sessions to personally examine and reflect upon my ineffectiveness, seemed to have been important in the integration of some new insights and ways of seeing my problems.

CHAPTER 12

COMING TO THE BRINK, TAKING CHANCES, AND CRASHING DOWN THE BARRIERS

This episode, which took place during an intensive two-day session (TDW #9), was the most critical one for me on the project. It is about surfacing and exploring missing or inadequate frames around teaching and learning, and it is about breaking some of my problematic frames as a learner and practitioner. The episode is also about making the most important "double loop" advances in my learning on the project, when I finally publicly confront the defensive routines, the patterns of ineffectiveness, and the "designed error" which had created the most significant barriers in my learning journey to date. Finally, it is the point at which I began to design and try out new and more productive theories-in-use and become significantly more Model 2 in my theory and my practice. The critical event which triggered these changes was an "experiment" which we decided to conduct, and which demonstrated a radical shift in our thinking, our strategies, and our approaches to teaching and learning (i.e., our theories-in-use). It is therefor this experiment and the events surrounding it that are the focus of my discussion of this important episode.

As I discussed in the previous chapter, in the weeks following our "stocktaking" and leading up to this session, I had read a great deal, and I had undergone a lot of personal reflection on my practice. I had also begun to examine closely some of the learning dilemmas and barriers I had been confronting, and I had gained some important new insights. Most importantly I had begun to seriously question some of my basic assumptions, the governing

variables and the initial conditions upon which my thinking and actions had been based to date. Recall, that in Chapter 8 I had summarized these initial conditions as follows:

1. I was a highly motivated and "ready" learner.
2. I was confident in my knowledge, abilities and understanding.
3. It was a complex and ambiguous task which lay before me.
4. Our working relationship was a relaxed one, and specific roles and responsibilities were unclear.
5. I was a partner in a collaborative team of equals, and as a team member, my responsibility was to participate actively and contribute equally in achieving the teams' goals and objectives. I also saw the priorities on the project as being; getting the diagnoses done, getting the write-ups of these diagnoses, and my keeping journals and reflecting on my learning.
6. Because I was confident in my theoretical knowledge and abilities, I was also confident that I would be able to perform competently. I also believed my colleagues were confident in my knowledge and my competence.
7. If I was attentive, studied and worked hard (i.e., did my "homework"), I would learn whatever I still needed to learn.

While I continued to be highly motivated as a learner (initial condition #1), I certainly did not have the same level of confidence in my knowledge, abilities and understanding (initial condition #2) as I had at the onset of the project. The experience to date had in fact been a rather humbling one! What I had particularly begun to question was the ways in which I was "framing" my role and responsibilities as a team member, how I was seeing my relationship with Ron and Fred, and the ways in which I was defining competency and

competent performance (initial conditions #4,#5 and #6). I had been struggling with such issues as the "unequalness" of my role, my dependency on Ron and Fred as "experts", and my discomfort with mimicry as necessary to my learning. I had also been questioning my apparent need to "please", my unrealistic standards and sense of inadequacy, and my inability to produce flawless diagnoses. Together we had attempted to clarify our objectives on the project, and we had begun to reassess our priorities (initial conditions #3 and #5). We had therefor all begun to question our overall effectiveness in achieving our objectives. And finally, I was questioning the effectiveness of my strategies for learning and for accomplishing the tasks as I saw them (initial condition #7). While my attentiveness, hard work, and study had provided me with some important insights and learnings, I still didn't feel as though I was making the advances in my learning that I had hoped for. I was still not confident in my ability to perform my role and responsibilities competently and produce good diagnoses. I did not feel like a good team player! In my questioning of these issues, I was beginning therefor to loosen the fundamental foundations of the reasoning that had guided my actions to date.

From the data of follow-up discussions, we may also conclude that while I was reflecting on myself as a learner and participant on the project, Ron and Fred also underwent some serious reflection about our process to date, and about themselves as teachers. While this has been addressed briefly in the preceding chapter, it will be further explored in the discussion which follows.

What was clear was that our discussions and our thinking had led us to shift our focus and our energies on the project, from "production" (i.e., of diagnoses), to more active and rigorous "reflection" on our reasoning and our actions as practitioners, teachers, and learners. We had made explicit for example, our intention to pay more attention to the process being used to

teach me to diagnose, to better understand and write up what we learned about the process of diagnosing, and to place new emphasis on identifying, focusing in on, and "capturing" and recording "critical incidents" or problems which occurred in our diagnosing, and in teaching and learning to diagnose.

The result of our discussions and our solo reflection in the time between meetings lead to different behaviors when we once again came together in session nine. While our stated intention during those two days was to build diagnoses of five cases, which we had studied and worked on independently in the weeks since our last meeting, our initial actions at the onset of the session would soon shift our priorities and our focus, from diagnosing, to teaching and learning.

Session nine opened with all of us sharing and discussing some of our reflections and the issues about teaching, learning, and doing diagnoses that we had been struggling with since our last meeting (i.e., our "left-hand columns"). Fred, for example, shared a discussion he had with Ron about how, in teaching students to diagnose, they didn't appear to use an integrated approach which step-by-step built the necessary skills needed to do diagnoses. In response, I immediately began to share my recent insights about the "technical" versus the "process" side of learning, and the kind of dilemmas which I felt had been causing the most problems for me. In this lengthy intervention I frequently read directly from my journal entries (my "data") in trying to give clarity and transparency to my reasoning. I therefor demonstrated a new rigor in reflecting "in-action" on my practice. This discussion was described later in my Learner's Reflective story:

> I summarized that in learning to diagnose, I believed that I had experienced two types of central dilemmas to date. The first... was related to learning in more depth the theory of action itself,

> including coding and diagnostic categories, the language of the theory, what determines what is core data and what is peripheral, and the "how-to's" of producing and then writing up a diagnosis. But the second type of dilemmas, which I referred to as the "process" aspect, had more to do with human and interpersonal issues like dealing with dependency upon the experts and/or the need for mimicry, fear of error, developing a sense of trust with one's coach(es), etc. (LRS, p.16)

Also interesting in our discussions, was the way in which I was beginning to publicly explore my different "role frames". I frequently referred to Ron and Fred as my "coaches" for example, which I had not done previously. In sharing how I had thought through my issues of dependency upon, and mimicry of my coaches, I also expressed a new comfort with my "unequal" role as a team member (i.e., my lower level of competency). My perception of myself was changing. This gradual shifting of my "self-frame" from one of equal team-member/colleague, to one of student/colleague would later become a more explicit focus of our discussions, and would have important consequences for our later thinking and actions.

In follow-up to these initial interventions, for the first time on the project the focus of our discussions shifted to examining critically and in-depth the overall approach and process we had been using, not only in the diagnoses of the cases under study, but also in facilitating my learning. We began for example, to address some of our "fuzzy thinking" and lack of clarity about our models of teaching and learning, and we began to search for some new teaching and learning models and strategies which could be tried. In the dialogue which follows for example, Ron reflected "in-action" on unclear teaching frames, and proposed a series of teaching and learning strategies

which might prove more effective, including me writing up something about my process of learning to diagnose, us developing a sort of "case book" of diagnoses for use in future such projects, and using a case methodology to explore our difficult episodes in teaching and learning.

Actual dialogue	Researcher's comments
RON:..The idea about mimicry is interesting because... I hadn't thought about that at all in terms of our working with you...What's more interesting to me is that I don't think...I thought of myself consciously as "coach"... yet the kinds of things we were doing were very coach-like. So going meta on what we were doing, with the metaphor for coach would be interesting. In what sense have we been coaching you and has it been good coaching, and what metaphor do we have for coaching...Your idea about writing up something about the process of coming to learn to diagnose,I think is an intriguing idea. (Sue agrees) Which is different from the other kinds of things we've talked about writing up...Writing about the process of learning to diagnose, and to try to imagine what that would look	Begins to reflect upon what may have been his theory-in-use in helping Sue to learn Suggests that one thing they might like to do, would be to examine how "coach like" their actions had been, and what appeared to have been their model for teaching Also expresses interest in Sue writing up something about her process in learning to diagnose and that this project would be different from others they have previously considered.

like... And the idea of offering examples. The same case from five different perspectives. Different cases from the same perspective. Whatever...

(Later...following some discussion summarizing what they had learned about writing up good diagnoses, and a review of their research objectives)

Also suggests that another interesting project would be to write up examples of different case diagnoses

RON: Another idea...is that if we were going to follow our methodology, we should be doing cases of difficult episodes in our teaching or learning diagnosis. We should be using a case methodology to represent what's difficult about teaching or learning...And rather than use it retrospective, we'd use it from now on. So that we try to flag things as we go forward, when we're in the midst of it or when we finish it, saying "that's a good example of something. Let's go back and figure out what it's a good example of"...For me it's learning diagnosis. I don't see myself here as

Proposes a new way of working together, a new strategy that might improve their effectiveness in teaching and learning, which is to "capture" and work on difficult cases in their own practice as these arise

Again tries to uncover his reasoning about his role and his theories-in-

teaching diagnosis (laughs). And that's I think, one of the reasons why, almost since we started I haven't taken a stance as teacher. I've taken a stance sort of as learner. We're learning here.	use in facilitating Sue's learning Advocates that the framing of his role may have been more like that of a co-learner than that of a teacher, and therefor an "equal".

(TDW, p.129 - 132)

But it was the intervention by Fred which followed, that would prove to be a critical "triggering" one for me. In that intervention Fred advocated that, in our strategies to date, along with not being clear about what we were looking for in write-ups of diagnoses, we hadn't explicitly designed a strategy useful to my learning. We had tended to be "fuzzy" in our thinking in the both areas. One of the proposals he then made was that we conduct an "experiment" which had as an express objective, teaching me diagnostic skills. This experiment would consist of me doing a diagnosis, presenting it to Ron and Fred who would critique it and help me in developing it, and taping the session(s) so that we could later go back and reflect on the process that took place, and any critical teaching/learning incidents which might have arisen. While he also acknowledged that this focus on teaching/learning issues and incidents could also be done by going back on our work to date and building cases, his preference was that we move forward and through the experiment, try a very new strategy.

Actual dialogue	Researcher's comments
FRED: Well if we did it...in terms of teaching diagnosis. Then we might say...and on the assumption we're the	Begins to explore reasoning and rationale for trying out the strategy that Ron has proposed

experts:..."Susan, here's a case. Do a diagnosis." She brings in the diagnosis, and then we reflect with her on the diagnosis, taking it and looking at how the critical episodes emerge between us on the diagnosis. I mean that would structure it to get the data, versus what we have been doing...One of the things we've been doing is... Let's do it and as we go along pinpoint critical episodes and say to Susan, "Keep a journal of critical episodes and we'll reflect on it". I don't think that strategy has been working.

Advocates that this particular approach may be a more "disciplined", rigorous, and effective one than that which they had been using to date, in that they would be retrieving and attempting to diagnose critical episodes and incidents as these occurred
Also advocates that Sue's journal-keeping has not been an effective strategy

RON: She has critical episodes though. It's not a journal...but it is about insights she gets that she didn't have before.

Points out that the journal-writing has been a means though of capturing and recording insights

FRED: But we haven't been doing it together in terms of, if the objective is..."teaching/helping Susan learn"... The strategy has been...you do the work in terms of what's happening

Again argues the ineffectiveness of this strategy and begins to expand on his reasoning about this

for you. What we haven't done is structure it to say...bring in what your having difficulty with. We did that a couple of times but then it became like the coaching... It wasn't where we distanced ourselves...in terms of that objective of teaching Susan. We haven't designed a strategy...Our strategy was hopefully go back to the tapes and listen to what we did on the tapes for critical episodes. Which we haven't done. But we could go forward and say... Now with that background Susan...here is a case, two cases, three cases. Bring in your diagnosis and we'll reflect on it, taping it and looking at what we do. What's good? What's bad? What's helpful? What's not helpful? Why we're doing this...I'm saying if the objective is teaching somebody, than that's something that's possible...

Advocates that they have also been ineffective in applying a strategy that they said they would, which was to "look back" and reflecting on their actions

Proposes that a new strategy that they could design and try, would be to have Sue produce case diagnoses which they would then help her with. In doing so, they would then generate new cases of their own practice as teachers and learners, and they could then diagnose these

RON: (382) And it has as it's model for teaching, do it, and we'll critique it? (TDW, pp.132-134)

Looks for further reasoning for this strategy of teaching

What followed was a lengthy discussion between Ron and Fred in which they actively reflected on their thinking and actions to date as teachers and as action scientists, agreeing that their actions seemed to have been more driven by a theory of learning (i.e., let's do these diagnoses together and see what we learn), than a theory of teaching. They agreed that they had learned a lot about building compelling diagnoses, and the process of doing diagnosis, but that we not been "rigorous" in capturing critical issues, insights, and incidents to date, and that they had clearly lacked teaching models for helping me learn. This discussion concluded with several strategies and projects being proposed. One proposal was that I produce a reflective story on my process to date of learning to diagnose, and Ron and Fred write retrospective pieces about what they had learned about diagnosis, so that eventually we could work with these and build a paper that would capture critical incidents in our teaching and learning of diagnostic skills. The project of producing a "case book" of models of diagnoses was also reiterated. Finally the need to more closely monitor critical issues and events which occurred in future was again raised, and Fred's proposal of the experiment was once again tabled.

Actual dialogue	Researcher's comments
FRED: I would like to try an experiment with the suggestion I made...Yes let's each write up something about what we learned about the process of diagnosis and what a good diagnosis is about. I think I'd also like us to do the experiment, taking a case and you	Again pushes us to try the strategy he has previously proposed, and further describes this, and illustrates how he thinks it might be an effective and helpful strategy for all of them

doing a diagnosis. And then monitoring how we work together with you, with that diagnosis. And see what emerges from that. If it's something we want to do again, or let it drop. I think that might be interesting, to look at your skills, our skills. See what happens in the session... Let's look at your diagnosis, and we work with her and see what we do, see what you do. And then stop and reflect on it. See if there were any critical episodes, and identify any learning...Then continue again...

(TDW, pp.138-139)

Throughout these initial discussions I made no comment. But when the idea of the experiment was again raised, my behavior changed. I was once again being confronted with production, only this time much more direct and explicit. This experiment would place me and my performance on "center stage" since I would be presenting my diagnoses (and my error) for public scrutiny and appraisal. I propose that the behavior that I demonstrated in follow-up discussions was consistent with the "refreeze" phase of the "production fear cycle" introduced in Chapter 10. Pushed to publicly demonstrate my knowledge and my skill, I became anxious and defensive. What is different though, is that this time my concerns, my fears, and how I was

"framing" the situation would be stated more explicitly, allowing us an opportunity to collaboratively explore these in depth.

Actual dialogue	Researcher's comments
SUE: I'm thinking about the experiment, and just as an immediate reaction, one thing is that it really changes the approach we have been using up until now. Because that experiment immediately puts the two of you into coach roles.	Begins to share her reactions to, her reasoning about, and her and "framing" of the experiment (i.e., that she see it as explicitly putting Ron and Fred into the role of "coach")
FRED: Yes, I agree.	Acknowledges this framing
SUE: And me in a student role, which is a <u>really</u> different process than we have been using up until now. I mean in the process to date I have, on occasion put myself into a particular role and maybe placed you into coaching roles. But it's been a very different kind of relationship than the kind of relationship that the experiment would set up.	Also advocates that the experiment would explicitly put her into the role of "student" and that this setting of roles would change how they have worked together to date
FRED: Yes, I agree...You framed it in terms of student, and what's the frame for us?	Agrees, and inquires about her framing of their roles

SUE: Coach.	Repeats, but offers no further illustration
FRED: I see that's your frame. I don't see it that way...What I see us as doing is setting up a structure in which we can generate data.	Begins to challenge her framing of their roles, and offers an alternative
SUE: Okay, but the dynamic that's there is, I produce information which is then examined by you and Ron. Which is... a little bit uncomfortable as a situation.	Defensive? Shares her discomfort with being "evaluated" by Ron and Fred
FRED: Well it seems to me that what it highlights partly is some of the things we talked about earlier; the mimicry, the dependency, the difference in expertise (Sue agrees)...	Goes on to further examine and inquire into how the experiment might change how they worked
SUE: But it adds an evaluative factor in it that hasn't been...explicit before.	Reiterates the explicit evaluative issue
FRED: It hasn't been explicit? What evaluative aspect has not been explicit for you before?	Pushes her to further share her reasoning about this as being new

SUE: Evaluative in terms of, you know, how much have I gotten, and what am I missing, and what level am I at in terms of my ability to diagnose?	Elaborates
FRED: Well I see it as evaluating not only you, but ourselves.	Argues that it will not only be her practice that will be under evaluation, but all of theirs
SUE: In what way?	Asks him to further explain his reasoning
FRED: Well, because we are going to be looking at two things. We are looking at your effectiveness in producing the diagnosis and we also reflect on our effectiveness at helping you do it.	Explains
SUE: Hmm	
FRED: And... I agree. It ups the ante. It highlights the idea that presumably we are more expert than you at doing it. It highlights it...and puts us to test it in terms of our learning. Yeh, I think that it does highlight all those things, I	Acknowledges the evaluative aspect embedded in the strategy, but offers an alternative way of framing this, i.e., of putting all of their practice under scrutiny in order to better identify where they are being productive and counterproductive

agree. The notion of student/coach, I was framing that as expert/less expert. I set it up as a suggested experiment because I think it will help us to do the action focus...It should highlight where you have trouble...It should help us focus in on our counterproductiveness. Ours as well as yours. But it might...yes it will tap into the evaluation thing. You just felt it. I feel it as I talk to you about it. (Sue agrees in background) So I think it does up the ante. But I think the payoff might be, that it really focuses us in on the critical incidents.

Acknowledges Sue's fears of evaluation, but again argues the potential benefits for her and their learning

SUE: And you think it can do that more than if there is more of an effort to focus on critical incidences on-line when they happen? Which I think might have been one of the problems up until now, that maybe we haven't zeroed in on.

Asks him to provide more reasoning for why his strategy would be more effective than them just being more rigorous in capturing critical incidents as these arise

FRED: No, I think what we've done so far is colluded. I think what we've

Shares his reasoning about why this other strategy has not, and

said is; "We're going to focus in on the process of learning". Great, we collaborate. We don't highlight your learning. We highlight all our learning. And I think what we've said is; "This is a complex, difficult thing, so let's learn together". So, you bring in your diagnosis, and we bring in our diagnosis. And when someone does a diagnosis, either someone says; "I see it differently" or; "Oh I didn't see it that way". We don't focus on our errors, as much as correct immediately our wrongs and help each other to do that...I'm almost suggesting that what we want to identify is where each of us is making the errors or where you might be making errors...You become the focal point in that way...We could always reflect on where we're being helpful to you, and where we are not being helpful to you...focusing in on our expertise (Sue hums several times in background). So what we've been doing, I think, is going along...and

would not be effective, i.e., because it results in them colluding and protecting, versus being rigorous about identifying and focusing in on their errors and their ineffectiveness

Again argues that while his experiment might lead them to focus more on evaluating Sue's effectiveness, they could also focus on their own

everything gets muddled. And we say we'll go back to the tapes, and note. But we haven't so far. This is saying; "You're the one who is going to have to go out there now and produce something" and, "You do it", if you want to do it that way. And we will be the experts and do that evaluation. The payoff for you is, if we're helpful, it really focuses in on where you're learning and not learning. The payoff for us is we really focus in on identifying our strengths and weaknesses. And...you should be tough on us.	Further shares his reasoning about the ineffectiveness of their practice Again acknowledges the evaluative aspect of the experiment Again expands on his reasoning about the potential benefits that the experiment to might bring for all of them Says that Sue should also be rigorous in evaluating their performance
SUE: Ah ha.	
FRED: Okay. You know...Be tough on your consultants.	
SUE: Ah ha.	I share little reaction to what Fred Fred has said (witholding?)
FRED: If it's not helpful, say...	
(after some further discussion)	

RON: It changes the way we've been working in a dramatic way.	Says that he too anticipates that Fred's experiment would be a radical change of strategy and working style
SUE: Yeh, for sure.	
RON: And I'm trying to figure out what the difference is. The idea is to set up a structure where we can produce data, and one place that we want to produce data is around your learning to diagnose... (Goes on to discuss at length questioning how this proposed strategy and structure will change how they work together i.e., by highlighting more their efforts at trying to help Sue learn. Then all three continue to discuss at length)	Begins to try to uncover his reasoning about why this would be so
SUE: ...the perception that I had until now...or the way that I framed it (was), we are learning more about learning to diagnose..	Sue also begins to try to uncover how she may have been reasoning about, and framing, their working relationship, objectives, and priorities up until now
RON: We are <u>all</u> learning.	

SUE: About the process of learning to diagnose. That's how I've had it framed it up until now. And another objective is...what about Sue learning how to diagnose. That was sort of an underlying objective. Because that was something that I was consciously monitoring in any case. And thinking a lot about. Hmmm.

FRED: Sure. And I (both laugh) upped the ante on the other frame. Which is to say, "No, you learn. We're going to help you learn." I emphasized the "expert". I articulated...another focus (Sue agreeing in background)...

Proposes that his experiment "shook" some of Sue's frames by focusing explicitly on Sue's learning

SUE: Well you swung it over to me... you swung it open to let's examine up close (Fred says, "Yeh, yeh") my process of learning, also with you in the roles of more expert.

Adds to what Fred has proposed

FRED: And looking at how we are effective and ineffective...I want to

examine us just as much as I want to examine you...I mean, I had the thought too of shifting it around. Okay, I'll write the diagnosis and you two help me learn it, and see...I like that partly. And part of me wants to think, am I escaping from emphasizing the other dilemma?	Reiterates how the experiment would be evaluating all of their practice. Also adds that while it may be tempting to continue the cooperative strategy of focusing on all of their learning (and perhaps him presenting his diagnosis), that this may serve only to help him avoid confronting and dealing with his ineffectiveness.
SUE: Hmm!	
FRED: I mean that would be, keep the collaborative thing going. Or am I avoiding something? I'm not quite sure?...And damn it...you framed it as, "student being evaluated". I want to tell you, I don't think I had that when I was saying it. I mean...I didn't have a sense of "one up - one down". I had a sense of an experiment, in which it would be upping the ante and really focusing in on it...	Confronts Sue about she has chosen to put an evaluative frame on the experiment
SUE: Oh yeh, I'm taking full ownership of how I've framed it...	Agees

FRED: Yeh. Okay.

RON: I felt that somehow, and it's intriguing, that somehow the way you were framing it puts Sue in a place that would...change the rules. It changed the nature of the relationship in a way that was clearly a change...
(later)
...The interesting thing that's different, is when we've been working before, we've been working towards <u>our</u> building a better diagnosis, and everybody's contribution contributes towards <u>our</u> diagnosis. The way you frame it now is, "You build a diagnosis, and we'll help you"

Once again goes on to try and build a theory about how the experiment would change their working relationship (and their theories-in use), to one which is more focused on helping Sue learn to diagnose (versus all of them diagnosing)

FRED: To build an even better diagnosis.

RON: And that's not our diagnosis, as much as we're helping you build a better diagnosis (others agree). And that's the big difference. And it's a dramatic difference, I think.

SUE: It casts us into really specific roles. And I think that up until now, for better or for worse, what's happened is we've chosen roles. I mean I've made the choice of placing you in the coach role, or... maybe you become a coach, or Ron becomes a coach. And on occasion we've gone into that mode of coach/student. And the sometimes we've moved out of that, and we've just collaborated, you know? We kind of move in and out of roles. And this...puts us into roles. And I don't mean that in a judgemental way. It's just that's how I see it. It puts us into roles. So I am thinking about that... That kind of learning relationship. And it's different from what it's been up until now.

(TDW, pp.139-147)

Again shares her judgement that the experiment would cast them into specific roles, versus allowing them the freedom (which she advocates they have had up until now) to decide what kind of role or working relationship they wanted

Says that she has not yet clear about what she thinks about this change

This discussion carried on for a lengthy period of time. What was critical about the discussion was the way in which we were all explicitly reflecting "in-action" on our thinking, our actions and the ways in which we had been framing our roles and our working relationship, and on how the experiment would undoubtedly cause us to change both our reasoning and our actions. We

frequently compared for example, the "evaluative" stance which would be taken in the proposed experiment with the collaborative and relaxed stance we had tended to take in earlier sessions. But Ron in particular emphasized that, given that we agreed that the previous model, or strategy for teaching me had either not been there, or had not been particularly effective, then clearly we needed to change our approach and our strategies, and the ways we were thinking and behaving.

What was also significant about these discussions was the way in which I "negotiated" with Ron and Fred. I was not convinced of the value of the experiment and/or whether I was ready to try it out. It may be hypothesized that my actions were designed not only to gather more information in order to weigh my decision, but also to gather time for my own reflection. Later, in my Learner's Reflective Story I was able to capture some of my reasoning and reactions I recalled having felt at the time of these discussions:

> I recall having felt threatened not only by the idea of dropping our "colleagues" frame, but deep down by the proposal that I be evaluated by these colleagues. I was to be evaluated on my progress, and I was uncertain as to how I would fare on the "test". While Fred tried to push me to drop the student/coach evaluation frame...I had difficulty letting go...I also expressed the need for some reflection time as I was feeling quite uncomfortable with the idea...Before breaking for lunch, Fred wrapped up our conversation by saying "let's get over this evaluation anxiety". We would after all, all be under scrutiny in our production. He had aptly voiced my central concerns. A break for lunch would give me some needed reflection and decision time. (LRS, p.17-18)

It is interesting that the subject of the experiment was not pursued until the end of the day. Could it have been that we all implicitly called for a reflective "time out"? Instead, the focus of our discussion turned to a recent conference that both Ron and I had attended, and which had largely focused on Mary Belenky's work, and her book entitled "Women's Ways of Knowing" (Belenky, 1986). We discussed at some length the work and theories of Belenky, comparing her arguments for the need to create open, caring, empathetic, and non-confrontative learning environments, with the Argyrian perspective that non-confrontation and uncritical acceptance is not in fact caring behavior. We also debated at length about how the two teachers/theorists would deal with a silent student, and frequently role-played scenarios which might occur and discussed how we might react in these situations.

There is no data which could help us gain more insight into why we would have changed our focus and spent so much time on this discussion. Could this discussion have been a strategy we all used to implicitly communicate the desire, underlying all of our actions, to be caring and helpful? I do recall though, that both during the discussion and in the weeks which followed, I thought a great deal about my own theories about silence and confrontation in learning contexts.

Our day ended with a brainstorming session in which we began to compile some of our insights to date about diagnosing, and about what had been helpful in teaching and learning diagnostic skills. We also agreed to try the experiment the following morning. But before moving on to my discussion of the experiment, I would like to present two maps which capture what I propose to have been my reasoning and my actions during day one. The first

is strikingly similar to the mapping of my "unfreezing and engaging" presented the "production fear cycle" which I proposed in Chapter 10.

SITUATION OR CUE

When our discussions, my reading, and my private reflection lead me to question my fundamental assumptions about, and the frames I have held about my role as a team member, our working relationship, my standards of and definition of competency, and the effectiveness of my learning strategies (i.e. my initial conditions)

And when,

my colleagues publicly express concern with their lack of clear models of teaching and with the ineffectiveness of their teaching strategies.

This leads to the following

REACTIONS AND ACTIONS:

I again "engage" as a learner, and begin to share and actively reflect "in-action" on my reasoning (my thinking), and some of the learning dilemmas that I have been encountering.

I also begin to publicly explore some of my frames and the initial conditions that I have begun to question.

AND THE CONSEQUENCES OF MY THINKING AND MY ACTIONS ARE:

1. My confidence returns.

2. We engage in publicly reflecting on and inquiring into our frames and models of teaching and learning. In doing this we come to better understand each other's thinking and actions, and we become more aware of the ineffectiveness of our models (i.e., we all learn).
3. I begin the process of shifting my perception of myself and my "role-frame" from that of equal team-member/colleague, to student-colleague. I also begin to re-frame Ron and Fred's role.
4. We begin to explore not only what contributed to our ineffectiveness, but also strategies which might help us be more effective in achieving our goals.

I propose that during the time between sessions #8 and #9, in which I read and worked hard at understanding my learning dilemmas, my confidence and comfort in my knowledge and abilities once again increased. When my colleagues then shared their dissatisfaction and concern with their ineffectiveness as teachers, this very much helped to "unblock" me so that I could more openly share my reasoning and my private reflections. This then made it possible for all of us to more actively and explicitly reflect "in-action" on our practice, challenge some of our existing frames, and also begin to explore gateways to strategies which might increase our effectiveness in future.

But there was clearly another process which occurred later in these discussions, and the mapping of this process also looks very similar to that of the "refreezing" phase of the "production fear cycle" of Chapter 10, with some notable differences.

SITUATION OR CUE

When I am invited to try a teaching/learning experiment in which I actively assume the role of student/learner, and I produce and present a diagnoses which will then be assessed and worked on by Ron and Fred in the role of teacher/coaches, this leads to the following

REACTIONS AND ACTIONS

I become anxious and defensive. I begin to "negotiate" for time and look for ways to avoid doing the experiment by looking for weaknesses in the proposal, and sharing my reasoning and concerns about how it would radically change our working relationship and put me under "evaluation".

AND THE CONSEQUENCES OF MY THINKING AND MY ACTIONS ARE:

1. Ron and Fred actively engage in discussing and exploring the potential benefits and drawbacks of the experiment, and my concerns and ways of framing it. I learn more about their reasoning, and they learn more about mine.
2. I "win" some needed reflection time.
3. We all begin to gain some new insights into the "real" teaching and learning issues and barriers that may be at work (i.e., unclear roles, fear of production, and evaluation anxiety).

So unlike earlier such "refreeze" incidents, this time the significant difference in my behavior was that I was not silent. I began to publicly express

challenge and explore some of the dilemmas in my reasoning. The time had come to make significant changes to how we were working together, but for me these changes were threatening given that they would shake some of my fundamental assumptions about how we worked together as equal colleagues. The experiment also threatened to drop the sense of safety and security that I had felt in the generally relaxed and unclear stance to working together that we had assumed to date. It would cast us into clear roles and it would force me to publicly produce and demonstrate my knowledge and skills (or lack of!).

I have proposed that "the experiment", conducted on the second day of our session, was a critical turning point on the project, particularly for me as a learner and practitioner, but also for Ron and Fred as my coaches and teachers. I argue this because, while in earlier sessions and discussions we had begun to grapple with missing, unclear, or inappropriate teaching and learning frames and strategies, and we had begun to shift our focus from issues of diagnosing and producing compelling diagnoses, to our overall effectiveness as teachers and learners, the consequences of the experiment would be for all of us to finally break a number of critical frames about ourselves as practitioners, evolve and then experiment with a series of new ones, and radically change certain of our theories-in-use. As a learner and a practitioner, I would finally publicly confront my error and ineffectiveness, and I would be helped to explore new, more Model 2, theories of practice. I would therefor undergo significant and "deep" double loop learning on my road to becoming an action scientist.

We immediately began the experiment on the second day of our meetings. In reviewing the audio-tapes it is striking how from the onset I sounded, and must surely have felt nervous, tentative, and unsure (i.e., low in confidence?). These audio-tapes are the most important data which

demonstrate how quickly I once again became deeply entrapped in my repetitive "production fear cycle" of error, as will be demonstrated in the selection of our dialogue which follows.

I began my intervention stating that my diagnosis was incomplete (i.e., I express dissatisfaction and low confidence in my production). I then went on to explain what I had done, and the process I had used to arrive at my understanding of the problem (i.e., I try to "save face" by focusing on the hard work that I did versus presenting an unsatisfactory "product"). In doing so, I frequently confused Ron and Fred, who several times asked me to present clearly my diagnosis, and began to get impatient (i.e., "push" me to produce). I did not, but rather continued to appear nervous and flustered, and I continued to focus on explaining the process that I had used to organize the case (i.e., I demonstrate further defensiveness, face-saving, and low confidence). When Fred then shared his judgment that I did not appear to have a diagnosis (i.e., he confronts me on my incompetence in producing what I had been expected to produce), I once again acted defensively, defended my process, and did not publicly acknowledge my "unknowingness". This pattern is seen clearly in the following selection from the transcripts of this session.

Actual dialogue	Researcher's comments
FRED: Here we go...	
SUE: You just want me to go through, what I noted?...	Seeks to verify process she is to use
RON: You give us your diagnosis, and we try and work at being helpful	Explains that they want her to present her diagnosis so that they can work with her on it

to you in building it to as good a diagnosis as we can make it.

SUE: Okay.

FRED: And you are, quote, "tough on us" in the sense of what helps, what doesn't help, where you're stuck, and so on and so forth.

Adds to Ron's explanation by encouraging her also to be evaluating the effectiveness of their strategies in helping her to learn

SUE: Okay...(after some numbering and organizing of paperwork) I don't feel the diagnosis is complete, but I'll tell you where I ended up on it. Hmmm...

Tentative (easing in strategy)

FRED: You have some criteria of completeness then?

Asks her to elaborate on comment by explaining her criteria for a "complete" diagnosis

SUE: Yeh, because there's still some things that I'm puzzled by. There's information that I'm not sure what to do with, but I have an inkling that it might help complete the puzzle.

Explains that she feels that her diagnoses is not complete because there is pieces of the case that she is not sure about
No illustration

FRED: Okay, that's what you mean.

SUE: Okay, the problem as stated by Ellen... (goes to mostly reading directly from case write-up and extracting pieces of data)...	Begins to share mainly her "coding" of the case
FRED: What did you just say?...	Asks her to clarify what she has said
SUE: I think she speaks to an additional problem in that section, that's supposedly her "strategy and barrier" section. But she brings up an additional problem which in fact becomes a central problem that she deals with in the dialogue. Okay? She also adds (works again from case)...I then added that this attribution that she makes is unillustrated and untested in the dialogue. It just stands there by itself.	Continues to explain how she has coded the case, i.e., the process she has used to interpret it, but does not offer a diagnosis Continues to label diagnostic categories in the case
RON: Can we just go back there and review. I'm losing track of the problem.	Says he is not following her line of reasoning
SUE: Okay.	

RON: I'm just trying to write it out for myself... (reviews his understanding of some of the problems that Sue has identified)...It's unclear. What's the problem there?	Shares his understanding of what Sue has said, but also communicates confusion and asks her to more clearly articulate her diagnosis of the central problem in the case
SUE: Well...(sounding frustrated) I really got stumped on that one. And I ended up going back and going back. And the reason I ended up calling it a problem and not a consequence is that it seems to me that that's what she's addressing in the dialogue...	Face-saving! Again uses same strategy of explaining what she did versus producing her diagnosis
RON: Okay let's go back (again reviews Sue's statement of the problem)...	Again expresses confusion in following what she has said
FRED: What I see you doing now is organizing what Ellen's case is.	Shares his judgement about what Sue has been doing (i.e., organizing and describing the case, but not diagnosing the case)
SUE: Yeh. Yeh.	No illustration
FRED: Describing it.	
SUE: Yeh.	Sue agrees

FRED: Not doing a diagnosis.

SUE: No.

FRED: Do you agree?

SUE: Yes.

Agrees with Fred's judgement, but offers no reaction to this

FRED: Okay, I agree too.

SUE: But for me that was the kind of process I had to go through is first...to organize...and put all the pieces together...before I moved on to then..

.

Defends her process (more face-saving?)
Abstract

FRED: So the steps of organizing the data for yourself according to the categories...

RON: Where did you put 9?..
(Some discussion about this with Sue)

Returns to the case

SUE: Okay so...basically where I'm at is I see two main problem areas. The central problem...(goes on to describe

Begins to share her reasoning about the central problems in the case, but again does not offer a diagnosis

these but high on the ladder of inference. Fred asks for some clarification at certain points)...So the first problem...where I went with it...was first...where Ellen stated her strategy...and then...what I saw to be her actual strategy...(Goes on to explaining this from case data)...and then I went to a few different mappings.

RON: And what you just mapped there is what you think she did?

Still unclear about her reasoning

SUE: That's the strategy as Ellen states it in her explanation.

Still abstract, and no diagnosis

RON: Ah ha.

SUE: And then I went on to map her theory-in-use as I saw it...

More about what she did, and the process she used in interpreting the case

RON: Okay.

SUE: Okay. And I have a bunch of them...the first one I tried was (explains)...What I ended up doing was mapping all the way through the dialogue. I kept getting "cues, actions, consequences" through the dialogue. The next step was	Explains again the work that she has done, and the steps that she has taken to analyze and try to build a diagnosis of the case
RON: Okay, can I slow you down.	
SUE: Okay.	
RON: You said she asks a question, in 14, I don't think she's asking a question. I think she's making a statement...(Goes on to share a different way that he is framing the problem)...	Ron begins to challenge part of Sue's interpretation of the case, and to share his reasoning about this, which is different
FRED: Could you repeat your theory-in-use proposition?... (Sue goes on to explain)	Fred invites Sue to carry on with her mapping of the case
FRED: What do you make of 24 then?...(demonstrates how this could	

become a part of the theory-in-use proposition and there is some discussion about this, before Sue is invited to carry on)

Ron and Fred begin to assume more active "teacher" roles, being "tough" on her reasoning, and presenting some alternative ways of interpreting the data

RON: Could you talk more to the consequences?...

(TDW, p.165-169)

But it was at this point in the session that Fred and Ron began to confront my unsureness, and my strategies of avoidance and defensiveness. They began to share their interpretation of my actions, and to challenge these and my reasoning. Fred, for example shared his judgment that I had been avoiding presenting my diagnosis because I had none to present, and did not want to be seen as ineffective. It is through these discussions that we began to "name" my patterns of error, and the dilemmas inherent in my thinking and actions. We began therefor to diagnose in-action the Model 1 features of my reasoning and my actions as a learner and a practitioner, and in doing so I was helped to better understand the negative consequences of this. What became clear, was that my ineffectiveness was not so much due to my inability to produce a "complete" diagnosis, but in not being able to say and to clearly demonstrate where I was having difficulty, such that this could be explored and we could look for solutions to my problem. The key was not therefor my "production", but how I managed non-production, not knowing, unsureness, or lack of confidence. It is with the naming and reframing of these real problems, and of my role and approach to learning, that we would finally be "freed" to move on and to design and explore new, more Model 2 strategies and avenues to

effectiveness. The following section of our lengthy dialogue demonstrates how this breakthrough in my learning slowly unfolded.

Actual dialogue	Researcher's comments
FRED: I'm not sure I know where your going with that...I mean what you just said describes what you've done so far. Like organize the data...(explains) Right?	Fred begins to confront Sue about what he interprets to be "face-saving" strategies, and begins to push her to share her reasoning for using these
SUE: Yup.	
FRED: So I understood what you've tried to say?	
SUE: Okay.	
FRED: Why were you saying that then? It sounds like your trying to justify or explain something.	
SUE: No, I mean I think I need to have all the data out and this is how I put all the data out. Because it seems that to get a really compelling diagnosis we then take all the data, and we clean it up, and we package it.	Defensiveness?

FRED: I do the same thing...But I think what I may have done differently is gone straight into the diagnosis.	Proposes what might have been a more effective strategy, i.e., to immediately produce her diagnosis
SUE: Yeh. Okay.	
FRED:...So I was waiting for you...to go to your diagnosis. You know, what's the problem here, as you see it...I assumed you'd done the work. I'm waiting to see. I mean maybe how you'd organized it was especially significant in some way. That it would lead somewhere. So I found myself initially...getting irritated.	Shares how he was thinking (his left hand column), and the frustration and irritation he was feeling about Sue's actions
SUE: (mumbling) So where's your diagnosis. (later) RON:..So in a sense a diagnosis is when I can name what the problem is, as opposed to the whole process of getting to naming it...(later)... in a sense it seems to me all that we've been doing so far is part of the diagnosis. When I said, "So what's	Also shares how he had been thinking and feeling about Sue's intervention

your diagnosis", I expect you to give me the finished part ...as opposed to, "this is what I did". In as sense what you did all the time...is diagnosing. Rather than the diagnosis.

SUE: Yeh.

(later)

FRED: And in a sense it's interesting because we see something about how you organize the material to get somewhere in making sense of it.

Is he "saving" Sue somewhat, in validating her ineffectiveness by saying that even if she didn't produce what she was asked to, it was interesting to here about how she went about interpreting the case

(later)

SUE: See to me the big problem, and it was the same in all of these cases, was getting a really clean statement of what the diagnosis is. That's a big leap...And part of it is...I'm not sure if I've figured out all this information. And I'm not sure that I have all the pieces? I kind of get inklings of what the diagnosis is...

Begins to explain where she thinks she got "stuck" in doing the diagnosis

FRED: I want to give you a heuristic

SUE: Okay.

FRED: The heuristic I would give you is, go where it makes sense, and work as far as you can...And not worry about whether you've got it all...you'll rework it...Clarify your diagnosis...	Proposes a strategy for getting "unstuck" (teacher role)
RON: I state it a different way, but I think it's essentially the same thing. Go with it, recognizing there are places where you are less sure. Places where the data isn't clear, it's ambiguous. In a sense just flag those and say, "Well I think it's going this way but there's not a lot of data to support it". And in essence I think we need to recognize...where we feel more or less confident. Tentative versus strong, or whatever, in our diagnosis. Continue?	Presents another framing of the strategy (heuristic) that Fred has presented, and elaborates adding that Sue needs to identify and "capture" more clearly where she is having difficulty (So that they can work on these problems, and help her out of her difficulty)
FRED:...So the piece you added was, also flag where there is..	
RON: Where you think you're making bigger jumps.	

FRED: Yeh, make a note of it, and leave it...and keep going...And the final heuristic would be, and there'll be incompleteness...

RON: The other thing is, I don't know that you didn't keep going. That somehow the implication is that you stopped someplace...I have no evidence that you stopped going, it's just that you got concerned about trying to build it so that it was tight, or something like that.

They begin to try to expore Sue's problem, and her reasoning about "incompleteness" of her diagnosis

SUE: Well, like I said at the beginning, that...I didn't feel it was complete.

Begin to retrieve data about this

FRED: You started off that way, right at the beginning. It was almost your first sentence.

SUE: Yeh. Yeh.

FRED: An Argyris intervention is; "what's the function of that?". Let me

Uses a prototype intervention in beginning to try to diagnose what

be stronger. Is that self-deprecatory, or protective in some way? Were you saying...It would now be a hypothesis,... "I'm now being evaluated, but hey you guy's...don't be too rough on your critique", or something?	might have lead Sue to act as she did, i.e., anxiety about evaluation
SUE: Hmmm. Maybe. I'll have to think about that. But it's not complete. I mean I don't have a clear diagnosis.	Not sure if she agrees Defensiveness again?
FRED:...Oh you don't have a clear diagnosis?	Again confronts Sue about whether she has been able to produce a diagnosis (incomplete or otherwise)
SUE:...Not that I'm completely convinced of...	No clear answer (self-protecting?)
FRED: But you do have a diagnosis.	Again confronts her
SUE: Somewhat.	Still no clear answer
FRED: Somewhat. Okay. So, I would say...it <u>is</u> a protection in a sense of "this diagnosis, I am not happy with". Is that what you are	Gives his judgement that her strategy is a self-protective one, and begins to explain

saying, "I have the diagnosis. I am not happy with it?".	
RON: Why is that protection though? That's the question.	Asks Fred to elaborate on his reasoning about Sue "self-protecting"
FRED: Because I didn't hear all that. I heard, "It's incomplete. It's confused"...	Begins to explain more about how he had interpreted what Sue had said
SUE: Yeh. Yeh. Okay, after going through the mapping that I got through, I ended up with something of a better picture of what the problem is. But I don't know that I have enough...data that I can put that diagnosis out on the table that would be convincing...I still have a problem connecting it up, you know?	Tries to further explain where she thinks she got into difficulty in producing a compelling diagnosis
(later) ...Because maybe I still have questions about what a complete diagnosis is.	Also says that she may lack understanding of the criteria for "completeness" in a diagnosis
FRED: You're still saying "maybe"... You're the one saying, "I don't know if this is okay". Well I'm asking you;	

"what is it...that you don't know about". Because I would say, "Put that forward". Say, "Here is what I know. Here is what I don't know. What do you think about this?"...	Advocates that Sue needs to give them more specific data and information about where she is having difficulty, and be open to them exporing and working with this
SUE: Because that is what it is. There's pieces of information here, I don't know what to do with, but I have an inkling that they are part of the picture.	Returns to explaining her problem with completeness, but on an abstract level with no illustration
FRED: What I'm hearing as I sit here is, the sentences at the beginning: "This is incomplete. I'm worried." And I'm saying, "Okay, terrific...I hear it". Period..My alternative is, "Here's what I feel confident about. This is my understanding. Here is what's unclear, and here are the reasons	Confronts Sue on her tentativeness and unsureness, and presents her with an alternative strategy, i.e., of more clearly stating what she knows and she doesn't know, and why
SUE: There's some pieces that I understand. And there's some other pieces...	

FRED: ...State what you're clear on and state what you're unclear on. And that means work. And that's an interesting problem. What's making it unclear, and can we help focus in on what it is in your reasoning or our reasoning that can get you out of that. I think it will move it faster... (TDW, 169-175)	Repeats the alternative strategy, and advocates that this might help them better help her manage her problems, and her learning difficulties

One consequence of this confrontation was that I appear to have begun to reframe and change my definition of "competency", and I began to publicly share where I was having difficulty. I also more actively assumed a role of student/learner and willingly began to accept the help, assistance and guidance of my two "experts", in trying to find solutions to my problems.

What soon became clear was that one of my problems as a learner and practitioner was my overall approach to doing diagnoses. It appeared that to date my strategy had been to take my sometimes intuitive sense of what a problem might be, and then try to find some concept or label to "name" this problem. It was only then that I would look for concrete data to support my argument. I had experienced limited effectiveness with this approach particularly since I still did not yet have a full enough understanding of all the possible concepts and/or ways of framing problems in diagnoses, and my interpretations were often unclear, abstract, and weak in supporting data. I was not, therefor able to "capture" the central problems in a case, and articulate them in a clear and compelling way.

Once we were able to identify this problem in my approach to diagnosing, we began to look for experiments and different techniques and strategies that we could try "on-line" for increasing my effectiveness at building a more satisfactory diagnosis that was clearer and more connected to the available data in the case. In our process of looking for new avenues for increasing our effectiveness we were also quite rigorous in discussing and assessing whether, and which of our desired ends and/or objectives would be best met by each new approach put forward.

One strategy which was proposed, was to have me work through the case, adding a right hand column in which I would insert my interpretation of each sentence. This would provide all of us with an explicit window on my reasoning and would thereby better enable us in identifying where I may be making judgments or evaluations that were inaccurate, too abstract and/or not supportable by data. After some discussion exploring the rationale for using such a teaching/learning strategy, I willingly accepted to do it, and It proved to be highly effective in helping me see where I had gotten into difficulty initially, and in building a more compelling diagnosis. The dialogue below demonstrates this process of me beginning to publicly discuss my problem, and the proposal of, and me beginning to try out this new experiment/strategy.

Actual dialogue	Researcher's comments
SUE: (496)...You see this is where I'm running into trouble getting the data to connect with what I think is happening...(Goes onto explain her interpretation of a dilemma that she sees in the case, and Fred frequently intervenes to ask her for more	Begins to more clearly demonstrate where she is having problems Advocates and illustrates from the case

information about her interpretation, or clarification of her hypothesis)...

FRED:...Well you're saying, here is where you...admit difficulty connecting data with concepts. Now, "polarization" is a concept, and...you can connect that up.	Continues to push her to share her reasoning Offers her another way of working with the data and interpreting the case
SUE: Yep.	
FRED: Now something that you call a defensive routine. What do you call a defensive routine? Can you connect that up to data?	Asks her to illustrate
SUE: I thought 17 and 18...(reads).	Does so
FRED: So "defensive routine" means what here? What does she do?... What makes that a defensive routine? Your using a concept from Argyris, right...?	Pushes her to further explain and demonstrate her reasoning
SUE: Yeh...(Goes on to try to retrieve her reasoning about her diagnosis, and some problems she has with	

connectability to data...)	
FRED:...(after verifying his understanding of what she has presented so far)...The "defensive routines"...You used the concept here, so I wanted to know what you were connecting it to. And I don't see that yet...Argyris has a very specific definition of defensive routine...(recalls that).	Again pushes her to explain her reasoning about what she has diagnosed as "defensive routines" in the case
SUE: You see I'm picking up on the terms, because part of it is, not being as familiar with the terms to figure out what the right label is to put on this (laughs).	Publically acknowedges and explains her unsureness
FRED: Then I'd say, "Don't use the term until you think you're clear on it. Or check it out.	Offers her a different strategy for dealing with this unsureness and not knowing
SUE: Yeh. Ah ha.	
FRED: (later)...I'm saying, you're way up the ladder...bring it down the	Another strategy (Actively "coaching" her)

ladder. And when you bring it down the ladder you say the way she is talking... characterize the way X is talking...that leads her into difficulties. Then if you want to slowly go up the ladder, we can try and do it... But you went up the ladder and said I'm having difficulty connecting it.

SUE: Yeh. Yeh.

RON:...Can I suggest an experiment?...the experiment I suggest is to add a right hand column, which is how do you interpret the sentences. To go through the sentences, sentence by sentence, and add, the way Argyris does it...He puts the dialogue down in the left hand column, and puts the interpretations on the right hand column. And I want to suggest that we do that, with this dialogue now, as a way of keeping whatever we want to say about it connected sentence by sentence.

Proposes another experiement which is designed to help Sue get closer to the data in the case

Suggests that they try this strategy (Is this moving the focus away from Sue producing?)

FRED:...I infer that you suggesting this intervention as a way of facilitating connecting the sentences, the dialogue, to the concepts?	Shares what reasoning he infers from Ron's suggestion
RON: Not so much to concepts as, I think we all will be better served, particularly Sue might be. There's 2 strategies, one is I want to...personally go through and see what meaning would I attach to each sentence. As a way of trying to be helpful, I want to see what meaning Susan attaches to each of the sentences...	Clarifies and expands on his suggested strategy, and how he thinks it could be a helpful one
FRED: And what I want to do is...flag the interventions we make that are helpful or not helpful in pushing the inquiry and the training further. It seems we've done a couple and this seems to be another item. One is organize the data. Two is connectability to concepts...Third...the heuristics. Those are all little pieces. (lengthy discussion follows about rationale for this approach over	Says that he would also like them to be more rigorous about "capturing" those teaching interventions that are helpful and not helpful

others...)

RON: Cause you see I think that...you can put lots of meanings on sentences. I think it will be interesting for us to look at what kinds of meanings we would attach to these sentences...So can we go through the dialogue that way?... Sue state what meaning she'd attach, and then we could add or subtract, or clarify, the meanings we'd attach.

Goes back to discussing the strategy that he has proposed

FRED: I'd like to suggest that that's something you could do. I'd like to suggest that you (Sue) continue with the diagnosis rather than us shifting to we do it. And see where you go with it.

Explicitly states that they need to stay focussed on strategies for helping Sue to learn, and on her production of a diagnosis

SUE: Hmmm...

FRED: I want to focus on Sue doing the diagnosis and us working with her and helping...(later) So you'd have to say...if you feel that's helpful or not.

SUE: I think this might be helpful because...it might help me understand where I'm getting in trouble...

(Group then begins to do this experiment with Sue sharing interpretation of one sentence and others then commenting, and discussing at length, sometimes building connections of interpretations to diagnostic classifications, and theory. Continue doing this for some time, but occasionally slip back into "collaborative" working mode, with either Ron or Fred giving their interpretation first).

She advocates that she thinks that Ron's proposed strategy may be helpful to her learning, and they go on to trying it out

Difficulty "hanging tough" in teacher and learner roles

FRED: Okay, I want to suggest stopping and see...does this help you now to do what you wanted to do and connect to data.

SUE: Yeh. Yeh.

Suggests that they reflect on the effectiveness of the strategy they have tried

They begin to do this (i.e., reflect on their action)

FRED: Connect to concepts...Rather

than continuing, collaborating like this. I want to go back to your issue of connecting to concepts...Or do you want to continue?

SUE: Well if I connected to the "polarization" concept then I could draw on...(goes directly to data in case and walks through making connections to theory on-line)

Sue goes on to demonstrate successful application of the new strategy
Producing!

FRED: I would agree with that. Now is that characteristic of the dialogue throughout now?

Continues to push her to share her reasoning

SUE: Yes, I think so...except in 20...well it might be useful to keep going a bit.
(Group then carries on working through the case, line by line, and Sue sharing and discussing her interpretations and how she is reasoning about case. Occasionally they leave this teaching mode and shift to Ron or Fred discussing and debating their diagnoses, or particular

terms or theoretical concepts they have used)...

(later)

RON: So, do you think you have a diagnosis?

Verifies whether Sue now feels that she has a diagnosis

(TDW, pp.175-182)

For the remainder of this session we focused on evaluating and reflecting on our actions over the two days. We summarized some of the most important learnings and insights we had gained, and we would revisit these several times during follow-up discussions in Phase 2 of the project. I had clearly made significant breakthroughs not only in building my diagnostic skills, but also in learning how to learn and becoming a more Model 2 practitioner.

I propose that one of the reasons I was able to make significant advances in my learning during this session, was that the events leading up to the experiment had put in place some important new conditions. Firstly, we were not satisfied with our effectiveness to date in achieving what we had set out to achieve, and had all expressed this publicly. Based on follow-up discussions, it is also highly probable that privately we had all begun to question the overall approach we had been using, and the relaxed collaborative stance that we had taken to date in our work together. My dissatisfaction with my level of competence in performing my role effectively as a team player, in producing diagnoses, and in becoming a more "Model 2 practitioner" had become highly uncomfortable, and thereby likely created a particular "readiness" for learning and for change. Our public inquiry and discussion had given me a new perspective on the nature of my learning dilemmas and problems in producing diagnoses. And finally, we had all

explicitly agreed, and made the commitment to being more rigorous in reflecting "in-action" on our reasoning and our actions as teachers and learners.

With these new conditions in place, we took a "risk" and tried a new teaching/learning "experiment". The experiment forced me to confront my fears, and publicly "produce" and demonstrate what I did and didn't know. I also shifted my "self-frame" and actively became a student/learner, as Ron and Fred more actively and explicitly became teachers/coaches. Once we made this shift, and once my difficulties and dilemmas were clear, we were "freed" to experiment further with other new strategies, and hence continued to increase our effectiveness in achieving the goals and objectives we had set out to achieve.

I propose therefor the following theory-in-use proposition to describe what occurred, and the consequences that the experiment produced.

SITUATION OR CUE

When, as a result of doing the experiment, I publicly demonstrate both my incompetence in performing the task (i.e., I cannot produce a complete diagnosis), and unsureness, lack of confidence, and strategies of defensiveness, avoidance, and face-saving.

And when Ron and Fred are "tough" on my reasoning, and publicly confront me about the ineffectiveness of my reasoning and my strategies, and what they interpret to be the negative consequences of these. This leads to the following:

REACTIONS AND ACTIONS

I begin to overcome my fear and recognize my errors, and I "drop" the role of equal partner and become a student/learner (I shift my role-frame at a fundamental level).

Ron and Fred more actively assume the roles of teachers/coaches (They also shift their role-frames) , and they begin to design more experiments and new strategies for resolving my problems and overcoming my ineffectiveness.

I become more willing to explore my ineffectiveness publicly, recognize and come to better understand the consequences of my "production fear cycle", and I become more willing to experiment (i.e., take "risks") with new strategies and approaches to resolving my problems and increasing my effectiveness.

AND THE CONSEQUENCES OF MY THINKING AND MY ACTIONS ARE:

1. My learning is "double-loop", and I change at a fundamental level my theories-in-use about learning, about diagnosing, and about competency (i.e., I become more Model 2 in my thinking and my actions).
2. Ron and Fred also change their theories-in-use as teachers/coaches (and increase their effectiveness).
3. I learn more effective strategies for doing diagnoses and presenting these in a compelling way.

In later discussions assessing the effectiveness of the experiment(s) undertaken during this session, we agreed that being "pushed" to get my production out, was what had most helped move me forward in my learning. This enabled us to not only see my errors, but also helped to more quickly

surface the Model 1 issues or dilemmas I was "stuck" in. We also agreed that in trying out some of the new teaching strategies, Ron and Fred had been "tough" on my reasoning in a way that had been different from previous sessions. The experiment for example, of having me go through the case line by line and giving my interpretations of each line, provided a "window on my reasoning" through which they could see and challenge where I had been making inaccurate or unillustrated judgments, assumptions, or evaluations. While this "toughness" had clearly been helpful to my learning, it had also at times been difficult for Ron and Fred to stay in this new stance. This challenge of "hanging tough" in new roles would continue in sessions which followed this episode, and in which we all tried to integrate our new theories of practice into our work.

So in summary, the importance of this episode in our project, was that for me as a learner it finally surfaced, made me confront, and built my awareness and understanding of my "confidence/competence" dilemma (Chapter 9), and my "production fear cycle" (Chapter 10) such that I could be helped to begin defining and designing ways of breaking these and becoming more effective in my practice. What had also been critical was the breaking of a series of unproductive frames about my role and responsibilities as a "team player" on the project, about competency and competent behavior, and about what kind of "hard work" I would need to do if I was to learn most effectively. It would therefor pave the way for me beginning to put in place new theories-in-use in future. I had confronted my fears and my incompetence, had my image of the "ideal" team player shaken, and I had new perspective on "learning how to learn". I had thereby taken a major step on my road to Model 2.

CHAPTER 13

ROLLING ALONG TOWARDS NEW HORIZONS: TRYING OUT NEW FRAMES, NEW STRATEGIES, AND NEW BEHAVIORS

This is the final episode and final chapter of my story. It took place during the last three workshops in Phase One of our project. If the focus of the previous chapters has been on understanding and diagnosing the counterproductive (i.e., Model 1) features of my thinking and actions as a learner and a practitioner during our project, the focus of this episode is on summarizing how these learning's and insights contributed to changes in my future reasoning and actions, and to my becoming more Model 2 in my practice as an action scientist. The episode is also about the hard work of integrating deep and lasting change in one's theories-in-use.

Both our overall approach and the focus of our activities shifted in these final training and diagnostic workshops. We had learned that if we were to be more effective learners and teachers, we would have to be more rigorous about "capturing" critical incidents and issues as these occured. Not only would we need to be doing more reflecting "in-action" (as issues arose), but we would also need to be more disciplined about recording our insights and learning's, so that we could have more concrete data to help us in diagnosing and reflecting actively on our action in the future. I had also learned that my learning would be better served, and I would show myself to be a more competent (i.e., Model 2) practitioner if I would more readily share and support with concrete data exactly where I was having difficulty, where I was "stuck", or simply where I was unsure. I would need to actively participate (versus being

silent), and not be fearful of making errors. And I would need to be more flexible in my role on the project, and where necessary assume a more "dependent" student role when I needed help from those more expert than I (i.e., Ron and Fred).

At the same time as we hoped to be more rigorous, and more readily put in place new strategies to facilitate my learning and to increase our understanding of the overall process of teaching and learning diagnostic skills, we were also conscious that there was limited time left for us to finish diagnosing our cases under study. We were reluctant to let go of the other objectives on our project, i.e., of learning more about the diagnostic process and the building of compelling diagnoses, producing a casebook, etc. So while we did in fact show a new rigor, and changes in our practice as teachers and learners during our final three training and diagnostic workshops, our concern with limited time and our other project objectives did present particular challenges to us "hanging tough" with our new roles and in trying to integrate new theories-in-use.

In an effort to better integrate our new insights and learning's, we began session ten with agreeing to try out a strategy which Ron had suggested in our last meeting. This new strategy was for each of us to tell a story about our key learning(s) and insight(s) from the incidents and events "the experiment" episode. My reactions and subsequent actions in response to this suggestion, show a very different pattern of behavior from that of previous sessions. Rather than avoiding "production", this time I demonstrated not only a readiness, but even and eagerness to be the first to share my story. I was very candid and open about sharing my recollections of those incidents and events which had been important and significant for me. I also frequently cited specific dialogue

(i.e.,explicit data) to demonstrate or support my hypotheses, as the following intervention demonstrates:

Actual dialogue	Researcher's comments
FRED: What were the critical learnings in your story?...	Asks Sue to begin sharing her story
RON: ...What have you learned about diagnosis, what have you learned about learning to diagnose, what have you learned about the difficulties in being taught diagnosis, or teaching diagnosing, or producing? Any of those would be interesting...	
SUE:...In listening to the tapes, what I felt again but even more strongly, was how much learning happened in that period of time...how significant those six hours were...I did alot of thinking about it...I think it started with...the end of the first day when the experiment was proposed, and there was a whole period of...Fred and I negotiating, with Ron intervening and asking questions, pushing you (Fred) to give more justification or rational for why we should try the experiment. And...I	Advocates importance of last session to her learning. No illustration of what her learnings were. Begins to try and publically retrieve and share what she remembered to be the events which took place. Data is abstract (i.e., does not specifically define and illustrate such attributions as "negotiating", "pushing", etc.)

was really aware at that time of how fearful I was. That underlining alot of this negotiation that was going on, and this front that I was putting on...was this fear of being put on the spot. This fear of being evaluated...	Shares her "left hand column" i.e., her feelings of "fearfulness" of evaluation which were witheld at the time.
And at the end of that discussion one of the last things that Fred said, which stuck with me was: "Let's get over this evaluation stuff". He put out on the table what I was having a really hard time just putting out clean on the table. I <u>was</u> fearful of being evaluated. I was fearful of suddenly the focus being on me, and having to prove how much I'd learned... Because I was having a really hard time framing it differently	Retrieves specific data about an intervention (action) made by Fred, when he publically confronted Sue about with her "fear of production".
from that...And then...having that night to think about it, and going into the experiment the next day having rationalized: "Now don't be silly (laughs). I mean this <u>is</u> really silly. I feel comfortable, and there's things I don't know, and there's things that I	Continues to share her subsequent reasoning about this fear of production and evaluation, and her difficulty in dropping this "frame" Shares strategy of witholding fear and anxiety, thinking alot about it, and working in private on letting go of this through "self-talk".

know. And...I remember saying (to myself): "This will be a good learning experience for you Susan. Get in there!" And how quickly though I translated things as being attacked...I listened to myself on the tape...to what later got labelled..."hedging"... Why are you telling all these long stories? Why don't you just get to the point and put the diagnosis out, or say: "I know this and I don't know this". It's facinating...because my whole approach is: "I want to show you how much work I did. Here's how I thought through this whole thing..." And then at the end I would be able to say; "I did all this work...and this is what I think I know and this is what I'm not sure about." But I couldn't get at putting that out, because for some reason it was showing an incompetence or whatever. You know, I should have been able to diagnose this. I mean after all these months I should have been able to come up with a more complete

Labels one type of behavior and begins to illustrate.

Shares surprise at her own reactions, actions, and defensive routines during the session.

Tries to give reason to her strategies and her actions .

diagnosis. So that was very significant for me. And when I listened to...how I dealt with this, even things like my tone of voice...I can hear my voice tightening up: "Yikes, I'm in trouble! How am I going to get out of this!" (laughing). I realized that that was a really important phase for me to go through. I'm aware that there's still alot of things that I don't know. I still have some big questions about areas that I have to learn more in terms of diagnosis. But I think I've lost that the fear of putting out on the table: "I don't know this. I'm lost here."...And also feeling confident about the things I do know. Because...In the case there was a lot of very good things that I had diagnosed, and I wasn't trusting myself in fact. Part of that whole judgement or evaluation anxiety was that I couldn't trust myself...And how much that was blocking me. The experiment then was significant in unblocking me, or at least starting the

Advocates that by increasing her awareness of her fear of production and her competence/confidence dilemma, and publically confronting these, she believes she has been able to "let go" if her fear of publically demonstrating her "incompetence", and has increased her confidence and her trust in her knowledge and diagnostic ability.

Shares her reasoning about how the experiment had contributed to her learning by starting to "unblock" her

process of unblocking. Putting out competencies and incompetencies and questions. I think too that...the big block for me...I spent a lot of time thinking about the working relationship, and how it had been really comfortable to have a collaborative working relationship. But in fact I needed to be "pushed", and the experiment pushed me...For me the collaborative approach was very comfortable. It was very "safe". I could participate when I wanted. And so I wouldn't push myself any more than I had to. I wouldn't take any more risks than what I was really sure of. And the experiment pushed alot of those thinkings back...Ron made the comment that: "I think we could have done this experiment six months ago. We probably would have found it as productive." I think I agree. I think that in terms of learning how to diagnose...yeh, we could have done it a long time ago...
(TDW, pp. 192-195)

problematic strategies and behaviors of witholding, fear of production and demonstrating her incompetence.

Also advocates that they had been operating in a collaborative working mode which had not been helpful to her learning (and begins to illustrate why), and that the experiment forced her into a different (a more productive) kind of working relationship.

Retrieves actual data about what Ron had said.
Agrees with Ron's hypothesis that the "experiment" probably could have been a useful strategy to have tried earlier in the project.

In the interventions that followed, Ron and Fred continued to focus on my story, and "pushed" me to elaborate upon and clarify my reasoning about my critical learning in the experiment. They were also "tough" on my reasoning, frequently challenging this and/or asking me to connect my hypotheses to actual dialogue or events (data). Eventually we were able to build a very clear diagnosis of the critical events and my critical learnings during "the experiment" episode. These have been discussed in the preceding chapter.

So, from a theory-of-action perspective, in beginning to tell my "story" I did demonstrate more Model 2-like behavior. It is clear, that at least in this first followup session, I had dropped my fear of production, and I appeared to be working with a new frame about competency whereby I was more readily sharing my reasoning and my hypotheses about my actions and my strategies, so that that Ron and Fred could challenge and/or explore these. In making my evaluations and attributions, or in presenting my hypotheses, I was also more rigorous about illustrating these with testable data (i.e., my recall of actual events, actions, or things that were said). I was putting my thinking, my reasoning, and my errors out on a public stage so that we could work on diagnosing these together, in making sense of what had taken place for me during this learning episode. Throughout the telling of my story, I also appeared to be quite comfortable in my new "student/learner" role, and in working with Ron and Fred in their "teacher/coach" roles. I also demonstrated new insight, and a new skillfulness in diagnosing the events that had taken place.

So it is clear that in our tenth meeting, in followup to "the experiment" and the learning that stemmed from it, we were quite effective at "hanging tough" with our new theories-of-action as teachers and learners. Our new strategy of me telling a story about my learning had also been a useful one.

We had all learned more about teaching and learning through further analysis of the critical "experiment" episode, and I had the opportunity to further develop my diagnostic skills by once again putting out my "production" in a public forum, and working with my coaches in building a more compelling diagnosis. I also had the opportunity to directly test and try out my new theories about being a more effective learner, ex., to take risks, produce, not be fearful of making errors, let go of the "equal colleague" role, etc. Having recognized the value of using stories to help us better "capture" and record some of our insights and learnings of the preceding months, we ended this session agreeing that we would close the first phase of the project by each writing, over the summer months, a reflective story about our learning in the three main areas of focus in our research. My story, which would be the beginning of this work, would be about significant insights and episodes in learning to diagnose. Fred's story would be about teaching diagnostic skills. And Ron's story would focus on insights and learnings about diagnosing.

We ended our meeting also recognizing that the end of this phase of the project was looming ahead of us, and we had limited time left to complete our work and to meet our objectives. This time pressure meant that there were choices to be made about what we wanted to do and how. The time we had spent on doing, and then assessing the "experiment" episode and the events surrounding it, had taught us a great deal about my process of learning diagnostic skills, and how this could be better facilitated. This had also given both Fred and I a lot of data to begin the summer project of writing our stories about teaching and learning. But we still had produced a relatively small number of case diagnoses over our six months of work together. Because of this, with Ron's suggestion, we decided to use our remaining two sessions to work on diagnosing as many cases as we could.

As a final hypothesis, I propose that the choice that we made to focus on "production" (i.e., of case diagnoses) both helped and at the same time hindered our learning and our effectiveness. The strategy was a helpful one in that we were able to produce a sufficient number of diagnoses so that we could meet the project objective of compiling a useful and varied "case book" of write-ups of diagnoses. It also allowed us, and particularly me, to build diagnostic skills through repeated practice in applying those skills. And finally, it provided a forum in which I had to continue "producing" and demonstrating my competence or incompetence for public scrutiny and reflection. On the other hand, I believe that the data shows that it also hindered our learning by frequently deferring our attention from consistently monitoring how well we were putting to the test our new theories of practice. While we successfully produced two very compelling diagnoses in our last two work sessions, and we were able to develop yet another new strategy to facilitate my learning (i.e., designing interventions which could be used with the client who had produced the case), we did have difficulty consistently implementing and monitoring our new theories-in-use. What proved most challenging, was the tendency to slip back into our collaborative mode of working versus "hanging tough" (as we termed it) in our new roles of teacher/coaches, and learner. To support this hypothesis, I will focus on one diagnosis (Red's case) which we did during our eleventh session.

At the end of session ten I responded to Ron's proposal that we work on diagnosing the remaining five cases which we had, by offering to present my diagnosis of the first of these in the next session. I thereby again showed my willingness to repeat "the experiment" strategy by again producing a diagnosis that we could publicly assess and work on.

Actual dialogue	Researcher's comments
RON: I want to suggest a strategy... Since the part of this I want to write up has to do with diagnosis of these cases, I would like us to try and visit all of the cases, however briefly. That would help me in terms of writing up diagnoses for the paper. What would help you in terms of learning to diagnose?	Proposes new strategy of trying to produce diagnoses of remaining cases. Advocates that this strategy will be helpful to him achieving his goal of writing up his paper on diagnosing. Verifies with Sue what she thinks would be helpful to her learning.
SUE: Well probably doing at least one other experiment. I mean I would like to present, out of the five, at least one diagnosis. I'd like to do that. That would be helpful.	Advocates that another "experiment" with her producing and presenting a diagnosis would help her learning.
FRED: What would you chose.	Invites Sue to select a case to work on.
SUE: Ah, "Red". I looked at that this morning so that's the one that's fresh.	Selects a case
FRED: Good. Red will be the first one we'll do on the 23rd. Is that okay? (TDW, p.200)	Verifies understanding that Sue will work on diagnosing "Red's case" and present this in their next meeting.

In my presentation of the diagnosis when we next met, we were initially very rigorous about monitoring and reflecting-in-action on how we were going about facilitating my learning during the session. Our working mode of looking for new and more effective strategies also continued. Fred for example, made a suggestion at the onset of the session, that we try another experiment of me not only sharing my diagnosis, but also designing interventions that I would use with the client in presenting this diagnosis. When I initially responded to his suggestion with my now-familiar strategy of "hedging" and unsureness, we were able to quickly address this counterproductive behavior and I soon moved on to trying out Fred's proposal.

But in the actual building of my diagnosis of "Red's case", we did not demonstrate the same rigor in putting to work our new theories-in-use. We had agreed that when I presented my diagnosis of a case, I should work hard at publically putting out my thinking and my reasoning about the case, and try to be concise and explicit about what I was sure or unsure about. Ron and Fred would be "tough" on my reasoning, and would "push" me to make my theories and hypothesis clearer and more connected to the available data. I would therefor assume the student role while they taught and coached me. But in fact, in our practice we frequently slipped back into the comfortable roles of "collaborators". Rather than staying focused on facilitating my building of a diagnosis, we frequently shifted our focus to Ron or Fred sharing their perspectives and their hypotheses and working with this in collaboratively crafting the diagnosis of the case. We had developed and integrated a way of working over the previous six months. Even though we had come to recognize that this collaborative mode was often not helpful to my learning, it would still

take a long time to break old ways of working and integrate the new. In our last session of Phase One of the project, Ron shared his thinking about what had happened during our work on my diagnosis of "Red's case", and the difficulty of putting new theories into practice. In Phase 2 of the project, we also frequently returned to this dilemma of "hanging tough" on new roles and ways of thinking and doing, while at the same time striving to produce diagnoses and build the most compelling ones possible.

Actual dialogue	Researcher's comments
FRED: (124)...Yesterday...you made a comment that we hadn't followed through on the experiment with Sue. Do you recall saying that?	Verifies his understanding of a comment made by Ron in the preceding session
RON: Yup.	Agrees
FRED: I'd like to talk about that...what led you to that conclusion...	Asks Ron to share his reasoning about his judgement of them not following through with experiment
RON: What we started with was Sue presenting her diagnosis...And then the mode we went into quickly... became one of, let's work with that and build it and shape it. As opposed to push it to get connected...After she presented, we switched into building it, not	Begins to share his reasoning about how they had slipped into a collaborative working mode versus staying focussed on Sue's building of her diagnosis.

into how come she built it the way she built it, and what was inadequate or adequate about the way she built it. What we did was, "let's build it". When we go to "let's build it", our mode is not teacher/learner, it's collaborator and; "anybody got a good idea as to how to make this fly?" kind of thing...In the afternoon I would describe what we did as sticking closer her interventions and how we could shape them...and I think we stuck more to the model I have for the teacher/learner...

Advocates that in afternoon their stance did revert back to one closer to teacher/coach (No illustration)

FRED:...What led you to go into that stance?...

Asks Ron to "give reason" to his actions.

RON:...I get caught up in building the diagnosis, and it's harder for me to stay in what I want to describe as teacher/student.

Begins to build his hypothesis that when the focus of their work is on building a diagnosis, it is difficult for him to work also on being a "teacher", i.e., correcting and monitoring Sue's work and Sue's production.

FRED: So that's one of your automatic responses it seems is; "let's

build together".

RON: Probably. I guess what's harder for me to stay in...is the ...correcting mode. For me the mode we've established over time, and work in most of the time is, "building it". And I think that's part of our history. These things (diagnoses) seem so hard to build. Just constructing the damn thing is a big challenge. So it's harder for me to stay in the mode of critiquing what you've (Sue) built...I get out of that mode quickly...

Advocates that this is a pattern of work that they have evolved over time

(TDW, 219-220)

But despite our ongoing struggles with integrating more effective theories of practice as teachers and learners, I did learn an enormous amount during the project, and continued that learning process over the months and years ahead. I not only increased my competence and my skill in using the theory-of-action approach to doing diagnoses, but I had very much changed my personal theories about my practice, and about competency and effective learning. Much of my learning was further developed and became more deeply engrained in my practice during the second phase of our project, and in the production of this work. In years since this project, I have also frequently had opportunities to apply my learning, and to have my theories of action

tested both in my personal and my professional life. All of these experiences have made me both more humble (there is so much yet to learn), and at the same time more sure of what I know, what I don't, and what kinds of learning strategies can help me continue to move forward along the road to Model 2. I thank the many friends, colleagues, clients, coaches, and teachers that continue to contribute to my personal learning journey. It is a long, and a fascinating road to travel...

CHAPTER 14

SO...WHAT DOES ALL OF THIS HAVE TO SAY ABOUT FACILITATING THE LEARNING JOURNEYS OF OTHER ACTION SCIENTISTS IN TRAINING?: SOME REFLECTIONS, RECOMMENDATIONS, AND CLOSING REMARKS

This paper has attempted to recreate, to examine in-depth, and to diagnose one practitioner's experience in learning the diagnostic skills of action science. Clearly, the study has limitations as to the generalizability of the findings. In the first case, it focused on the particular experience of only one learner, and certainly no two learners are alike. In addition, the case has been analyzed from a unique and particular perspective, using the approach and applying the rules and methodological tools of action science. And finally, the interpretations, re-creation of what occurred, and selection of data has come from the unique and untraditional "inside" perspective of the participating learner and her coaches.

Despite such limitations, I have attempted to maximize not only depth, but professional rigor and objectivety in my analysis. In supporting my claims with substantial data, I leave open the possibilty that others may make different observations, and draw some different conclusions from what occurred in our laboratory. I welcome, and in fact invite such new and/or differing insights and perspectives.

As a learner, educator, and scientist it is my hope that through the sharing of my experience, and the learnings and insights which were gained in my learning journey, that this study will contribute to building understanding not only about the process of learning the diagnostic skills of action science, but

also about how one might design and implement more effective teaching/ learning projects for future action scientists in training. There are no simple answers in this "murky ground". We still have so much to learn about how one comes to be an action scientist and a Model 2 practitioner. And it was the importance, and the challenge of this problem which drove this study. As Schon (1987) has pointed out:

> In the varied topography of professional practice, there is a high, hard ground overlooking a swamp. On the high ground manageable problems lend themselves to solutions through the application of research-based theory and technique. In the swampy lowland, messy confusing problems defy technical solution. The irony of this situation is that the problems of the high ground tend to be relatively unimportant to individuals or society at large, however great their technical interest may be, while in the swamp lie the problems or greatest human concern. The practitioner must choose. Shall he remain on the high ground where he can solve relatively unimportant problems according to prevailing standards of rigour, or shall he descend to the swamp of important problems of nonrigorous inquiry? (Schon, 1987, p.3)

What I will do in this chapter therefor, is summarize what were the most important issues which arose, and the most important observations, insights, and learnings which were made as a result of my particular learning journey. In light of these, I will also offer a series of suggestions and recommendations for future such projects and teaching/learning practicums, and how these might be designed so as to increase their overall effectiveness. I hope that this will open new doors for future experimentation and exploration in this area.

As with previous studies in the training of action science practitioners, our work confirmed that learning the diagnostic skills of action science is a long, difficult, and sometimes even arduous process. The training not only takes time, but considerable commitment, enthusiasm and motivation from both the learners and the educators. Since becoming an action scientist means developing a new theory of practice, this implies radical change in how one thinks and acts. It involves building knowledge and skill, but also developing artistry in the practical application of this knowledge. It also involves the willingness to publically make errors, and to take risks.

Because of this, the careful selection of participants for such a project would seem to be important. A preliminary screening of potential participants should be done in order not only to verify their motivation, commitment, availability, and interest, but also to discuss in some depth the nature of the project, the proposed objectives, what the process may involve. This study also suggests that participants should have a certain amount of familiarity with the approach and the theory (i.e.,"technical knowledge") before embarking on such a project.

While there was only one central learner in this particular project, in future such practicums the involvement of a second or third learner might be worth experimentation. At the same time the intense and complex nature of the training would caution involving too many people. It could prove interesting though, to explore how this might affect such potential learning issues as fear of production, low participation, and evaluation anxiety, and whether or not the same issues arise, or have the same significance, when the experience is being shared by more than one learner.

Another critical learning was about the importance in the earliest phase of such a project, of giving priority, and devoting significant time to clarifying, and "laying the groundwork" for the work which lies ahead. This would include:

1. Establishing objectives and priorities for the project which are clear, well understood, realistic (i.e., not too numerous or far-reaching), and attainable.
2. Clarifying the expectations of all participants (learners and teachers), which would be important not only for adapting the practicum design to best meet individual needs, but also to provide an opportunity to draw out, discuss, and explore at an early phase what may be some of the assumptions, frames, and initial conditions that each participant brings to the learning project.
3. Verifying the existing knowledge and skill level of the learner(s), so as to best determine the needs of the learner for particular resources, instruction, and/or coaching
4. Having an explicit discussion and clarifying the roles and responsibilities of all participants on the project, and what rules and norms they agree to work by. In this process it may in fact prove effective to develop some form of teaching and learning contract, which may even include an "anticipatory clause" dealing with potential problem areas (i.e., what will we do if...?)
5. Agreeing on the structure and process for working together. This may even include developing a model agenda, while at the same time agreeing that there will need to be considerable flexibility built in to allow for experimentation with new and

different strategies, tools and approaches.

6. Establishing clear means and mechnisms for the ongoing monitoring and evaluation of the learning, the process being used to facilitate this, and whether the overall objectives of the project are being achieved.

So what I am suggesting is that in the first phase of the project, the criteria and terms of reference for working together be explicitly discussed, clarified, and agreed upon. It would also be important to record these since they would also provide the framework for monitoring and evaluating the overall effectiveness of the project.

Once the groundwork for the project has been laid out, then comes the challenge of creating the most effective learning environment. In this particular project, the acquisition at an early phase of concrete technical knowledge, for example, seemed to be a critical prerequisite to building skill and artistry in diagnosing. It seemed also in this case to contribute to building learner confidence. This means ensuring that the learner has developed not only a good general knowledge and understanding of the theory, but also has a level of familiarity with the diagnostic tools, concepts, categories, prototypes, models, the coding of cases, etc.

I have previously suggested that there should be an assessment of the learner's level of knowledge in the earliest phase of the project, since this would help to clarify individual needs for particular resources, information, etc. But I would also recommend that the learners receive an extensive bibliography and selection of readings and resource materials at the onset of the project. During our project we also frequently discussed the value of a "casebook" of diagnoses, which would provide models of different types of

cases, and ways of presenting and writing up diagnoses. I believe that such a tool would be an invaluable resource for any action scientist in training.

With regards to the overall structure, content, and process of the training workshops, this study certainly showed that this type of learning is intense and complex. My particular experience would also seem to emphasize the importance of balance of not only "content" learning, but also "process" learning. Content learning would focus on such things as the development of theoretical and technical knowledge and understanding. Process learning, on the other hand would deal with such things as the emotional, and sometimes difficult aspects of "de-skilling", "re-education", the development of a new theory of practice, and practice in applying new skills, knowledge, and artistry. It would also involve such things as the building of trust between all participants in the practicum.

The study also demonstrated the importance of balance of the learner's action and reflection time. In my experience emphasis clearly needed to be placed on "producing", and publicly demonstrating and trying out new knowledge and skills (and overcoming silence). At the same time, private reflection and study time seemed to have been extremely important because of the depth and the intensity of the learning, and to integrate and process this.

The design of a learning practicum must also meet the challenge of respecting each individual's rhythm and personal readiness for learning and change, balanced with creating conditions that will push this readiness and the risk-taking necessary to advancing learning. This study certainly supports the argument previously discussed, that humans generally tend to not only resist change, but in fact need to repeatedly fail and/or see errors before they will begin to design and try out new ways of thinking and acting. Clearly then, the practicum would have to allow the time and the place to make errors, learn

from these, and then evolve and experiment with alternative ways of thinking and acting.

Finallly my experience seemed to emphasize that learning is maximized when tools and mechanisms are in place for not only "capturing" and recording critical issues, incidents, and learning's as these arise, but also diagnosing these "on-line" as they arise, or shortly thereafter. Also, having processes in place for the ongoing monitoring and evaluation of the overall effectiveness of the project, better enables the participants to detect and correct errors as these occur. A learner's reflective journal is one important tool for not only recording incidents, but also for reflection-on-action and the building of a valuable data base. But there must also be in place ways of best ulitizing such a tool and valuable information, and for capturing, recoding, and diagnosing critical events and issues as they occur in sessions

Based on these observations, insights, and learnings I would go so far as to suggest that a typical practicum workshop should at minimum contain the following elements:

1. A "check-in period" when all participants would have an opportunity to share any between-session learnings, insights, etc. which they may have had. This may also be a time when journal entries could be shared, as well as new information, resources, etc.
2. A period of working on a case diagnosis. This should emphasize maximizing the involvement and the participation of the central learner, and the building on both technical knowledge, as well as skill and artistry. The focus would be on diagnosing the case under study, while also monitoring and "flagging" any critical issues or events which might occur.

3. A period of active "reflection-on-action" where the focus is on diagnosing the effectiveness of the strategies for teaching and learning. This could occur either during the case diagnoses or immediately following this.
4. A closing summary evaluation of the workshop, the process, and the learnings, in order to monitor overall effectivenss and find the best means of maximizing future learning.

I am uncertain about the extent to which my experience and my findings will be generalizable to future work in the training of action scientists. Nonetheless, I sincerely hope that it will provide some new perspective and insight into the complex process of learning the skills and artistry of action science. It is also my hope that by sharing my learning experience in the form of an in-depth case study I have made a useful contribution to the rather limited bank of information about teaching and learning the diagnostic skills of action science, and that future teachers and learners may benefit in some way from this. And finally it is my hope that this study will also invite further inquiry, and research into what kinds of learning environments and experiments might better facilitate the effective and efficient learning of future action scientists. We still have a long road to travel...

APPENDIX A

Calendar of Meetings Held and Data Coding

Date	Session	Transcript #	Pages
January 10, 1989	TDW #1	No Cassette	---
January 24, 1989	TDW #2	No Cassette	---
February 2, 1989	TDW #3	1	pp. 1-17
February 17, 1989	TDW #4	2	pp. 18-31
March 9, 1989	TDW #5	4	pp. 62-73
March 16, 1989	TDW #6	5	pp. 74-76
March 30, 1989	TDW #7	6	pp. 77-85
April 3, 1989	TDW #8	No Cassette	---
May 23-24, 1989	TDW #9	11	pp. 124-191
June 20, 1989	TDW #10	12	pp. 192-202
June 26, 1989	TDW #11	13	pp. 203-217
June 27, 1989	TDW #12	14	pp. 218-227
September 28, 1989	CRW #1	3	pp. 32-61
October 27, 1989	CRW #2	7	pp. 86-97
November 13, 1989	CRW #3	8	pp. 98-108
November 27, 1989	CRW #4	9a	pp. 109-115
December 5, 1989	CRW #5	9b	pp. 116-118
December 12, 1989	CRW #6	9c	pp. 119-120
December 18, 1989	CRW #7	10	pp. 121-123

BIBLIOGRAPHY

Argyris, Chris. "Some Unintended Consequences of Rigorous Research". Psychological Bulletin, V.70, n.3, pp. 185-197, 1968.

Argyris, Chris. Intervention Theory and Method; A Behavioral Science View. Massachusetts, California, London, and Ontario: Addison-Wesley Publishing Company Inc., 1970.

Argyris, Chris. "Dangers in Applying Results from Experimental Social Psychology". American Psychologist, April, 1975, pp. 469-485.

Argyris, Chris. Increasing Leadership Effectiveness. New York, London, Sydney and Toronto: John Wiley and Sons, Inc., 1976.

Argyris, Chris. Inner Contradictions of Rigorous Research. New York: Academic Press, 1980.

Argyris, Chris. Reasoning, Learning and Action; Individual and Organizational. San Francisco, Washington, London: Jossey-Bass Publishers, 1982.

Argyris, Chris, and Robert Putman and Diana McLain-Smith. Action Science; Concepts, Methods, and Skills for Research and Intervention. San Francisco: Jossey-Bass Publishers, 1985.

Argyris, Chris. "Interventions for Improving Leadership Effectiveness". Journal of Management Development, 4 (5), pp.30-50, 1985.

Argyris, Chris. Strategy, Change and Defensive Routines. Boston, London, Melbourne, Toronto: Pitman Publishing, 1985.

Argyris, Chris. Overcoming Organizational Defenses: Facilitating Organizational Learning. Needham Heights, MA: Allyn and Bacon, 1990.

Argyris, Chris. "Teaching Smart People How to Learn". Harvard Business Review, 69, (3), pp.99-109, 1991.

Argyris, Chris. Knowledge for Action: A Guide for Overcoming Barriers Organizational Change. San Francisco: Jossey-Bass Publishers, 1993.

Argyris, Chris, Donald Schon, Robert Putman, and Diana McLain-Smith. Action Science Notebook. Unpublished manuscript, Harvard University, 1987.

Argyris, Chris and Donald Schon. "Participatory Action Research and Action Science Compared: A Commentary". American Behavioral Scientist, 32 (5), pp.612-623,1989.

Argyris, Chris, and Donald Schon. Theory in Practice: Increasing Professional Effectiveness. San Francisco: Jossey-Bass, 1974.

Belenky, Mary Field (et. al.). Women's Ways of Knowing: The Development of Self, Voice, and Mind. New York: Basic Books, 1986.

Brookfield, Stephen D. Developing Critical Thinkers: Challenging Adults to Explore Alternative Ways of Thinking and Acting. San Francisco: Jossey-Bass Publishers, 1987.

Brookfield, Stephen D. "Using Critical Incidents to Explore Learners' Assumptions". In Jack Mezirow and Associates (eds.), Fostering Critical Reflection in Adulthood: A Guide to Transformative and Emancipatory Learning. San Francisco: Jossey-Bass Publishers, 1990.

Brooks, Ann and Karen E. Watkins. "A New Era for Action Technologies; A Look at the Issues". In Ann Brooks and Karen E Watkins (eds.), The Emerging Power of Action Science Technologies. San Francisco: Jossey-Bass Publishers, 1994.

Campbell, D.T. and J.C. Stanley. Experimental and Quasi-experimental Design for Research. Skokie, Ill: Rand McNally, 1963.

Diamond, Michael A. "Resistance to Change: A Psychoanalytic Critique of Argyris and Schon's Contributions to Organizational Theory and Intervention". Journal of Management Studies, 23, (5), pp. 543-562, 1986.

French, D and H. Saward. Dictionary of Management (2nd ed.). England: Gower Press Ltd., 1983.

Friedman, Victor Jay and Raanan Lipshitz. "Teaching People to Shift Cognitive Gears: Overcoming Resistance on the Road to Model 2". Journal of Applied Behavioral Science, 28, (1), pp. 118-136, 1992.

Joiner, Billy B. Searching For Collaborative Inquiry: The Evolution of Action Research. Doctoral Dissertation, Faculty of the Graduate School of Education of Harvard University, 1983.

Kemmis, S. "Action Research". In John P. Keeves (ed.) Educational Research Methodology and Measurement: An International Handbook. Victoria, Australia: Pergamon Press, 1988.

Lakomski, G. "Critical Theory". In John P. Keeves (ed.) Educational Research Methodology and Measurement: An International Handbook. Victoria, Australia: Press, 1988.

Lamming, R. and Bessant, J. Macmillan Dictionary of Business and Management. London: Macmillan Press, Ltd., 1988.

Lewin, Kurt. Resolving Social Conflicts. London: Harper and Row, Publishers, Inc., 1948.

Marasigan-Sotto. Construction of a Scoring Method for Analyzing Argyris' Theories-in-use. A Thesis presented for the degree of Complementary License in Psychology, Katholieke Universiteit te Leuven, (date unknown).

Marsick, Victoria J. "Action Learning and Reflection in the Workplace". In Jack Mezirow and Associates (eds.), Fostering Critical Reflection in Adulthood: A Guide to Transformative and Emancipatory Learning. San Francisco: Jossey-Bass, 1990.

Merriam, Sharon B. Case Study Research in Education: A Qualitative Approach. San Francisco: Jossey-Bass, 1988.

Miller, Nod. "Participatory Action Research: Principles, Politics and Possibilities". In Ann Brooks and Karen E Watkins (eds.), The Emerging Power of Action Science Technologies. San Francisco: Jossey-Bass Publishers, 1994.

Mezirow, Jack and Associates (eds.). Fostering Critical Reflection in Adulthood: A Guide to Transformative and Emancipatory Learning. San Francisco: Jossey-Bass Publishers, 1990.

Putnam, Robert W. Putting Concepts to Use: Re-educating Professionals for Organizational Learning. Doctoral Dissertation, Graduate School of Education of Harvard University, 1990.

Robinson, Vivian. On Teaching Consultation Skills. Unpublished manuscript, Harvard Graduate School, 1980.

Schon, Donald A. Educating the Reflective Practitioner. San Francisco, London: Jossey-Bass Publishers, 1987.

Schafritz, Jay M., Richard P. Koeppe, and Elizabeth W. Soper. The Facts on File Dictionary of Education. New York: Facts on File, 1988.

Schein, Edgar H. "Personal Change Through Interpersonal Relationships". In Warren Bennis, John Van Maanen, Edgar H. Shein and Fred I. Steele (eds.), Essays in Interpersonal Dynamics. Illinois: The Dorsey Press, 1979.

Senge, Peter. The Fifth Discipline: Strategies and Tools for Building a Learning Organization. New York: Bantam Doubleday Dell Publishing Group, Inc., 1990.

Smith, Ronald. Reflecting on Clinical Teaching: A Theory-of-action Approach. Paper presented at the American Educational Research Association Annual Meeting, San Francisco, 1992.

Smith, Ronald and Fred Schwartz. "Improving Teaching by Reflecting in Practice". In J. Kurfiss, L. Hilsen, S. Kahn, M.D. Sorcinelli and R. Tiberius (eds.), To Improve the Academy: Resources for Student, Faculty and Institutional Development, Vol. 7. POD/New Forum Press, 1988.

Souvaigne, E. Creating Contexts for Effective Action and the Development of Meaning-making. Unpublished qualifying paper submitted to the Graduate School of Education of Harvard University, 1985.

Watkins, Karen and Renee Rogers. "Incidental Learning and Intervention: An Action Science Study of Adult Children of Alcoholics in the Workplace". In Karen E. Watkins and Victoria J. Marsick (eds.), Sculpting the Learning Organization: Lessons in the Art and Science of Systematic Change. San Francisco: Jossey Bass Publishers, 1993.

Watkins, Karen E. and Tom J. Shindell. "Learning and Transformation Through Action Science." In Ann Brooks and Karen E Watkins (eds.), The Emerging Power of Action Science Technologies. San Francisco: Jossey-Bass, 1994.