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Action science revisited: Building knowledge out of practice to transform practice

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Over the course of 30 years, I have tilled a lot of organizational soil within the action science tradition, first under the tutelage of its founder, Chris Argyris, then with my colleagues, Bob Putnam and Phil McArthur. As an action scientist, I build theories out of practice that can be used to transform practice and the organizational context in which it is situated. To build such theories, I work with practitioners to create communities of inquiry within communities of practice by enacting behavioral norms that make inquiry more reliable and fruitful.

Action scientists use the term 'action' to signal a commitment to transforming practice through reflective internal critique, while we use the term 'science' to signal a commitment to the principles, if not the practices, of traditional social science: "responsibility to the evidence, openness to argument, commitment to publication, loyalty to logic, and an admission, in principle, that one may turn out to be wrong" (Scheffler, 1982, p. 138). This dual commitment requires us to pull from three different traditions: conventional social science, interpretive approaches, and critical theory.

Building knowledge out of practice is never easy. The practice context requires researcher and practitioner alike to give up unilateral control, to meddle in messy matters of values and ends, and to grapple with emotionally charged issues, all of them subject to competing

interpretations. Still, there's no avoiding it. These issues – and the infinitely complex contexts in which they arise – are not only relevant to practice, but the very essence of it. This chapter illustrates how, under these conditions, I used action science methods to build theory out of practice that's at once useful, valid, and liberating – the ultimate goal of any action science effort (see Table 15.1).

Table 15.1: Action science methods

A knowledge-building journey

Since first meeting Chris Argyris in 1979, I have followed in his footsteps as an action scientist, and with his constant encouragement, I have built a theory of human interaction quite different from the 'theory of action' perspective he introduced with Donald Schön in 1974. My journey began while studying Chris at work with graduate students and organizational clients. I was repeatedly struck by the level of defensiveness he generated when seeking to explain and transform behavior that prevents learning at the individual and organizational levels, a primary cause being the glaring gap between what people espouse and how people behave.

At first, I attributed the defensiveness to the practitioners' defensive nature; then I thought it might be Chris's style or his implementation of the theory, not the theory itself or its methods. But eventually, through extended observation and inquiry, I began to suspect that the theory's constructs and methods themselves might be creating the very defensiveness they were designed to reduce and preventing the very learning they were designed to promote.

Below I recount the practices I used over two stages to explore and transform this paradoxical possibility. In the first stage, I uncovered a practice problem – a limit to practice that prevents people and/or organizations from realizing their aspirations – and I reflected on

the underlying theory informing that practice. In the second stage, I invented and tested out new ideas, eventually integrating them into a theory of human interaction designed to move beyond the limitations uncovered in stage one (see Table 15.2).

Table 15.2: How to build new knowledge – an action science approach

To get a window into the steps I took and the practices I used, let's start where I started – with the constructs and methods embedded in the theory of action perspective.

Stage 1: Uncovering and defining a practice problem

The theory of action perspective, like its creators, both advanced and reflected the intellectual trends of the time. Starting in the 1950s, psychological inquiry had turned its attention to the way the mind works in everyday life. By 1974, a vast stream of research and theory had cast people as intuitive scientists, building implicit knowledge out of experience and using more or less faulty inferential strategies to apply that knowledge to social situations.

In a similar vein, Argyris and Schön conceived of practitioners as having theories of action that guide how they reason and act. Like other social scientists, they made a distinction between explicit and implicit knowledge, calling the former espoused theories and the latter theories-in-use. Unlike other researchers, however, they discovered a gap between the two that gave rise to inconsistencies, incompetence, and injustices of which actors seemed unaware. According to their research, most people unknowingly held a theory-in-use they called Model I, which values seeking one's own purposes, staying rational, minimizing emotionality, and winning. At the same time, they discovered that the vast majority of these people espoused a different theory called Model II, which values valid information, free and informed choice, and internal commitment to those choices (see Figure 15.3: Models I and II).

Figure 15.3 Models I and II

As action scientists, Argyris and Schön used this insight to help practitioners conduct what critical theorists call an internal critique, using people's espoused theories to critique their theories-in-use. By uncovering inconsistencies between the two, Argyris and Schön sought to catalyze what they called double-loop learning – learning capable of yielding insight and change at the level of values, not just strategies or tactics (see Figure 15.4: Double-loop learning).

Figure 15.4 Double-loop learning

Bringing this same internal critique to organizations, Argyris and Schön went on to propose that individuals' theories-in-use combined to create what they called O-I Organizations – organizations characterized by defensive routines that organizational members themselves didn't like because they distorted information, undermined their choice and commitment, and prevented double-loop learning. Although Argyris and Schön believed that O-I Organizations reinforced individuals' Model I theories-in-use, they placed primary causal responsibility for change on individuals who, as organizational agents, perpetuated these systems.

To facilitate change, Argyris – more the interventionist than Schön – collected data on how practitioners actually thought, felt, and acted in different situations, so he could break through the unawareness that prevented them from seeing that they were behaving in ways they themselves did not like. In doing so, he sought to promote the kind of double-loop learning needed to move from a Model I to a Model II theory-in-use, a theory-in-use more consistent with what the practitioners themselves espoused and more likely to produce results they valued.

Step 1: Pay close attention to anomalies

While graduate students, Bob Putnam and I observed Chris's practice countless times and transcribed countless audio-recordings. During this time, I noticed that despite efforts to be helpful, whenever Chris pointed out a gap between what practitioners espoused and what they did, many grew so defensive they spent far more time trying to 'prove' Chris wrong than reflecting on themselves. Some claimed that the data on their behavior were not representative. Others argued that their counterparts were so problematic that they had no choice but to behave the way they did. Still others asserted that the organizations in which they operated were so fraught with defensive routines that they had to behave accordingly. In each case, regardless of the argument, they all claimed the same thing: Chris's assertions were invalid and unfair.

Undeterred, Chris would first ask them to bring in data illustrating a time when they behaved consistently with Model II – that is, when they sought valid information, created conditions for people to make free and informed choices, and pursued internal commitment. Almost always people found it impossible to do. Chris would then argue that this confirmed his assertions that: (1) they held a Model I theory-in-use, (2) they were unaware of this, (3) they had defenses designed to keep them unaware, and (4) they were unaware of these defenses. At this point, a few hearty participants would sign up to learn how to become Model II with varying degrees of shame, earnestness, and hope. But many – too many from my point of view – either dismissed what Chris said as unfair or feared it might be fair but lost the appetite and resilience needed to double-loop learn or to pursue transformational change.

Having long observed people cast results like these aside, attributing them to things like 'resistance' rather than to the limitations of their own theory or practice, I cautioned myself

not to do the same. Instead, I brought these results to the foreground and kept asking myself: What's causing so much defensiveness? What's getting in the way of people learning?

Step 2: Open a new line of inquiry based on close observation

With these questions in mind, I went in search of answers. The first possibility I entertained was Chris's style: perhaps he himself was unknowingly behaving in Model I ways and triggering unproductive defensiveness as a result. But then I saw that even when Chris behaved in Model II ways – testing views, inviting challenge, inquiring into people's reactions – he still elicited unproductive defensiveness. Even more suggestive, I saw that other practitioners with the same theory – Bob Putnam, Phil McArthur, and myself – triggered the same defensiveness.

A second possibility, I went on to conjecture, might lie in the problematic nature of people's defenses. I noticed that whenever someone – either Chris, Bob, Phil, or I – pointed out a gap between people's espoused theories and their theories-in-use, those who got the most defensive had only two defenses at their disposal: fight (unilaterally assert we were wrong) or flight (avoid any engagement with us). Then I realized, even if this was a valid explanation, it still meant we might be triggering defenses that closed a good number of people off to learning – which I took to be a serious limitation for those of us aiming to understand and transform defensive routines.

This last thought gave me the uneasy feeling that we might be missing something practitioners saw but couldn't articulate in terms we recognized as valid. Perhaps labeling people Model I, even if directionally accurate, might not be nuanced enough for practitioners: (1) to believe their actions were fairly portrayed – something they frequently said; or (2) to change the factors perpetuating their Model I behavior – something they frequently bemoaned. Perhaps when practitioners said they didn't feel free to behave differently, they

were onto something the theory had not adequately addressed. All of this led me to wonder: What if the theory's constructs and methods were themselves generating unproductive defensiveness?

Step 3: Make new sense by observing closely and thinking outside the box (theory)

Over the next few years, I stepped outside the theory of action perspective to see if there might be something we were missing, and from the vantage point of other research and theory, I looked at patterns in people's responses to different constructs and methods. First among these was the construct of governing values*:* the tacit values governing behavior across situations. Because these values are by definition tacit, practitioners cannot see or access them directly; they can only infer them from behavior – and not all that easily. To do so, they must take several inferential steps from some behavior to any conclusions they might reach about the tacit values informing that behavior (see Figure 15.5: The steps needed to infer governing values).

Figure 15.5 The steps needed to infer governing values

This posed two challenges. First, because values are so central to one's identity, yet Model I values are so alien to it, it was hard for people to accept that they were acting according to these values, leading many to initially reject the notion. Worse, because it takes several steps to infer governing values from behavior, it was easy for people to keep rejecting the possibility by endlessly challenging our interpretation of their behavior. Second, even those who came to accept that they held Model I governing values struggled mightily, unable to see or access values outside their awareness and thus finding it hard to change them. Given this, it is no surprise that I often observed two patterns: defensive debates over how to interpret behavior, and people growing discouraged and withdrawing from the learning process.

A second problem I discovered, also through close observation and thinking outside the theory, lay in the theory's analytic methods. These methods rely on 'scoring' people's behavior using global constructs like Models I and II and behavioral categories like advocacy with or without inquiry. This analytic approach asks practitioners to categorize their own and other's behavior as this or that: either Model I or Model II or advocacy either with or without inquiry. My observations suggested that this had two unintended effects. First, once behavior was labeled, people showed little curiosity about or interest in understanding what led to it. Second, they obscured differences that had to be understood for change to occur. For example, the person who softens his advocacies with self-deprecating phrases in order to avoid conflict is very different from the person who couples his advocacies with veiled insults in order to impose his view.

My review of clinical psychology suggested that these differences were critical: What motivates one person might leave another cold, and what one person needs to learn, another might need to unlearn. This same research suggested that most people long to be seen and understood in a nuanced way, and that they need to see and understand their behavior with greater subtlety for learning to be personally revealing. All of this led me to suspect that while it might be valid to categorize practitioners Model I, it might make learning less meaningful and more challenging.

A third limitation to the theory of action perspective is where it locates the problem to be solved. According to the theory, problems like incompetence, inconsistencies, and injustices – as well as practitioners' inability to learn about them – can all be traced back to individuals' theories-in-use and their unawareness of them. This causal construction gives no weight to factors most salient to individuals: the context or situation in which they operate, and the people with whom they interact. Yet an abundance of cognitive research shows that

individuals tend to rivet on situational factors and overlook their own actions. This same research shows that it is much easier for actors to see what others are doing and the impact on them than it is to see what they themselves are doing and their impact on others. Not only should any explanation of individual behavior include these situational and interpersonal factors for theoretical completeness, leaving them out will increase the odds of practitioners rejecting the explanation, since it ignores what is most salient to them. And this, in fact, is what I observed – practitioners arguing that the theory did not apply to them, because it did not take into account the situations or people they faced.

A fourth problem lay in how the theory of action perspective distinguishes between espoused theories and theories-in-use. What makes this distinction so powerful is that it isn't just saying that what we espouse is different from what we do. It's saying that there is a theory behind what we do and that this theory is inconsistent with the theory we espouse. In other words, it asserts that there is knowledge embedded in our skilled actions that conflicts with the conscious knowledge embedded in our espoused theories. This means that the learning task is not just to alter our behavior, but the theory informing our behavior.

So far, so good. The problem arose when practitioners of the perspective used people's espoused theories to critique their theories-in-use as if the goal was to bring them 'up' to their espoused theories. Yet my own and others' research into the nature of practical knowledge suggested that espoused theories were hardly the gold standard towards which any theory-in-use ought to aspire. The overwhelming majority I observed were simplistic and internally inconsistent. For example, I often heard the same practitioner espouse the need for greater transparency and participation in decision-making, while at the same time espousing the need for greater speed and efficiency. Since greater transparency and participation slow decision-making down and make it less efficient – even if more effective – the two are in necessary

tension. Yet these two propositions sat side-by-side in many practitioners' espoused theories, leaving them chronically frustrated with their firm's decision-making processes.

In contrast, I marveled at our theories-in-use. The knowledge embedded in them captures and conveys more complexity faster than any espoused theory could ever do, telling practitioners what to do with which kind of people in what kind of situation without giving it a moment's thought. Take one theory-in-use proposition a practitioner inferred from her thoughts, feelings, and behaviors: 'When a unilaterally minded boss tells me what to do in an impatient tone of voice, agree with him even if it doesn't make sense, then disregard it and do what makes sense to me, covering up what I did and covering up the cover up'. Few espoused theories exhibit that kind of ingenuity or capture that much complexity; none embrace its practical duplicity.

The point is, we know far more than we can tell. It's like riding a bike. An MIT computer program on how to ride a bike takes thousands of pages to capture what we know how to do instantaneously. Similarly, in the world of social action, we all carry in our heads thousands of pages worth of intricate knowledge about this or that type of situation or person – all of it stored in our neurons, all of it just outside our awareness, all of it telling us what to do.

This line of thinking led me to suspect that the distinction between the two types of theories wasn't fruitfully drawn. As drawn, it is unclear to which proposition in an espoused theory a practitioner ought to align her theory-in-use, and whether in doing so, it would not simply violate another. I began to think: Perhaps our espoused theories aren't as good as we assume and our theories-in-use aren't as bad. Perhaps the nature of the knowledge embedded in the two theories is simply structurally different. If so, then perhaps the task wasn't to bring theories-in-use 'up' to espoused theories. Perhaps the task was to create a dialectic between

the two that could produce a more complex, integrated synthesis that informed more congruent, effective action.

To summarize, in this first stage of knowledge building, I paid close attention to a practice problem: the unproductive defensiveness slowing down practitioners' efforts to learn and change. I then observed this defensive behavior closely from outside the theory of action perspective by drawing on different research and theories; based on this, I opened up a new line of inquiry that uncovered a possible cause: constructs and methods central to the theory of action perspective. Finally, with this definition of the problem in mind, I began to make new sense of the practitioners' defensiveness. In the next stage, this sense-making laid the foundation for a solution aimed at explaining the anomalies I noticed and overcoming the limitations I uncovered.

Stage 2: Inventing and testing out new ideas in practice

My colleagues and I spent a decade inventing constructs and methods designed to overcome the limitations uncovered in stage one. We then tested these in a series of action experiments conducted at our Action Design Institute and at organizations as diverse as Apple Computer, Herman Miller, the Monitor Group, and Nine to Five. In these experiments, we intervened to see if these new constructs and methods would create the results we predicted – less defensiveness and more learning – while remaining open to learning they did not in light of data others could independently see and assess. This section traces how we took these steps, the distinctive norms for rigor that characterize them, and the type of knowledge they generate.

No one does a better job than Don Schön (1984) of describing the distinctive norms for rigor that characterize experimentation in action:

> [The inquirer's] primary interest is in changing the situation. But if he ignores its resistance to change, he falls into mere self-fulfilling prophecy. He experiments rigorously when he strives to make the situation conform to his view of it, while at the same time he remains open to the evidence of his failure to do so. (Schön, 1984, p.153)

Schön goes on describe the line of inquiry that meets these standards of rigor:

> When a move fails to do what is intended and produces consequences considered on the whole to be undesirable, the inquirer surfaces the theory implicit in the move, criticizes it, restructures it, and tests the new theory by inventing a move consistent with it. The learning sequence, initiated by the negation of a move, terminates when new theory leads to a new move which is affirmed. (Schön, 1984, p. 155)

Schön makes a distinction here between the logic of confirmation, in which a researcher tests different causal hypotheses by isolating and manipulating different variables under controlled conditions, and what Schön calls the logic of affirmation, in which a practitioner makes a move to bring about an intended outcome in a more complex and less controlled practice context. In the latter case, a move is negated if it fails – and affirmed if it succeeds – in creating an intended outcome across similar situations.

As action scientists, the knowledge we produce must not only be valid in the Schönian sense, it must also be useful and liberating to be truly transformative. That is, practitioners must be able to use the knowledge to significantly increase their degrees of freedom when acting. This means their actions must be significantly less constrained by: (1) internal psychological factors ranging from anxieties about failure or conflict to crippling reactions towards authority; and (2) external situational factors, whether it is geographic distance, formal decision rights, or win/lose political dynamics. Below I outline the steps we took to build theory that meets these standards.

Step 1: Invent ideas out of practice

Guided by others' research and our own observations, my partners and I hypothesized that defensiveness could be decreased and learning increased if constructs and methods: (1) used the notion of framing rather than governing values to construe one of the key internal factors informing behavior; (2) included the situational and interpersonal factors most salient to practitioners; (3) opened up and structured a 'dialogue' between the tacit and explicit knowledge practitioners build out of experience and use in practice; and (4) used causal frameworks in concert with ethnographic methods to guide a practitioner's reflective inquiry and to describe, understand, and alter any behavior getting in his or her way.

To illustrate the invention process, let's look at how we built and defined the construct of 'framing' as an alternative to 'governing values'. Guided by Schön's research on how practitioners frame their roles and the problems they face, I noticed that the goals people framed for themselves in particular situations seemed to be a product of the way they saw themselves in relationship to others. That is, if a person sees herself as a helpless victim in relation to someone she views as a powerful threat, she will frame one type of goal for herself and not another – say, to avoid the person and/or to protect herself. I also noticed that unlike governing values, which lie outside our awareness, people had little difficulty accessing and describing the in-the-moment thoughts and feelings that formed their framing of a situation – framings that made some actions seem obvious, others out of reach. I then hypothesized: If, instead of evaluating people's tacit values in light of their espoused theories, we helped people recount, reflect on, and reframe their in-the-moment thoughts and feelings in different situations, they might feel less helpless and less ashamed, and as a result, experience and exhibit less defensiveness and more learning.

The problem here is not that values don't exist, or that they are not reflected in how people frame situations. It is to say that for all the reasons outlined in the prior section, using espoused values to evaluate governing values across situations causes more defensiveness and less learning than observing how a person's framing of a particular situation limits her to acting one way and not others. The latter task is an exploratory, descriptive task that engenders curiosity and learning; the former is an evaluative, labeling task that engenders anxiety and defensiveness.

Step 2: Test ideas in practice

As I went through a similar hypothesis-generating process with the other three limitations, I began conducting action experiments designed to test them. I then reflected systematically on the results of these experiments with practitioners and colleagues in light of data they could independently see and assess.

To see what I mean, let's stay with the example of framing. To test the idea that the construct might produce less defensiveness and more learning, I designed interventions in which I first helped practitioners capture their in-the-moment thoughts, feelings, and actions; I then helped them reflect on these data in light of three questions implied by my definition of framing: (1) How do I see myself in relation to the other person in the situation? (2) What goals am I setting for myself as a result? (3) How might this framing limit the actions I have at my disposal?

All of my interventions were tape-recorded and most were transcribed. To analyze results, I analyzed transcripts with practitioners and an action science colleague to assess the level of defensiveness and learning exhibited. We assessed defensiveness as low and their learning as high to the extent they: (1) expressed a sense of efficacy and curiosity rather than shame and helplessness, (2) engaged actively in the learning process; (3) scrutinized what they thought,

felt, and did; (4) invited others to observe their behavior and to describe their impact; (5) tried out actions that had previously been out of reach; and (6) generated new questions and fundamental insights about themselves (for examples, see Smith, 2008, 2010, 2012).

Step 3: Build and revise theory over time

I went through a similar testing process with the other constructs and methods to see whether they also reduced defensiveness and promoted learning. Repeated testing over time, in light of others' research as well as my own, helped me to refine and revise these constructs, first integrating them into a relational model of human interaction (see Figure 15.6), then into a model of organizations that explains how relationships among individuals – not individuals alone – translate formal designs into cultural realities (see Figure 15.7).

Figure 15.6 The relational perspective

The theory underlying these figures diverges from the theory of action perspective in five respects, each designed to overcome the limits uncovered in stage one. First, the relational perspective construes framing as the mechanism through which individuals access and apply experiential knowledge in specific contexts, and refine and reshape that knowledge over time. This makes experiential knowledge and framing – rather than governing values – key levers for learning and change.

Figure 15.7 Organizational steering mechanisms

Second, the relational perspective starts where practitioners start: With the contexts they are up against, as their experiential knowledge leads them to see it. This draws attention to the reciprocal relationship between context and knowledge, underscoring how each shapes the other with framing the invisible hand doing the shaping.

Third, this perspective proposes that both implicit and explicit knowledge are in need of scrutiny to ensure coherence and effectiveness, and that this scrutiny is best conducted through ongoing frame reflection and reframing in light of the behavior and results a particular framing produces in specific situations.

Fourth, the model serves as a framework and includes a set of explicit methods for reflecting on practitioners' actions and interactions. The two together are designed to lead people away from making categorical, value-laden evaluations and towards developing a more nuanced, descriptive, and thus useful understanding of their own and others' behavior.

Fifth, the model of organizations treats relationship structures instead of individuals as a primary unit of organizational action, analysis, and intervention. In doing so, it highlights the cognitive-relational blinders that prevent people from changing their social realities, and it implies ways of overcoming those blinders – for example, by asking each person to say what they see that the other person cannot see (see Figure 15.8: Overcoming relational blinders).

Figure 15.8 Overcoming relational blinders

To summarize, in this stage my partners and I explored different constructs and methods designed to reduce defensiveness and increase learning. We then tested these through action experiments that meet action science's distinctive norms for rigor. Finally, we used the data generated by these experiments to revise the constructs and methods, eventually integrating them into a model of human interaction and a model of organizations that, when applied, produced less defensiveness and more learning than the theory of action perspective.

What's next?

The original architects of action science and the theory of action perspective are now gone. But Chris and Don's influence lives on through their work and through those of us touched

by their generosity and shaped by their commitment to building new knowledge. I can't count the number of times I brought an emerging idea to Chris, only to have him ask the same question: 'What's new?' Far from wanting us to stay within the theory of action perspective, he constantly pushed us to find its limits and to move past them, using the action science approach to produce knowledge that's at once valid, useful, and liberating to practitioners.

In the future, if action science is to take root and grow, those of us working within that tradition must set our sights on pushing beyond the limits of what we know. Only then can we continue to create ever more powerful ways of understanding and transforming our social worlds.

Figure 15.1 Action science methods

Action science straddles three traditions: social science, interpretive approaches, and critical theory. Though an uncomfortable straddling, its methods go a long way toward solving the theory-practice gap and the rigor-relevance dilemma that undercut the impact all three traditions have on practice. Here is a brief summary of its methods in light of these traditions; for an extended discussion, see *Action Science* (1985):

Collecting data

Because we are interested in producing knowledge that can be used in practice, we collect directly observable data on practice, on practitioners' thoughts and feelings in the moment, and on the context in which they operate. Drawing from interpretive approaches, these data include recordings of what people say and do while practicing; the thoughts and feelings they report; and those observable aspects of the context that, according to practitioners, impinge upon or inform what they say, do, feel, or think, including things like cultural artifacts, physical arrangement, documents on formal strategies, structures, procedures, and the like.

Conducting experiments

To fully explain the social world, you need to surface those factors that maintain it. Ordinarily these factors are so tacit and taken for granted that they are hidden from reflective view: unspoken norms that undermine inquiry, the patterns of thought and feeling that inform and are informed by those norms, beliefs that put an artificial limit on what people can say or do, conflicting values that create double binds, and so on.

To bring these factors into view, action scientists draw people's attention to what they actually do, feel, and think in the heat of the moment and to how this shapes the outcomes and social worlds they create This in turn generates the motivation practitioners need to design and conduct experiments in which they work hard to bring about more desirable outcomes while remaining open to learning they can't. When these 'action experiments' are successful—that is, they bring about outcomes more in line with the practitioners' enlightened self-interest—their efforts are affirmed; when they fail to do so, their efforts are negated, and they design a new experiment based on what they learned from the prior one (see Schön, 1984). Because action experiments aim to alter the status quo, they trigger defenses designed to maintain it, allowing us to see and build theory that takes such defenses into account.

Testing interpretations

Like those at work within the interpretive tradition, action scientists regard interpretations as the basic building blocks of everyday social life, informing what we do and don't do – and as a result, creating and recreating the social worlds in which we operate. Those social worlds are more or less constrained, say action scientists, depending on our interpretive freedom – that is, how aware we are of our interpretations and how able we are to discard or modify them in light of observable data (a normal science notion) and our enlightened self-interest (a critical theory notion).

With this in mind, we work with practitioners to create conditions psychologically safe enough to reliably pursue two sets of questions. First, what data might lead us to revise, elaborate, or discard our interpretations, and are there other interpretations that might fit our data better? And second, when faced with two equally valid or even plausible interpretations, which interpretations will make it easier for us to pursue our enlightened self-interest?

Figure 15.2 How to Build New Knowledge—An Action Science Approach

Stages	Practices	Tactics: Question Asked | Activities Undertaken
Stage 1: Uncovering and Defining a Problem (In Existing Theory)	**Step 1: Pay attention to anomalies**	Question: What is causing counterproductive defensiveness—i.e., defensiveness that slows down or prevents the very double-loop learning the theory of action perspective aims to promote? Activity: I notice and record practitioner's level and type of defensiveness; when I see defensiveness that slows or prevents double-loop learning, I examine Chris's behavior to see if he is enacting the theory effectively. I record and study times when Chris enacts his theory, yet still generates counterproductive defensiveness.
	Step 2: Open a new line of inquiry	Question: Might constructs central to the theory of action perspective be generating counterproductive defensiveness? Activity: Since counterproductive defensiveness exists when Chris and others enact the theory of action perspective well, I record and study people's defensive reactions, and I examine the theory of action perspective to see if its constructs or methods might be implicated.
	Step 3: Make new sense	Question: What is it about these constructs and methods that might be producing counterproductive defensiveness? Activity: I observe and interview practitioners and record patterns in their reactions and actions in response to specific constructs and methods; many participants report feelings of shame, helplessness, and discouragement, and many of these withdraw from learning.
Stage 2 Inventing and Testing New Ideas (To Build New Theory)	**Step 1: Invent ideas (out of practice)**	Question: What types of constructs and methods might reduce counterproductive defensiveness and encourage learning? Activity: I create a series of constructs over time designed to increase a sense of control and hope (to counter shame & helplessness) and to speak to the situational and interpersonal factors practitioners face (to create a sense of fairness); I use these to design interventions hypothesized to reduce defensiveness and encourage learning.
	Step 2: Test ideas (in practice)	Question: To what extent, if any, do these new constructs and methods reduce defensiveness and encourage learning when put into practice? Activity: I collect data on what I did and on the levels of defensiveness and learning exhibited and reported by practitioners; I ask a trained colleague to assess what I did and the results I produced; I revise and improve upon constructs in light of new data.
	Step 3: Build new theory (for practice)	Question: What new theory might we build out of what we are learning from these experiments in action? Activity: I shuttle back and forth between experimenting with discrete constructs and integrating them into an alternative theory that could more usefully explain and transform behavior practitioners consider problematic. Over time, I continue to revise and improve upon the constructs and the overarching theory in light of new data, revealing new anomalies and sparking another knowledge-building cycle.

Figure 15.3 Models I and II

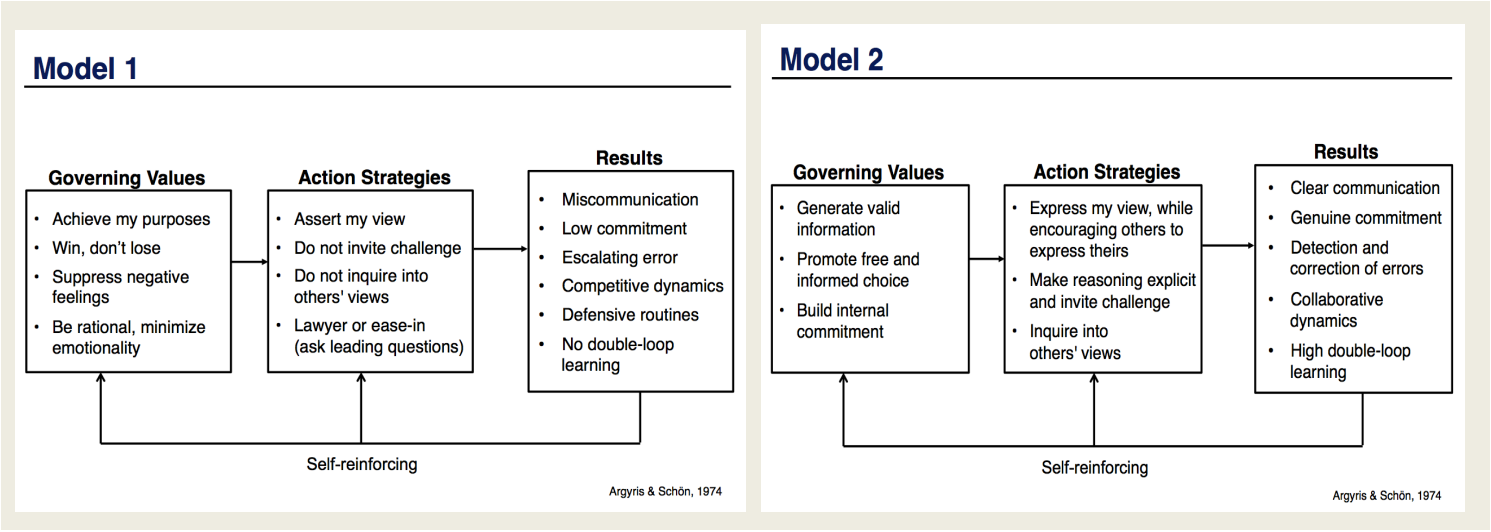


Figure 15.4 Double-loop learning

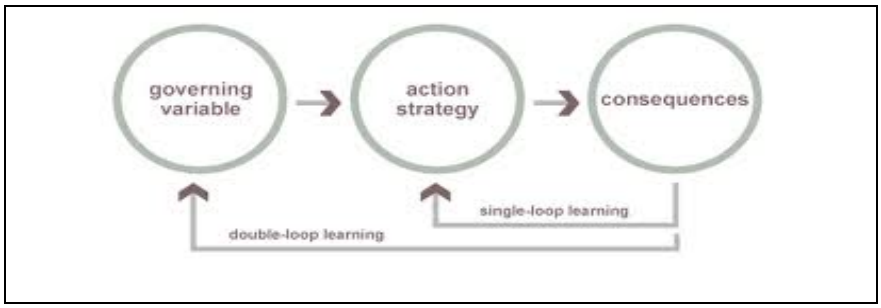


Figure 15.6 The steps needed to infer governing values

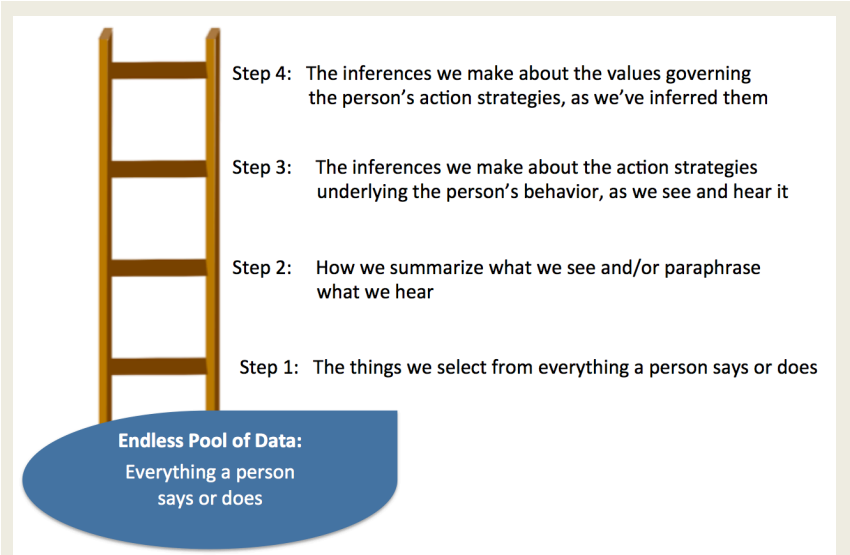
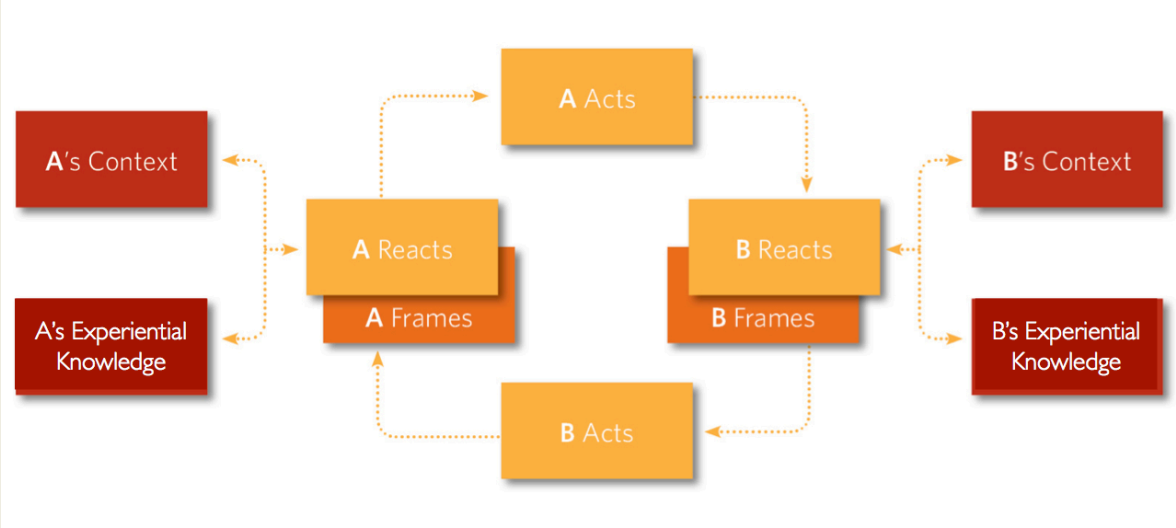


Figure 15.5 The relational perspective



All relationships have an informal structure that emerges over time out of ongoing patterns of interaction. Four interlocking elements make up that structure. They are:

1. **Actions and Reactions**. Actions refer to what someone actually says and does, while reactions refer to what someone thinks and feels in response to what the other person says and does. Each person's actions evoke reactions in the other, leading that person to act one way and not another. Relational patterns form out of people's intersecting actions and reactions.
2. **Frames**. Frames refer to our spontaneous, emotionally imbued interpretations of ourselves in relation to others and the goals we set as a result. When we frame situations, some actions seem obvious, others impractical. Frames lead patterns to repeat until they form a more enduring informal structure.
3. **Contexts**. The contextual backdrop – formal roles, time constraints, historical events – against which some triggering event occurs, prompting the need to respond. Our contexts filter what we see, and along with our repertoires, shape how we frame each other.
4. **Experiential knowledge**. Our experiential knowledge – forged out of experience over the course of our lives – defines the range of responses we have at our disposal for framing and acting in different social contexts, once triggered by some event. As the arrows suggest, our experiential knowledge both shapes and is shaped by our contexts. Together the two govern the way people frame situations, leading them to react to and act toward each other in a particular way.

These four elements combine to give a relationship its distinctive character, one we intuitively recognize but have difficulty seeing and thus changing.

Figure 15.7 Organizational steering mechanisms

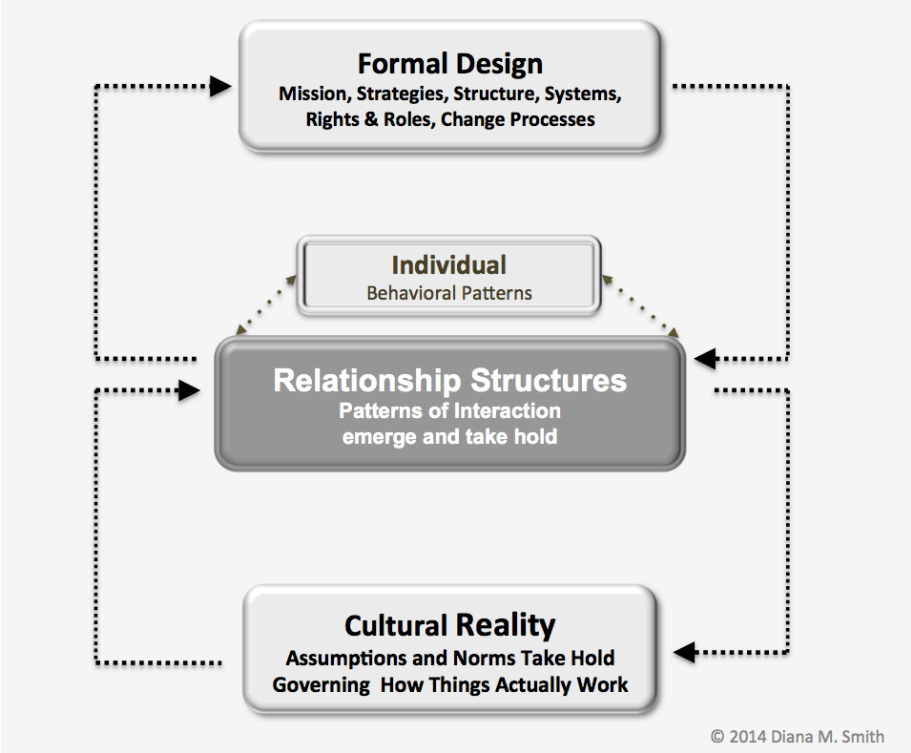
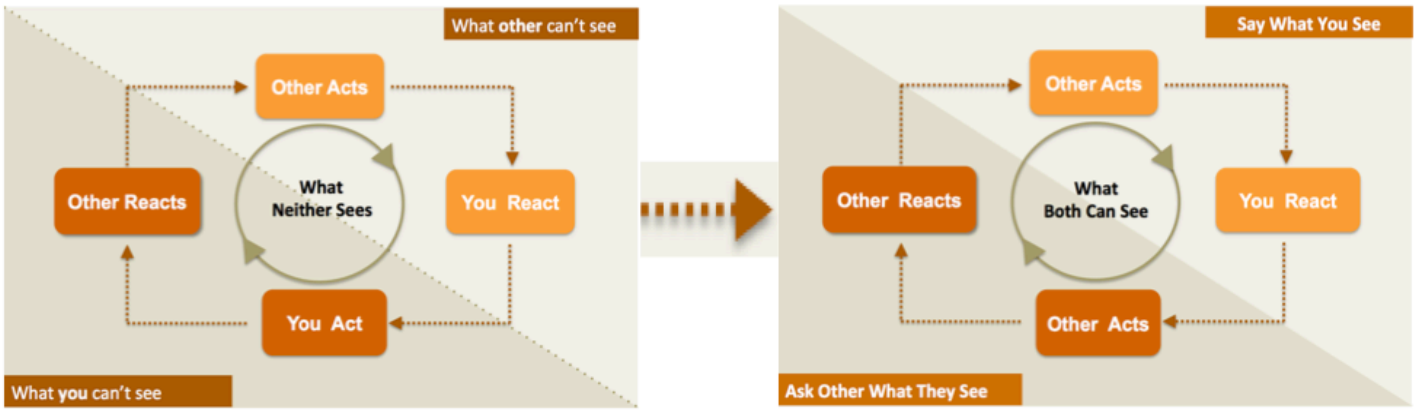


Figure 15.8 Overcoming relational blinders



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