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Accomplishment

Language-action philosophy uncovers the truth about effective coordination and accomplishment.

In the late 1980s, artificial intelligence research encountered a difficult period its leaders have called "AI winter." Funding agencies had lost faith in the primary, long-term objectives of AI research—computers that think, understand, and exhibit expert behavior. The headway toward secondary goals—including speech recognition, pattern recognition, natural language translation, automatic classification, machine inference, diagnostics, decision support, chess, and robotics—was not enough to overcome doubts about achievability of the primary goals.

In 1987, Terry Winograd (a leading figure in AI) and Fernando Flores (a business genius with a Ph.D. in language-action philosophy) published a book arguing that many of the great dreams of AI would never be achieved because they were based on flawed assumptions about intelligence, knowledge, and competence [7]. They said the AI agenda was formulated within a "rationalistic tradition" of thought, in which the function of the brain appears to be describable as a mechanism governed by rules—then, once the rules are captured in a database, a sufficiently fast computer would simulate brain behavior in real time. This is why the primary claims of AI seemed so reasonable.

Winograd and Flores used a language-action perspective to show that expert behavior is not rule-based. They cast doubt on whether computers, which only follow rules, could ever meet standards for expert performance. The AI research community eventually accepted much of their advice and directed research toward the design of systems that would amplify human capabilities, especially cognitive ones.

Language-action philosophy reveals practical ways to improve coordination and effective action. A prominent example, discussed in [7], was captured in an email system by Action Technologies called The Coordinator. This system, which ran on half a million IBM DOS/Windows platforms, tracked "conversations for action," the loops in which one person performs an action in response to another person's request. In a 1987 demo, my Action Technologies host showed me he could manage twice as many projects using Coordinator as I could manage with my Unix email. I soon mastered the practice of the "conversation for action" and attained the productivity increases I saw among those using The Coordinator.

In 1992, Peter Likins, then President of Lehigh University, examined the growing distrust of the U.S. Congress toward research [4]. Using a language-action perspective, he argued that the "social contract" entered in 1945 between the U.S. government and the sci-

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entific research community was breached. The understanding was that the government would sponsor research on subjects chosen by scientists; in return, scientific research would improve defense, health, and the economy. It's the same problem experienced by AI: two sets of observers with mismatched interpretations of what was promised. The impasse continues: most research sponsors insist on deliverables of manifest utility while many scientists continue to press for unfettered funds.

These are just three of a much larger set of examples where language-action philosophy has played a prominent role in improving computing research, human-computer interaction, and coordination among technology developers and users. It has also helped with workflow technologies, databases, software projects, software designs, and networks. It has demonstrated linguistic practices, which when followed rigorously can dramatically improve coordination within a work group, leading to much greater productivity, satisfaction, and accomplishment. Outside our field it has helped businesses to reduce waste and increase customer satisfaction; helped professionals learn to deliver value and earn more trust; and helped leadership trainers to teach effective practices of teamwork, management, and leadership. I will summarize the philosophy and why it can give IT professionals a competitive edge.

Action in Language

Language-action philosophy is a philosophy about human accomplishment. It reveals the inner workings of commitments and coordination. Without commitments, most coordination fails, and without coordination, most goals cannot be achieved. It also reveals that each human being is a distinct observer whose interpretations of events need not agree with others. When different observers (such as the AI researchers and their sponsors) have mismatching interpretations of what is promised, broken coordination and distrust are the inevitable results.

Language-action theory is rooted in the work of philosopher John Austin on speech acts in the early 1960s [1]. Austin noted that while acts of speech often precede action, some acts of speech are action. A speech act is an utterance that performs the action it says—for example, "I pronounce you husband and wife," or "You are hired." Austin said that every speech act constitutes a commitment that affects other people and their worlds. Our language offers many types of speech acts, including assertions, assessments, requests, offers, counteroffers, declines, deferrals, promises, retractions, cancellations, revocations, instructions, orders, commands, and declarations. This philosophy found its way into computing soon after computer scientists began to realize computers were being used more for communication than for calculation.

The assessment is one of the most common acts. An assessment is a judgment, an evaluation, or an opinion. A grounded assessment is one supported by relevant facts and other evidence. Assessments provide motivation and purpose for actions to follow. Speakers who provide well-grounded assessments have much more success in mobilizing others to perform actions. In contrast, speakers who exhort action based on ungrounded opinions often get no followers; the action seems too risky and followers stay away.

We use our capability of language to move toward accomplishments in three ways: action, possibilities, and disclosure.

Conversations for Action. Although many speech acts can be performed without explicit cooperation from others, the reality is we accomplish most things in cooperation with others. One of the most common cooperative practices is the action loop, origi-

nally called the "conversation for action" by Flores. It is a sequence of four speech acts between persons A and B:

A: I request.
B: I promise.
B: I deliver.
A: I accept.

On completion of the loop, B has supplied the "conditions of satisfaction" that were missing for A. (This was discussed in detail in a previous column, "The Missing Customer," March 2003.)

Conversations for Possibilities. We form teams, groups, and organizations to enable us to perform collective actions beyond individual capability. Flores observed in [7] that collective action flows from networks of action loops, stating that managers must be fluent in conversations for possibility as well as conversations for action. A conversation for possibility creates a context for a conversation for action.

Conversations for Disclosure. The biologists Humberto Maturana and Francisco Varela wrote a book about the biological roots of language and human understanding [5] in which they claimed coordination is a basic principle of biology and can be traced through all organisms from simple cells up through societies of animals such as ants, bees, and apes. Societies of ants use chemicals as their medium of coordination; bees use dancing; apes use signs and gestures. We humans use language as our means of coordination. Unlike chemicals, dancing, and signs, human language confers the capacities for self-identity, self-consciousness, and reflection.

This has a very important consequence: each of us is a separate observer. We are constantly "listening" to stimuli, interpreting them, and responding. We construct stories about ourselves (our private identities) and about others (their public identities). We create a "world" that is the reality in which we operate. Every interaction with another person creates a moment of "synchronization" between our two worlds; without these moments, our worlds would drift ever farther apart. We have developed social practices called disclosures that reveal our interpretations to others and help bring about a greater alignment between our observers. We are constantly trying to observe our own observers, report on them to others, and observe theirs. All this is a prelude to effective coordination.

Effective listening is essential for effective disclosure. It is not enough to listen to our own internal conversations, moods, sensations, and emotions. We must also listen for how others listen to us. Suppose I say "I'm thirsty." One person will hear this as a request to fetch me a glass of water. Another will hear it as an announcement that I am about to go to a water fountain. Another will hear it as information about my internal state. Am I sensitive to these different listenings of my statement?

Human relations experts tell us we will have difficulties connecting with other people when we express mostly "thoughts" and hardly any "feelings." In other words, we will be more effective if we reveal and share our worlds. Expressions of "thoughts" are abstractions about the world, made as if the world is a reality perceived by everyone in the same way; in contrast, expressions of "feelings" acknowledge that the speaker's individual experience of the world is not the same as others.

Somatic Responses. Leadership expert Richard Strozzi Heckler notes that all these linguistic acts will evoke various physical, emotional, and energetic responses in the speaker as well as the listener—responses that are felt rather than thought [3]. We will be unable to act unless we feel committed; thinking or saying "I am committed" is not enough. Language-action philosophy shows us practices that help us achieve coherence between the logic and sensations of our commitments, thereby moving us toward accomplishments.

In our neuromuscular pathways we embody automatic responses to events. Among our automatic responses are our mannerisms, body language, inflections of voice, trained practices, and ways of holding our energy. Other people sense these things and react to them without words ever being spoken. We learned these responses in past situations (often childhood) as methods of protection and survival and we retain them long after the original circumstances have disappeared. For example, some of us were trained

as children to believe that saying no is rude and impolite; as adults, we cannot say no to a request and end up overwhelmed by too many commitments. Some of us cannot tolerate confrontations; if we perceive that a request will evoke a sharp response, we will avoid making the request. Automatic responses such as these can prevent us from acting and thus prevent us from moving toward what we want to accomplish.

Summary. We use language to move toward desired accomplishments in three ways:

- Coordinations: Individual speech acts as well as protocols for making and fulfilling commitments, individually, on teams, and in organizations.
- Possibilities: Protocols for inventing new possible actions, often in response to threats or opportunities, and often followed by a declaration that the group will move toward one of the new possibilities. The declaration defines a new context and personal commitments to the next context. Managers, parents, and leaders make such declarations, often called "decisions."
- Disclosures: Revelations of concerns and worldviews. Some disclosures are willful, such as expressing an emotion or a concern. Others are revealed by our actions and practices, such as the aphorism "actions speak louder than words." The skill of disclosing is intimately coupled with the skill of listening.

Possibilities and disclosures create contexts for coordination. Thus everything connects back to the fundamental distinctions from biology pointed out by Maturana and Varela. Our abilities to act, to manage mood, to learn, to coordinate, and to find and generate value in what we do, are all linguistic and mediated by our somatic responses.

Trust

Trust is one of the most important assessments we make about others and others make about us [2, 6]. If others trust us, we will accomplish much. If others distrust us, we will accomplish little. The language-action perspective offers an interpretation of trust that can be quite helpful in establishing and building it.

Trust is an assessment of confidence that an outcome will actually be accomplished and simultaneously an acceptance of the risk that it will not be. Trust is an emotional skill in which we align our intentions and our sensations of readiness for action.

As discussed previously, coordination is a major arena of trust. Our trust in someone's promise is based on subassessments of competence, sincerity, and capacity. Competence means the person has the embodied skill to deliver what he promises. Sincerity means the person's private and expressed intentions are the same. Capacity means the person has the time, resources, and favorable circumstances to succeed. We won't trust someone whom we think is incompetent, insincere, or lacks capacity. We won't trust someone who breaks promises. Simply knowing this can help us shape our actions so that we are seen as trustworthy.

It is all too easy to grant trust based solely on a good feeling about the person. Ungrounded assessments of trust can lead to betrayals.

One of the most difficult skills to learn is making grounded assessments of trust in promises other people make to you. Your accomplishments depend on others fulfilling their promises. Nothing is more disconcerting than to fail to achieve an objective because you trusted someone else who did not deserve your trust. Their failure to deliver something important to you prevented you from delivering something you promised.

Why This Is Important To Professionals

We all want to accomplish what we set out to do. Our accomplishments constitute our base of experience and allow us to move to higher stages of competence over time (see my previous column, "Career Redux," September 2002). The more competent we become the bigger the accomplishments we can achieve and can aspire to.

Language-action philosophy uncovers the truth that accomplishment cannot happen without commitments. Commitments are linguistic acts. The more we understand about the language acts in coordination, generation of possibilities, and disclosures, the

more we will be able to organize ourselves to accomplish our goals. Most people report that the language-action perspective, by revealing new and effective actions, has enabled them to become more competent and trustworthy. They gain a competitive edge relative to others who lack this interpretation.

The language-action perspective illuminates many other phenomena of interest to professionals: for example, the meaning of innovation and how to produce it; the meaning of research and its connection to innovation; power and its influence on actions; entrepreneurship; design; and (for computing professionals especially) information.

Much has been written on how we use language to create action. I hope this column has revealed powerful interpretations that will enable us to function better as professionals. C

References

1. Austin, J. *How to Do Things With Words.* Harvard University Press, 1962.
2. Fukuyama, F. *Trust.* Free Press, 1995.
3. Heckler, R.S. *The Anatomy of Change.* North Atlantic Books, 1993.
4. Likins, P. A breach of the social contract. *Commun. ACM 35*, 11 (Nov. 1992), 17–19.
5. Maturana, H. and Varela, F. *The Tree of Knowledge.* Shambhala Publications, 1987.
6. Solomon, R. and Flores, F. *Building Trust.* Oxford University Press, 2001.
7. Winograd, T. and Flores, F.. *Understanding Computers and Cognition.* Addison-Wesley, 1987.

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