Exploring Movements-in-Thought: The Experiential and Historical Roots of Qualitative Data Acquisition in the Constructive Developmental Framework

Otto Laske

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The acquisition of qualitative data on how individuals and groups communicate is a major pillar of developmental psychology and its application in institutions and organizations, -- a practice I refer to as *Applied Epistemology* (A.E.). Qualitative data capture makes it possible to assess succinctly from what stage or in what phase adults make meaning and sense of the worlds they construct for themselves, both individually and collectively. Since the only 'world' people live in is their own, knowing what individual *worlds* structurally look like has major social and societal relevance and potency for education and social change.

A.E. is also a foundation of the fabrication of Apps that promote communication and collaboration in the social domain in an increasingly virtual world (remaining connected to the physical world), while simultaneously providing a critical force against mindless automation that disregards or squelches uniquely human capabilities, one of which is complex and critical thinking.

For instance, when properly fed back to clients, epistemological ("developmental") data enable CEOs and managers, as well as team leaders, to support self-organization in individuals and teams, something that has become a requirement in increasingly more 'flat' and 'agile' organizations around the world since agility is grounded in self-organization.

Such data also inspires and enables the construction of "apps" that can crucially empower dynamic collaborations at high levels since it helps individuals recognize their own limited thought patterns and, through reflection on what they say and do, enables them to reach heretofore not experienced levels of transparency regarding their work and workplace, if not also their life.

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In 2005 and 2008, respectively, I published two volumes entitled "Measuring Hidden Dimensions" (MHD) which, in my view, broadly outline two different branches of Applied Epistemology, one called *social-emotional*, the other, *cognitive*. The former addresses perspective taking and self-observation, the second, complexity handling and fluidity of thinking.

These volumes represent a refinement and re-direction of work by R. Kegan and M. Basseches in the 1980s toward broader social concerns, as explored by me in my 1999 dissertation on developmental coaching of executives (https://interdevelopmentals.org/?p=6870).

Subsequently, I made use of these publications for putting in place an international certification program in A. E. for coaches, consultants, and managers.

In organizations and institutions worldwide, exploring what Basseches was the first to call *movements-in-thought* (MiT) is still an unfamiliar undertaking, -- certainly not to the benefit of organizations.

In this article, I shed more light on the 30-year long history of which my writings entitled *Measuring Hidden Dimensions* (MHD) are the outcome. This history leads me back to my experiences with simulating *protocols* made at the University of Utrecht, The Netherlands, in the early 1970s, which were inspired by G. M. Koenig's theory of musical composition and by Herbert A. Simon's work in Artificial Intelligence.

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There is an important difference between a theory of knowledge and a theory of experiencing the generation of knowledge through one's own and others' thinking process that at times leads to knowledge. The latter theory is practical, being a foundation of Applied Epistemology (A. E.). While a theory of knowledge is focused on publicly sanctioned, categorized results of movements-in-thought (MiT), the second theory sheds light on how cognitive results are generated by an individual's and team's MiTs in real time in the first place.

To be empirical, the second theory, requires data evidencing private, often intimate, MiT's that can be captured in a verbal language. By keeping track of, or *protocolling,* MiT's rooted in an individual's speaking and movements-in-thought in real time, one acquires insight into the individual's *personal epistemology* and its level of adult-developmental maturity, both in the social-emotional and cognitive sense of the term 'maturity'. Such insight is exceedingly helpful for understanding entire teams and groups, if not entire populations.

My review of the coming-into-being of the applied epistemology called *Constructive-Developmental Framework* (CDF) refers to my own professional history. It comprises four parts:

1. Protocol Analysis
2. Interviewing for Expert Systems
3. Clinical Interviewing
4. Developmental Interviewing

Protocol Analysis

As a composer working with computers in 1970, I became interested in supplanting historical musicology (from which I had long suffered) by a discipline whose focus were not artifacts produced by composers now dead called "scores" (which I considered as equally dead), but rather the mental processes that led to scores or performances. I called this discipline coming into being on account of computers *cognitive musicology,* a discipline I mandated to research

composers' and performers' real-time mental processes. This had just become a possibility on account of early forms of AI pioneered in the late fifties. (At the Instituut voor Sonologie, Utrecht, The Netherlands, where I worked, we used a PDP-10).

For this purpose, together with another composer with a theoretical bent, Barry Truax, I created a computer program called OBSERVER. Written for a teletype keyboard, this program comprised two sets of operators, one for composing in real time, and one for observing the step-by-step MiTs that a child would use to generate a linear melody. Since we wanted to focus strictly on MiT's, unobstructed by musical notation, electronic music was the ideal medium. We decided to invite a group of children of age 7 to 12 to share with us their musical thinking, and provided them with tools for manipulating the acoustic parameters of sound called 'pitch' (tone-height), tone color, duration, and loudness. As materials for "interviewing" the children via teletype. we chose simple electronic waveforms, the primitive raw materials of electronic and acoustic sound.

Following H. Simon and A. Newell's practice at Carnegie-Mellon, Pittsburgh, we captured the children's musical activity in the form of teletype *protocols*. These were sequences of operators the children had used over half an hour for the sake of composing a linear string of electronic sounds. In the process that OBSERVER captured, the children went back and forth between their teletype operations and their listening process, adjusting a short 'cantus firmus' to start out from to which other sounds were to be added, such that all sounds at their disposal could be consecutively modified (e.g., transposed or shortened) until a -- for the child's mind satisfactory -- *composition* had been achieved.

The notion embedded in OBSERVER was that if one were able to replicate a child's composition protocol by writing simulation code in some A.I. language, one could claim to have understood, to a small extent, the child composer's musical problem-solving process. Invited by H. A. Simon, himself an excellent cellist, in 1975 I moved to Pittsburgh, PA, to benefit from the A.I. research on-going at Carnegie-Mellon. The result of my research was published in 1977 by the Music Department of the University of Pittsburgh under the title *Music, Memory, and Thought* (https://www.amazon.com/gp/product/0835702650/ref=dbs_a_def_rwt_bibl_vppi_i4). It was a primer in cognitive musicology, focused on MiTs generating what society calls *music*.

Interviewing for Expert Systems

Composers were not the only experts I was interested in. Working as a software engineer and member of the A.I. Team at Arthur D. Little, Cambridge, MA, in the middle 1980s, I encountered an opportunity to enrich my first, behavioristic approach to exploring MiT's via real-time interviews with experts in organizations. Our task as a team was to build a bridge between experts such as lawyers, chemists, and stock traders, etc., on one hand, and programmers designing software-based *expert systems,* on the other. We approached this assignment by engaging experts in recorded, real-time interviews through which we explored with them the

MiTs they ceaselessly generated in pursuit of a specific task, and then work with programmers to embody our findings in available A.I. software.

I had learned from protocol analysis (1973-78) that scrutinizing operator sequences as indicators of mental process, as practiced in *information psychology*, was a rather limited undertaking since the composing machine I retro-actively built, and then projected into children's musical consciousness as "their" creative mechanism, was not very forthcoming about the emotional, in fact not even the intellectual, operators involved. Rather, it was a first step toward work in A. E. based on concepts of computer science, i.e., in a highly structural manner.

At that time (1985), interviewing professional experts in natural language dialogue was still a *terra incognita,* also since the way one would optimally proceed as an interviewer was far from evident and had been thought about very little. A theory of 'thought forms' had just been invented by M. Basseches but was unknown to me although I worked, as he did, in Cambridge, MA. (I took me 7 more years to find out about his work at Harvard University).

As is well known, experts' MiTs are embedded in their own specific lingo, a kind of foreign language an interviewer needs to learn to analyze, to get access to the conceptual core of what an expert has been saying. Of course, the analysis of interviews of experts was prejudiced by the MiTs used by the interviewer and interview analyzer who (beneficially) was an outsider to the expert's universe of discourse. The interviewer had to have at least a rudimentary understanding of presently existing software available for sculpting expert procedures through software equivalents, and thus could advise programmer colleagues who were translating interview analysis results into a suitable programming language.

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For me, the most enlightening aspect of my interviewing and interview analysis practice was the realization of how difficult it is to interview an expert in such a way that one is able to capture, not just the expert's textbook knowledge used in a specific task, but preponderantly the aesthetic and idiosyncratic dimensions of his work, -- what Chomsky had called "performance" in contrast to (grammatical) "competence". (Our venture with OBSERVER really was headed toward a *performance model* for music composition.)

In fact, it was exactly the expert's performance knowledge, not his competence, that was the crux in building an effective expert system ("app"), in whatever field. Performance (in the sense of Chomsky) had to do with largely unconscious MiTs that often had to be inferred by the interviewer by making provocative summary statements that provoked further elucidations of subject matter by the expert interviewed: the interviewer's mandate was to create a performance model of the expert, not a competence model.

What became increasingly clear during my interviewing for expert systems apprenticeship, especially when analyzing recorded interviews, at Arthur D. Little was threefold:

1. Interview outcomes are co-constructed by interviewee and interviewer. (This entailed the squaring of the circle since the interviewer was both a partner of, and detached from, the interviewee.)
2. The interviewee, just as the interviewer, are following an internal dialogue of their own, focused on 'the same' concepts but nevertheless idiosyncratically 'different' due to making meaning and sense differently from each other.
3. The interviewer's internal dialogue needs to insinuate itself into the interviewee's internal dialogue by way of intense listening in order to "correctly" render the interviewee's MiTs.

Another insight from interviewing experts – who rarely worked in isolation – was that I realized I had no clue as to how effective teamwork could be understood epistemologically, not to speak of explaining, or even guiding, such work.

These insights were prizeless when in the early 1990s I learned to conduct semi-structured interviews for the sake of understanding individuals' adult-developmental stage or phase in my training as a developmental psychologist at Harvard University.

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I had learned as an expert system interviewer/engineer that experts are ceaselessly generating *conceptual configurations* ("cognitions") of a strictly logical kind that, when analyzed algorithmically could, with collaborative effort, be translated into programmed procedures, mostly by engineers separate from the interviewer.

To make this possible, the interview analyzer had to cooperate with software engineers, to ensure that the algorithms created by them had a high degree of verisimilitude relative to the flow of MiTs the expert had shared. The stark constraint this enterprise was burdened with is that it was very difficult to ensure that the resulting algorithm would not totally erased the human mental process captured by interviewer, reducing it to its purely logical structure, and thus reducing the performance model of the expert to a mere competence model. (In terms of DTF, typically nothing remained of the expert's thinking in process, relationship, and transformational thought forms.)

What got lost, in terms of real-time interviewing, were the rich, personal MiTs an individual expert produces in whatever "work" s(he) is engaged in, internal or external.

Clinical Interviewing

The next step in my interviewing apprenticeship was taken in the domain of mental health, as different from mental growth. In this discipline, I learned to follow interviewing protocols for something called "intake", on one hand, and "psychotherapy" (as different from coaching), on the other.

The goal of the first practice was to obtain a holistic, rounded impression of a specific patient (sometimes at the bedside, where it was reduced to understanding degree of physiological functioning), while that of the second was to work with that impression over time, supported at times by clinical assessments, by unfolding the unconscious and conscious dimensions of the client's psychological functioning for the sake of being of help.

In this field, the "operators" that produced the patient's psychological dimension were deeply hidden, and even the DSM (dialogical and statistical manual of mental disorders) would not make them appear other than as *symptoms* whose root causes essentially remained buried.

This insight prepared me for the possibility that factors of mental growth (referred to as "adult development"), which I was to call "social-emotional" and "cognitive", could be of great help in diving below merely clinical symptoms and behavioral patterns, by using semi-structured qualitative interviews which could be systematically assessed and compared between subjects.

The major insight from my clinical work, outside of a host of insights into the societal and social formation of mental disorders and their practical management, concerned the importance of adopting a -- clinical or non-clinical -- *interviewer persona*.

A little story will highlight what I mean.

In the beginning of the third year of my clinical internship at a large Boston teaching hospital (Boston Medical Center), my psychotherapy supervisor said this: "From our patients, I hear good things about your work with them. They all like you and think of you as a very helpful, emphatic person. However, from my perspective, you still lack a solid psychological *persona* different from your own person. I am referring to a professional 'mask' you need to wear as a true *psychologist,* in order to be able to stand in your patients' shoes regardless of your instantaneous feelings about, or 'take' of, them. This will help you not to be fooled by their seemingly immediate needs and will strengthen your insight into the structure of the mental processes that make them have these needs." (In terms of developmental practice, he was pointing to the difference between an "other-dependent" and a "self-authoring" way of interviewing.)

I was somewhat crushed by my (well-meaning) supervisor's trespassing onto my professional persona, but very soon changed to being grateful to him for his astute observation on my behalf. Even today, I am trying to model him when I help beginners in developmental interviewing with fashioning their optimal *persona* for the sake of interviewing, -- one of the hardest tasks I have encountered in A. E.

Developmental Interviewing

One might think that, given the experiences so far reported, I was well prepared for entering the premises of developmental interviewing and research. Even so, it took me another decade

to learn expert social-emotional and cognitive interviewing. In this further learning, I refined Kegan's interviewing protocol as well as created the DTF 'Three Houses' protocol that helps interviewing practitioners sustain a *persona* independent of "of their own little personality", as my clinical supervisor put it.

(*Your own little personality* is a fellow thoroughly situated at Kegan's other-dependent level who tries to please clients or identify with patients, and is usually unprotected by employing an interview protocol strengthening an interviewer's *persona*. Many beginning developmental interviewers find it to be "socially awkward" (which it is), to have to assume a 'persona' (mask) different from their own little personality because they have no clue as to how they 'come across' to others. In the Constructive-Developmental Framework (CDF), supports for building an interviewer-persona take the form of 10 social-emotional *prompts*, on one hand, and the 3x4=12 *floors* of the Three Houses serving as *cognitive* prompts, on the other. Both of these tools cut down on the number of the many, merely anecdotal, thought associations that interviewees, when unguided, fall prey to.)

In practicing CDF, thus applied epistemology, over 20 years, I discovered that a new frontier of developmental interviewing arises in work with teams. In that kind of work, we are dealing with all of the social-emotional and cognitive factors of team work that ultimately determine how "self-organizing", as the slogan goes, a team can become (Jan De Visch & Otto Laske, Dynamic Collaboration, www.connecttransform.be).

Without a sure sense of a team's potential for functioning in an 'upwardly' and 'downwardly' divided fashion, little can be achieved when leading or guiding teams. In light of all of my interviewing experiences since protocol analysis in the 1970s, becoming a *critical facilitator* of teams (as Jan De Visch has called it) tests all resources of any reflective, developmentally thinking, practitioner. Educating critical facilitators requires a systematic and stringent effort along the lines of the IDM program initiated by me in 2001.

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