

Heuristic Concepts, Processes, and Validation

Heuristic inquiry is a process that begins with a question or problem which the researcher seeks to illuminate or answer. The question is one that has been a personal challenge and puzzlement in the search to understand one's self and the world in which one lives. The heuristic process is autobiographic, yet with virtually every question that matters personally there is also a social—and perhaps universal—significance.

Heuristics is a way of engaging in scientific search through methods and processes aimed at discovery; a way of self-inquiry and dialogue with others aimed at finding the underlying meanings of important human experiences. The deepest currents of meaning and knowledge take place within the individual through one's senses, perceptions, beliefs, and judgments. This requires a passionate, disciplined commitment to remain with a question intensely and continuously until it is illuminated or answered.

CONCEPTS AND PROCESSES OF HEURISTIC RESEARCH

Identifying with the Focus of Inquiry

Through exploratory open-ended inquiry, self-directed search, and immersion in active experience, one is able to get inside the question, become one with it, and thus achieve an understanding of it. Salk (1983) has called this kind of identification with the focus of the investigation "the inverted perspective" and has described the process as follows:

In order to understand what follows it will be necessary for me to refer to certain effects of inverted perspective which I have found valuable in my scientific work and which I have also used as a device to understand the human condition. I do not remember exactly at what point I began to apply this way of examining my experience, but very early in my life I would imagine myself in the position of the object in which I was interested. Later, when I became a scientist, I would picture myself as a virus, or as a cancer cell, for example, and try to sense what it would be like to be either. I would also imagine myself as the immune system, and I would try to reconstruct what I would do as an immune system engaged in combating a virus or cancer cell . . . Before long, this internal dialogue became second nature to me; I found that my mind worked this way all the time. (p. 7)

Self-Dialogue

In addition to the significance of becoming one with what one is seeking to know, one may enter into dialogue with the phenomenon, allowing the phenomenon to speak directly to one's own experience, to be questioned by it. In this way, one is able to encounter and examine it, to engage in a rhythmic flow with it—back and forth, again and again—until one has uncovered its multiple meanings. Then one is able to depict the experience in its many aspects or foldings into core themes and essences. Self-dialogue is the critical beginning; the recognition that if one is going to be able to discover the constituents and qualities that make up an experience, one must begin with oneself. One's own self-discoveries, awarenesses, and understandings are the initial steps of the process.

Heuristic inquiry requires that one be open, receptive, and attuned to all facets of one's experience of a phenomenon, allowing comprehension and compassion to mingle and recognizing the place and unity of intellect, emotion, and spirit. The heuristic researcher is seeking to understand the wholeness and the unique patterns of experiences in a scientifically organized and disciplined way. Heuristics, like any other science, is "a search for unity in hidden likenesses" (Bronowski, 1965, p. 13). Craig (1978) has emphasized that in scientific inquiry the heuristic process moves from whole to part and back to whole again, "from the individual to the general and back again . . . from the feeling to the word and back to the feeling, from the experience to the concept and back to the experience" (p. 57).

Rogers (1969) has summarized the essential qualities of discovery in terms of openness to one's own experiences, trust in one's self-awareness and understanding, an internal locus of evaluation, and a willingness to enter into a process rooted in the self. Preliminary awareness of one's own knowledge and experience of a critical life issue, challenge, or problem enables one to begin a study of the problem or concern. As the inquiry expands, such self-knowledge enables one to develop the ability and skill to understand the problem more fully, and ultimately to deepen and extend the understanding through the eyes and voices of others. Maslow (1966) has emphasized that "there is no substitute for experience, none at all. All the other paraphernalia of communication and of knowledge—words, labels, concepts, symbols, theories, formulas, sciences—all are useful only because people already knew them experientially" (pp. 45-46).

The process of self-dialogue makes possible the derivation of a body of scientific knowledge that is useful. Such a process is guided by a conception that knowledge grows out of direct human experience and can be discovered and explicated initially through self-inquiry.

In their reflections on human inquiry, Douglass and Moustakas (1985) have observed that

learning that proceeds heuristically has a path of its own. It is self-directed, self-motivated, and open to spontaneous shift. It defies the shackles of convention and tradition. . . . It pushes beyond the known, the expected, or the merely possible. Without the restraining leash of formal hypotheses, and free from external methodological structures that limit awareness or channel it, the one who searches heuristically may draw upon the perceptual powers afforded by . . . direct experience. (p. 44)

In self-dialogue, one faces oneself and must be honest with oneself and one's experience relevant to the question or problem. Jourard (1971) has pointed out that self-disclosure is "the act of making yourself manifest, showing yourself so others can perceive you" (p. 19). Douglass and Moustakas (1985) also stress the value of self-disclosure: "At the heart of heuristics lies an emphasis on disclosing the self as a way of facilitating disclosure from others—a response to the tacit dimension within oneself sparks a similar call from others" (p. 50).

An example of self-dialogue is presented in Varani's (1985) heuristic investigation of the psychological dimensions of mystery. In the initial phase of his study, Varani maintained a journal in which he recorded dialogues with himself as a way of entering into the phenomenon of mystery. He immersed himself in the topic and clarified for himself its nature, meaning, and essence. Excerpts from his self-dialogue on the mystery of dying and death follow.

March 23, 1982

JOHN You sound overwhelmed under a deluge of all of these references to death and dying. Is that true?

JOHN PAUL Yes, that is true. It's like Niagara Falls crashing down upon me. The overwhelming facts about the widespread, omnipresent reality of death, offer no escape from dying. . . .

JOHN Do you have anything in particular to say about your experience of the mystery of death?

JOHN PAUL Well, I am immersed in the reality of death more often than I am aware of it or make conscious allusions to it. My guess is I could remain immersed in it; dwell in it; allow the heuristic process to move me along. I feel heavy, pressured, sad, but not depressed. I can smell death all around. Winter particularly is a time when death seems almost visible once the snow has melted and it remains still too cold for spring to come. All is dead, the trees and grass; the shrubs look beaten down; even the evergreen is pale and brown—no life at all.

JOHN Is there anyway I can assist you in this process?

JOHN PAUL Yes, I can be helped to remain in continuity with my historical personage.

JOHN How can I help here?

JOHN PAUL Jog my memory; keep before me the list of personal experiences with death.

JOHN The deaths of your mother, father, Peter, Bob Webb, stand out quite strongly, I believe. The early childhood experiences: wakes in neighbor's living rooms; the tragic deaths of family friends on Christmas Eve, writing out your will and obituary . . .

JOHN PAUL Yes, these do stand out. The failure to discuss our fears about death while growing up still smarts. I suppose being in the ministry today offered a way to deal with death . . . a step away.

JOHN What about the experience of mystery around death? Can you discuss the experience?

JOHN PAUL I would like to. However, let me rest on it. I want to stop at this point.

March 24, 1982

JOHN PAUL I'm not sure I am anymore ready to focus on the experience of death's mystery, especially my own death, than yesterday. What comes to the surface is the unknown time when it will happen to me. Even saying it in such a passive voice strikes me as odd and unwanted.

JOHN Are you saying that the time factor is mysterious, obviously unknown? And that you will die is not a choice? This too, is mysterious?

JOHN PAUL Yes, both of these are. When it will be disturbs me; how it will be, puzzles me; that I cannot choose to die at a certain time or place, causes me to be confused. It is out of my hands, beyond my control. Death is such an important event in my life and I am helpless to see its execution. Uncertainty looms large about the unknown time factor; out-of-hands aspect comes next; finally, just "how" it will be creates some discomfort. . . .

JOHN Since you have mentioned key themes surrounding your experience of dying and death, could you now describe just what is your experience with each of them? How do you relate to each theme?

JOHN PAUL Taking the first theme, i.e., *the uncertainty of the time of my death*, I have tended to value time as a premium, as most precious. Time seems to be my life itself. I don't always maintain this attitude, yet, I would like to value time deeply on a consistent basis. This does not mean that the here and now is lived exclusively. I value my past and I look forward to a promising future. As I blend these time components, I can bring an ever deeper meaning to my future goals.

JOHN As I hear you, the upset about the mysterious moment of your dying can be an incentive to being vulnerable to the present moment, an openness to what it can offer, or, in another sense, what you can bring to it on the basis of your intentional energies, while maintaining a sense of continuity with the past.

JOHN PAUL You have it. . . . Moving on to the second theme that puzzles me: *the uncontrollability issue*. As I ponder this, I sense it not as a critical and insurmountable issue. Truly experiencing death as a passive event bothers me. I would prefer to surrender myself at the

appropriate moment. This seems plausible and not too mysterious an event. Clearly I do not mean to take my life in suicide. For this would do violence to life's dignity for me. In another sense I am doing just that according to the truth of an old axiom: "What you sow, that is what you shall reap". My present life style, the totality of it, is moving me in the direction that will ultimately result in my death. Yet, this is not a conscious suicidal approach as it was not for Jesus or Thomas More who elected to remain true to their convictions which ultimately resulted in their executions. It seems to be the paradoxical nature of life; is it not of the essence of life to live and move towards dying? . . .

June 7, 1982

JOHN You are saying that as you sow your life, so will you reap the harvest, death being one of the fruits. You have some control, the same as you have of determining the present use of your time and in giving your life direction.

JOHN PAUL Yes, it is the unpredictable illness or accident for which I cannot account, that allows the mysterious unknown to associate with the uncertain aspect of life.

JOHN Are you including in your description of the experience both uncertainty and unpredictability (i.e., of the particular circumstance)?

JOHN PAUL Yes. It is these two themes in the mystery with which I must learn to cope. The final theme mentioned earlier, *the exact how*, seems now to be submerged in the first two themes.

Tacit Knowing

Underlying all other concepts in heuristic research, at the base of all heuristic discovery, is the power of revelation in tacit knowing. Polanyi (1983) has stated that all knowledge consists or is rooted in acts of comprehension that are made possible through tacit knowing: "*We can know more than we can tell. . . . Take an example. We know a person's face, and can recognize it among a million. Yet we usually cannot tell how we recognize a face we know . . . this knowledge cannot be put into words*" (p. 4). Such knowledge is possible through a tacit capacity that allows one to sense the unity or wholeness of something from an

understanding of the individual qualities or parts. Knowledge of the trunk, branches, buds, flowers, leaves, colors, textures, sounds, shape, size—and other parts or qualities—ultimately may enable a sense of the treeness of a tree, and its wholeness as well. This knowing of the essence or treeness of a tree is achieved through a tacit process. Vague and defined dimensions or components take on “sharp outlines of certainty, only to dissolve again in the light of second thoughts or of further experimental observations. Yet from time to time certain visions of the truth, having made their appearance, continue to gain strength both by further reflection and additional evidence,” (Polanyi, 1964, p. 30).

Polanyi (1964) calls the elements of tacit knowledge *subsidiary* and *focal*. The subsidiary factors attract immediate attention; they are essential to knowing, but of secondary importance. They stand out when we examine our experience. They are the elements of perception that enter into conscious awareness. They are visible and can be described. Each time we look, we may become aware of subsidiary elements as vague shapes, outlines, or understandings that take on a definite form. Ultimately, subsidiary factors represent the invariant constituents (those which are unique and distinctive). They combine with the focal (unseen and invisible) aspects of an experience, thus making possible a sense of the wholeness or essence of a phenomenon. The focal is a necessary component in the achievement of unity or integration. Because *focal* is associated with focus, perhaps a more appropriate designation would be *implicit* or *subliminal*; nonetheless, Polanyi's language will be retained here.

In *Knowing and Being*, Polanyi (1969) considers four types of tacit knowing in which subsidiary and focal dimensions come together to create whole experiences. The first “skill” (p. 182) requires an integration of subsidiary and focal qualities such as those in learning to ride a bicycle. In this activity, a set of subsidiary skills are required, such as pedaling, steering, balancing, braking, a sense of space, timing, appropriate motions, and coordination; along with focal factors such as readiness, self-esteem, confidence, optimism, and sense of the whole—all of which are combined when riding a bicycle. When the subsidiary skills and focal attitudes are in rhythm, the person is able to fulfill the task and complete the performance.

Polanyi (1964) refers to a second type of tacit knowledge as “reading of a physiognomy” (p. 182). In understanding the mood of a person—

for example, worry—we note the furrowed brow, the downcast eyes, the lowered body, the heaviness of movement, the pinched voice and mouth, and other clues in catching the whole mood. These are the subsidiary elements. The sense of stress, heaviness, the basic inner downcast state, and other tacit signs represent the focal dimensions. Together they enable a reading of the person's state of being or mental outlook. Polanyi believes that we attend *from* the subsidiary features "to the mood by integrating them to the appearance of the mood" (p. 182) and that this enables us to determine the meaning of a person's outlook or prevailing attitude.

The third type of tacit knowing is involved in the way we find our way in the dark—for example, entering a theater after a movie has begun. We grope in the darkness but there are flashes of light. We "feel" our way along, picking up subsidiary clues and combining them with our sense of the focal qualities of space, shadow, and light. We develop a sense or meaning of where we are and thus are able to locate an empty seat.

Finally, Polanyi refers to "speculative skills" as tapping into the tacit dimension. For example, "a chess player conducting a game sees the way the chess-men jointly bear on his chances of winning the game" (p. 182). The chess player utilizes subsidiary and focal factors that operate in tacit knowing and is thus able to decide on the next move.

When we curtail the tacit in research, we limit possibilities for knowing. We restrict the potential for new awareness and understanding. We reduce the range and depth of meanings that are inherent in every significant human experience (Douglass & Moustakas, 1985). In obtaining information that will contribute to resolution of an issue, or illumination of a problem, the tacit dimension underlies and precedes intuition and guides the researcher into untapped directions and sources of meaning. Tacit knowing is a basic capacity of the self of the researcher and gives "birth to the hunches and vague, formless insights that characterize heuristic discovery" (Douglass & Moustakas, p. 49).

Emphasizing the indispensable nature of the tacit dimension in discovery of knowledge Polanyi (1969) asserts that: "while tacit knowledge can be possessed by itself, explicit knowledge must rely on being tacitly understood and applied. Hence all knowledge is *either tacit or rooted in tacit knowledge*" (p. 144).

Intuition

From the tacit dimension, a kind of bridge is formed between the implicit knowledge inherent in the tacit and the explicit knowledge which is observable and describable. The bridge between the explicit and the tacit is the realm of the between, or the intuitive. In intuition, from the subsidiary or observable factors one utilizes an internal capacity to make inferences and arrive at a knowledge of underlying structures or dynamics. Intuition makes immediate knowledge possible without the intervening steps of logic and reasoning. While the tacit is pure mystery in its focal nature—ineffable and unspecifiable—in the intuitive process one draws on clues; one senses a pattern or underlying condition that enables one to imagine and then characterize the reality, state of mind, or condition. In intuition we perceive something, observe it, and look and look again from clue to clue until we surmise the truth.

The more that intuition is exercised and tested, the more likely one will develop an advanced perceptiveness and sensitivity to what is essential in discovery of knowledge. Polanyi (1969) views the lived, expressed intuition as a skill, developed into effectiveness through practice. Referring to intuition, he states that “great powers of scientific intuition are called originality, for they discover things that are most surprising and make men see the world in a new way” (p. 118).

Intuition makes possible the perceiving of things as wholes. For example, one can view a tree from many angles, sides, front, and back; but one cannot see a whole tree. The whole tree must be intuited from the clues that are provided by careful observation, experience, and connecting the parts and subtleties of the tree into patterns and relationships that ultimately enable an intuitive knowing of the tree as a whole. Every act of achieving integration, unity, or wholeness of anything requires intuition. At every step along the way, the heuristic researcher exercises intuitive clues and make necessary shifts in method, procedure, direction, and understanding which will add depth, substance, and essential meanings to the discovery process.

Intuition is an essential characteristic of seeking knowledge. Without the intuitive capacity to form patterns, relationships, and inferences, essential material for scientific knowledge is denied or lost. Intuition facilitates the researcher’s process of asking questions about

phenomena that hold promise for enriching life. In substance, intuition guides the researcher in discovery of patterns and meanings that will lead to enhanced meanings, and deepened and extended knowledge.

Indwelling

Indwelling refers to the heuristic process of turning inward to seek a deeper, more extended comprehension of the nature or meaning of a quality or theme of human experience. It involves a willingness to gaze with unwavering attention and concentration into some facet of human experience in order to understand its constituent qualities and its wholeness. To understand something fully, one dwells inside the subsidiary and focal factors to draw from them every possible nuance, texture, fact, and meaning. The indwelling process is conscious and deliberate, yet it is not lineal or logical. It follows clues wherever they appear; one dwells inside them and expands their meanings and associations until a fundamental insight is achieved.

A person's anger, for example, is an experience that invites self-engagement. One becomes attuned to whatever appears in thoughts, feelings, impressions, and even glimmerings or fleeting awarenesses. In the heuristic process of indwelling one seeks to understand the nature and meaning of anger. Ultimately one seeks to apprehend anger in a living sense: its qualities, the conditions (internally and externally) that evoke it, the events, places, and people connected with it. The process of indwelling requires that one remain with one's anger and return to it again and again, until one is able to depict it fully in words and pictures, and perhaps even in creative expressions such as through poetry, artworks, movements, and narratives. Indwelling requires practice to enable the researcher to tap into intuitive awakenings and tacit mysteries as well as the explicit dimensions which can be observed, reported, and described.

Throughout a heuristic inquiry, indwelling is an essential process; particularly in the elucidation of the parameters and details of the experience. The concentrated, heavy work of heuristic research is part of the demand of the explication process, a process through which one gathers detailed life experiences related to the qualities and constituents of the phenomenon under investigation. Through the explication

process, one's understanding of the phenomenon is deepened and extended. Explication requires reflective analysis, a return to the phenomenon for a more complete perspective.

Indwelling is a painstaking, deliberate process. Patience and incremental understanding are the guidelines. Through indwelling, the heuristic investigator finally turns the corner and moves toward the ultimate creative synthesis that portrays the essential qualities and meanings of an experience.

Focusing

Another essential process in heuristic inquiry is that of focusing. It is both a concept that points to a significant idea relevant to personal growth, insight, and change, and a process that has been perfected and advanced as a therapeutic strategy by Gendlin (1978).

The steps of focusing as used in heuristic research include the clearing of an inward space to enable one to tap into thoughts and feelings that are essential to clarifying a question; getting a handle on the question; elucidating its constituents; making contact with core themes; and explicating the themes. Focusing facilitates a relaxed and receptive state, enables perceptions and sensings to achieve more definitive clarification, taps into the essence of what matters, and sets aside peripheral qualities or feelings.

Focusing is an inner attention, a staying with, a sustained process of systematically contacting the more central meanings of an experience. Focusing enables one to see something as it is and to make whatever shifts are necessary to remove clutter and make contact with necessary awarenesses and insights into one's experiences.

Douglass and Moustakas (1985) conclude that the focusing process enables the researcher to identify qualities of an experience that have remained out of conscious reach primarily because the individual has not paused long enough to examine his or her experience of the phenomenon. Through the focusing process, the researcher is able to determine the core themes that constitute an experience, identify and assess connecting feelings and thoughts, and achieve cognitive knowledge that includes "refinements of meaning and perception that register as internal shifts and alterations of behavior" (p. 51).

The Internal Frame of Reference

Heuristic processes relate back to the internal frame of reference. Whether the knowledge derived is attained through tacit, intuitive, or observed phenomena—whether the knowledge is deepened and extended through indwelling, focusing, self-searching, or dialogue with others—its medium or base is the internal frame of reference.

To know and understand the nature, meanings, and essences of any human experience, one depends on the internal frame of reference of the person who has had, is having, or will have the experience. Only the experiencing persons—by looking at their own experiences in perceptions, thoughts, feelings, and sense—can validly provide portrayals of the experience. If one is to know and understand another's experience, one must converse directly with the person. One must encourage the other to express, explore, and explicate the meanings that are within his or her experience. One must create an atmosphere of openness and trust, and a connection with the other that will inspire that person to share his or her experience in unqualified, free, and unrestrained disclosures. Rogers (1951) has emphasized that the empathic understanding of another person's internal frame of reference is an essential condition of constructive personality change. Our most significant awarenesses are developed from our own internal searches and from our attunement and empathic understandings of others.

Our behavior will sometimes appear to be irrational when viewed from the outside, when observed from an external frame of reference. Lorenz's study of imprinting, reported in Combs, Richards, and Richards (1976), is a humorous example of how our understanding of other persons' experiences is distorted when we fail to recognize the phenomenal world of the experiencing persons, when we fail to seek to understand individuals' behavior and experiences through their perceptions and feelings and the meanings that they attach to their activities.

So it came about, on a certain Whit-Sunday, that, in company with my ducklings, I was wandering about, squatting and quacking, in a May-green meadow at the upper part of our garden. I was congratulating myself on the obedience and exactitude with which my ducklings came waddling after me, when I suddenly looked up and saw the garden fence framed by a row of dead-white faces: a group of tourists was standing at the fence and staring horrified in my direction. Forgivable! For all they

could see was a big man with a beard dragging himself, crouching, round the meadow, in figures of eight, glancing constantly over his shoulder and quacking—but the ducklings, the all-revealing and all-explaining ducklings—were hidden in the tall spring grass from the view of the astonished crowd. (p. 43)

THE PHASES OF HEURISTIC RESEARCH

Six phases of heuristic research guide unfolding investigations and comprise the basic research design. They include: the initial engagement, immersion into the topic and question, incubation, illumination, explication, and culmination of the research in a creative synthesis. Each phase is discussed briefly in the sections which follow and in detailed applications in the next chapter.

Initial Engagement

Within each researcher exists a topic, theme, problem, or question that represents a critical interest and area of search. The task of the initial engagement is to discover an intense interest, a passionate concern that calls out to the researcher, one that holds important social meanings and personal, compelling implications. The initial engagement invites self-dialogue, an inner search to discover the topic and question. During this process one encounters the self, one's autobiography, and significant relationships within a social context.

Ultimately, these forces come together and form a question. The question lingers within the researcher and awaits the disciplined commitment that will reveal its underlying meanings. The engagement or encountering of a question that holds personal power is a process that requires inner receptiveness, a willingness to enter fully into the theme, and to discover from within the spectrum of life experiences that will clarify and expand knowledge of the topic and illuminate the terms of the question. During the initial engagement, the investigator reaches inward for tacit awareness and knowledge, permits intuition to run freely, and elucidates the context from which the question takes form and significance.

Immersion

Once the question is discovered and its terms defined and clarified, the researcher lives the question in waking, sleeping, and even dream states. Everything in his or her life becomes crystallized around the question. The immersion process enables the researcher to come to be on intimate terms with the question—to live it and grow in knowledge and understanding of it.

The researcher is alert to all possibilities for meaning and enters fully into life with others wherever the theme is being expressed or talked about—in public settings, in social contexts, or in professional meetings. Virtually anything connected with the question becomes raw material for immersion, for staying with, and for maintaining a sustained focus and concentration. People, places, meetings, readings, nature—all offer possibilities for understanding the phenomenon. Primary concepts for facilitating the immersion process include spontaneous self-dialogue and self-searching, pursuing intuitive clues or hunches, and drawing from the mystery and sources of energy and knowledge within the tacit dimension.

Incubation

Incubation is the process in which the researcher retreats from the intense, concentrated focus on the question. Although the researcher is moving on a totally different path, detached from involvement with the question and removed from awareness of its nature and meanings, on another level expansion of knowledge is taking place. During this process the researcher is no longer absorbed in the topic in any direct way or alert to things, situations, events, or people that will contribute to an understanding of the phenomenon. Nevertheless, growth is taking place. The period of incubation enables the inner tacit dimension to reach its full possibilities; for example, the house key that has been misplaced often evades one's recall of its location while one is totally preoccupied with finding it. Almost as soon as one is absorbed with something else, however, the key suddenly appears in consciousness and draws its owner to it. More common perhaps is the forgotten name: No matter how hard and long one concentrates on remembering, the name does not present itself. Incubating the name while being involved with something else often brings it into awareness.

A similar process occurs in heuristic inquiry. The period of incubation allows the inner workings of the tacit dimension and intuition to continue to clarify and extend understanding on levels outside the immediate awareness. Using Poincare's findings in mathematics in *Science, Faith and Society*, Polanyi (1964) asserted that discovery does not ordinarily occur through deliberate mental operations and directed calculated efforts

the way you reach the peak of a mountain by putting in your last ounce of strength—but more often comes in a flash after a period of rest or distraction. Our labors are spent as it were in an unsuccessful scramble among the rocks and in the gullies on the flanks of the hill and then when we would give up for a moment and settle down to tea we suddenly find ourselves transported to the top . . . by a process of spontaneous mental reorganization uncontrolled by conscious effort. (p. 34)

Like Archimedes, who discovered a principle of buoyancy and displacement of fluids while taking a bath, the heuristic researcher through the incubation process gives birth to a new understanding or perspective that reveals additional qualities of the phenomenon, or a vision of its unity. Incubation is a process in which a seed has been planted; the seed undergoes silent nourishment, support, and care that produces a creative awareness of some dimension of a phenomenon or a creative integration of its parts or qualities.

Illumination

The process of illumination is one that occurs naturally when the researcher is open and receptive to tacit knowledge and intuition. The illumination as such is a breakthrough into conscious awareness of qualities and a clustering of qualities into themes inherent in the question. The illumination process may be an awakening to new constituents of the experience, thus adding new dimensions of knowledge. Or, the illumination may involve corrections of distorted understandings or disclosure of hidden meanings. When the researcher is in a receptive state of mind without conscious striving or concentration, the insight or modification occurs. A degree of reflectiveness is essential, but the mystery of situations requires tacit workings to uncover meanings and essences.

Illumination opens the door to a new awareness, a modification of an old understanding, a synthesis of fragmented knowledge, or an altogether new discovery of something that has been present for some time yet beyond immediate awareness. For example, after passing a particular scene back and forth many times I decided recently to capture its landmarks in my memory. I recorded the scene in a dated personal journal. Then I saw something that totally shocked me: On the fifth trip I was just passing—not particularly noticing anything—when a large cemetery plot suddenly appeared and caught my attention. Of course, it had been there all along, perhaps within my vision and perception, but beyond immediate attention; it was not among the core qualities that I had identified. I looked again. It was still there. I saw it distinctly and realized not only that it was a core component of the scene, but that it now virtually dominated everything else.

My original core qualities were objects of beauty in nature—fall flowers, mature trees, unusual shapes, striking greens, peaks and valleys, and brilliant colors, all burgeoning with life. What I had missed or ignored was the symbolic presence of death. Then all at once I remembered that my friend's sister had suddenly died. I had been informed at a time and place where I was unable to contact my friend. Shortly after receiving the death notice, I was passing the landscape scene for the fifth time. Until then I had not wanted to face the meaning of death in such a strikingly beautiful setting. I was unable to offer my support and sympathy, thus I put death out of action. Tacit surgings made death an instant reality and required that the cemetery be given its rightful place.

In illumination, it is just such missed, misunderstood, or distorted realities that make their appearance and add something essential to the truth of an experience. The illumination process has been continually recognized in creative discoveries from the earliest thinkers on science and is a key theme in Capra's *The Turning Point* (1982) and in Kuhn's *The Structure of Scientific Revolutions* (1970).

Explication

Once illumination relevant to themes, qualities, and components of a topic or question occurs, the heuristic researcher enters into a process of explication similar to (but in much more detail than) the

effort described above to understand and explain the meanings behind the missed cemetery in the landscape scene.

The purpose of the explication phase is to fully examine what has awakened in consciousness, in order to understand its various layers of meaning. Numerous heuristic approaches are utilized in pursuing a full elucidation of the descriptive qualities and themes that characterize the experience being investigated. A comprehensive elucidation may also include the recognition of new constituents and themes. In the explication process, the heuristic researcher utilizes focusing, indwelling, self-searching, and self-disclosure, and recognizes that meanings are unique and distinctive to an experience and depend upon internal frames of reference. The entire process of explication requires that researchers attend to their own awarenesses, feelings, thoughts, beliefs, and judgments as a prelude to the understanding that is derived from conversations and dialogues with others.

Perhaps the most significant concepts in explicating a phenomenon are focusing and indwelling, where concentrated attention is given to creating an inward space and discovering nuances, textures, and constituents of the phenomenon which may then be more fully elucidated through indwelling.

In explication a more complete apprehension of the key ingredients is discovered. Additional angles, textures, and features are articulated; refinements and corrections are made. Ultimately a comprehensive depiction of the core or dominant themes are developed. The researcher brings together discoveries of meaning and organizes them into a comprehensive depiction of the essences of the experience. The researcher explicates the major components of the phenomenon, in detail, and is now ready to put them together into a whole experience.

Creative Synthesis

The final phase of heuristic research is the process of creative synthesis. The researcher in entering this process is thoroughly familiar with all the data in its major constituents, qualities, and themes and in the explication of the meanings and details of the experience as a whole. The creative synthesis can only be achieved through tacit and intuitive powers. Once the researcher has mastered knowledge of the material that illuminates and explicates the question, the

researcher is challenged to put the components and core themes into a creative synthesis. This usually takes the form of a narrative depiction utilizing verbatim material and examples, but it may be expressed as a poem, story, drawing, painting, or by some other creative form.

Knowledge of the data and a period of solitude and meditation focusing on the topic and question are the essential preparatory steps for the inspiration that eventually enables a creative synthesis. The major concepts that underlie a creative synthesis are the tacit dimension, intuition, and self-searching. The researcher must move beyond any confined or constricted attention to the data itself and permit an inward life on the question to grow, in such a way that a comprehensive expression of the essences of the phenomenon investigated is realized.

To sum up: Behavior is governed and experience is determined by the unique perceptions, feelings, intuitions, beliefs, and judgments housed in the internal frame of reference of a person. Meanings are inherent in a particular world view, an individual life, and the connections between self, other, and world.

The Validation of Heuristic Research

Since heuristic inquiry utilizes qualitative methodology in arriving at themes and essences of experience, validity in heuristics is not a quantitative measurement that can be determined by correlations or statistics. The question of validity is one of meaning: Does the ultimate depiction of the experience derived from one's own rigorous, exhaustive self-searching and from the explications of others present comprehensively, vividly, and accurately the meanings and essences of the experience? This judgment is made by the primary researcher, who is the only person in the investigation who has undergone the heuristic inquiry from the beginning formulation of the question through phases of incubation, illumination, explication, and creative synthesis not only with himself or herself, but with each and every co-researcher. The primary investigator has collected and analyzed all of the material—reflecting, sifting, exploring, judging its relevance or meaning, and ultimately elucidating the themes and essences that comprehensively, distinctively, and accurately depict the experience.

Bridgman (1950) emphasizes the subjective bases of validation, the dependence of validity on the judgment and interpretation of the researcher:

The process that I want to call scientific is a process that involves the continual apprehension of meaning, the constant appraisal of significance, accompanied by a running act of checking to be sure that I am doing what I want to do, and of judging correctness or incorrectness. This checking and judging and accepting that together constitute understanding are done by me and can be done for me by no one else. They are as private as my toothache, and without them science is dead. (p. 50)

The heuristic researcher returns again and again to the data to check the depictions of the experience to determine whether the qualities or constituents that have been derived from the data embrace the necessary and sufficient meanings. The heuristic researcher's "constant appraisal of significance" and "checking and judging" facilitate the process of achieving a valid depiction of the experience being investigated. They enable the researcher to achieve repeated verification that the explication of the phenomenon and the creative synthesis of essences and meanings actually portray the phenomenon investigated. In such a process, as emphasized by Polanyi (1969), "certain visions of the truth, having made their appearance, continue to gain strength both by further reflection and additional evidence. These are the claims which may be accepted as final by the investigator and for which he may assume responsibility by communicating them in print" (p. 30).

Although the process involves returning again and again to the raw data and checking again and again the constituent meanings of the experience for comprehensiveness and essence—a rigorous and disciplined series of steps—Polanyi (1969) has emphasized that there are no rules to guide verification that can be relied on in the last resort; the scientist must make the ultimate judgment. The synthesis of essences and meanings inherent in any human experience is a reflection and outcome of the researcher's pursuit of knowledge. What is presented as truth and what is removed as implausible or idiosyncratic ultimately can be accredited only on the grounds of personal knowledge and judgment (p. 120).

In heuristic investigations, verification is enhanced by returning to the research participants, sharing with them the meanings and

essences of the phenomenon as derived from reflection on and analysis of the verbatim transcribed interviews and other material, and seeking their assessment for comprehensiveness and accuracy. For example, in Humphrey's (1989) recently completed research on the constituents of the search for life's meanings, he mailed each research participant the composite comprehensive description of the experience with a request that it be examined to determine whether or not it included the essential qualities and meanings of their experiences. Thirteen of his 14 co-researchers responded; 10 indicated that the comprehensive statement of essences had captured their experience fully and accurately, and that nothing further need be added. Three stated that important qualities had been omitted relevant to the "dark side" of searching for life's meanings, and that these were necessary and essential to an accurate portrayal of the experience. Humphrey states:

I had thought that my heuristic exploration . . . had been thorough. . . . Fortunately, the step of participant validation highlighted the reduced emphasis on this aspect and I returned to an heuristic process concerning the dark side of my own search and also re-examined the research interviews. The result was that I significantly expanded the importance of this element of the search for meaning. (p. 65)

Having revised his comprehensive description of the experience of searching for life's meanings, Humphrey (1989) resubmitted it; all co-researchers agreed that the revised statement contained the essence of their experience.

Another example of the validation process of heuristic research comes from my own studies of loneliness. The publication of *Loneliness* (Moustakas, 1961) was a way of taking responsibility for the depictions of lonely experience and lonely life, for the derived meanings and essences of the experience, and for the analysis of loneliness into themes of the alienating loneliness of anxiety, existential loneliness, and lonely solitude.

I received about two thousand responses from readers of *Loneliness* and *Loneliness and Love* (Moustakas, 1972), a publication in which I expanded the meaning of the phenomenon. I reprint two of these—from *The Touch of Loneliness* (Moustakas, 1975)—which exemplify the kind of verification offered by readers who recognized the creative

and destructive paths of loneliness, themes that were elucidated in my research:

A Little Boy Part of Me

I want to say something about your book, *Loneliness*. I was the son of an army officer, and I went to West Point and spent seven years in a very numb and lonely existence as an army officer. It was during a time of intense loneliness that I first discovered and read your book, *Loneliness*, four and a half years ago. I had just split with my wife after ten years of marriage and I was very deeply into experiencing that tragic loss for the first time. Loneliness had been an emotion which I had always managed to outrun. I had discovered that if I did something important or impressive that people would make a fuss over me and I would not have to experience my own loneliness. Additionally, at age five, I became "man of the house" when my father left for World War II, leaving me in charge of my mother and telling me to take care of her and to "be good" and he would hurry home. I tried so hard to "be good," yet he didn't come home for four years. I didn't burden my mother and kept my loneliness deep within myself. On a lake in New Hampshire, when loneliness literally caught up with me after having outrun it for so long, I cried deeply; I went beneath the veneer of my tough shell and found a whole new part of the essence of me—a creativity. I wrote poems and a book and painted. And more important, I discovered a little boy part of me that had grown up early—a tenderness which West Point didn't exactly nourish. I find that this tender part of me, rather than the tough part, was a part my friends and I both cherish. I then discovered that rather than my toughness being my strength, as I had misconstrued it in the military, it was really my tenderness that was my strength. (pp. 46-47)

In Loneliness I Have My Own Dream

I am writing you as, perhaps, many others have, upon reading your book on loneliness. It was difficult for me to muster up the courage to lift the cover and enter a world that I feared would tell me what I didn't want to know.

In vain I've tried to build bridges. Despondent, confused, with no other alternative than panic and suicide I would commit myself to the prison-like cacophony and discord of a mental institution.