

1983 Eleanor Clarke Slagle Lecture

# Clinical Reasoning: The Ethics, Science, and Art

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As I join the roster of Eleanor Clarke Slagle lecturers, I am keenly aware of the privilege and responsibility of being so honored by my professional colleagues. Since my selection for the award was based on a recognition of a synthesis of skills in occupational therapy practice, education, and research, it seemed fitting for me to pursue a topic that would in some way enable me to reflect this synthesis. Thus, in developing the theme of clinical reasoning, I have taken a practice issue, studied it from an educational perspective, and formulated a conceptual framework for guiding the development of a clinical science of occupational therapy.

A therapist, employed at a regional rehabilitation center, extracts cues from the records of acute hospitals, to judge the rehabilitation potential of patients referred for admission. Another therapist, working with persons with mental retardation, selects a treatment approach based on task analysis to teach self-care skills. A third therapist, serving on a geriatric assessment team, uses scores on a mental status examination and performance ratings in daily living activities to estimate patients' ability to continue living alone in their homes. A fourth therapist reviews patients' progress in manual dexterity to formulate a recommendation for or against hand surgery. These four therapists are using their clinical reasoning skills to collect and transform data about patients into decisions that have critical implications for the quality of life of their patients.

If we questioned the therapists about their decisions, each would probably comment on their potential fallibility. Some patients, denied occupational therapy because of a perceived lack of potential for rehabilitation, would make substantial gains in functional skills if intervention were initiated. Some patients with mental retardation will not benefit from the task breakdown approach to self-care training. Some geriatric patients admitted for institutional living could have been supported adequately in the community. Some patients undergoing hand surgery will lose functional abilities. The possibility of error in our clinical judgments and the potential ensuing negative consequences urge us to develop ways of improving our assessment and treatment decisions.

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Despite the obvious importance of clinical judgment in the occupational therapy process, little attention has been given to explicating the thinking that guides practice. My research, albeit with a small number of occupational therapists, suggests that our cognitive processes are regarded as intuitive and ineffable. For example, when therapists were asked how they arrived at their treatment decisions, they commonly responded by saying, "I have never really thought about it." or "I don't know how I reached that conclusion. I just know." Cognitive activity constitutes the heart of the clinical enterprise. Our failure to study the process of knowing and understanding that underlies practice precludes an adequate description of clinical reasoning. This in turn prevents the development of a methodology for systematically improving it and for teaching it.

I intend to explore here the reasoning process through which we learn about patients so that we may help them through engagement in occupation. I will construct an intellectual device for viewing clinical reasoning from the perspective of the basic questions the therapist seeks to answer through clinical inquiry. The scientific, ethical, and artistic dimensions of clinical reasoning will be elucidated as these questions are explored. The device will be useful for directing and appraising our thoughts about treating patients and for developing a clinical science of occupational therapy. In developing my thoughts, I have relied on the basic scheme of clinical judgment presented by Pellegrino (1) for medicine and have adapted it to the occupational therapy process.

# The Goal of Clinical Reasoning

The goal of the clinical reasoning process has an impact on each of the steps taken to achieve the goal. Hence, an appreciation of this goal provides insight on the whole process.

Patients come to occupational therapy when they, their physicians, family members, or caregivers perceive that they are not adequately performing their daily activities. Performance in self-care, work, and leisure occupations has been compromised because of the consequences of disease, trauma, abnormal development, age-related changes, or environmental restrictions. The disruptions in occupational functions are characteristically severe and enduring as opposed to transitory. To regain a former level of performance, maintain the current level, or achieve a more optimal one, the patient enlists the aid of the therapist. The therapist's task, therefore, is to select a right therapeutic action for the patient (1). In other words, the goal of clinical reasoning is a treatment recommendation issued in the interests of a particular patient. Decision making is highly individualized.

The occupational therapy treatment plan details what a particular patient should do to enhance occupational role performance. The therapeutic action must be the right action for this individual. This implies that it must be as congruent as possible with the patient's concept of the "good life." Treatment should be in concert with the patient's needs, goals, life style, and personal and cultural values. A therapeutic program that is right for one patient is not necessarily right for another. The ultimate question we, as clinicians, are challenged to answer is: What, among the many things that could be done for this patient, ought to be done? This is an ethical question. It involves a judgment to which facts contribute but that

must be decided by weighing values. A salient criterion of an ethical action is its agreement with the patient's valued goals. The clinical reasoning process terminates in an ethical decision, rather than in a scientific one, and the ethical nature of the goal of clinical reasoning projects itself over the entire sequence.

Ethical decisions regarding treatment are not made in isolation from scientific knowledge. The patient comes to the therapist for expert advice regarding adaptation to chronic dysfunction. The factual basis for decision making is provided by the therapist. When therapists set out to solve clinical problems, they are confronted with an unknown—the patient. Scientific methodologies are used to learn about the patient. Once the patient's condition is adequately understood, scientific and empirical knowledge is applied in the efforts to enhance occupational status. Although ethical considerations can override scientific ones, they do not displace the need to secure a scientific opinion.

#### **Clinical Questions**

To ascertain the right action for each patient, clinical inquiry focuses on three questions: What is the patient's current status in occupational role performance? What could be done to enhance the patient's performance? And what ought to be done to enhance occupational competence? These are the fundamental questions that I previously alluded to as guiding the clinical process. Each question will be considered first in terms of the knowledge needed to answer it, and, subsequently, in terms of the cognitive processes used to obtain the knowledge.

#### What Is the Patient's Status?

The first question to be considered is the assessment question: What is the patient's occupational status? The occupational therapy assessment is a concise and accurate summary of a patient's occupational role performance that arises from an investigation of the patient. The occupational therapy assessment tells us what we need to know about the patient to plan a sound intervention or prevention program. To serve this function, the assessment includes several features: it indicates what is wrong with the patient, it indicates the patient's strengths, and it indicates the patient's motivation for occupation.

The word *assessment* is preferable to the terms *diagnosis* or *problem definition* for the evaluation of occupational status because it has a much broader meaning. Diagnosis and problem definition connote the identification of pathological, abnormal, dysfunctional, or problematic processes or states. To assess means to rate the value of property for the purpose of taxation. The word *assessment*, then, with its emphasis on the evaluation of the worth of something, is an appropriate term to apply to the process of collecting information to resolve clinical problems and to the statement that summarizes the results of that process. Occupational therapy is concerned with helping disabled persons to adapt to chronic disability more effectively. This may be accomplished by enhancing abilities as well as by remediating or reducing dysfunction. The occupational therapy assessment serves as the end point of evaluation and the starting point for treatment planning. To serve this pivotal function, the

assessment must specify both assets and liabilities. Thus, diagnosis, or the determination of what is wrong with the patient, is only a part of the assessment.

Knowledge. The assessment process usually begins with diagnosis, since knowledge of dysfunction tells us what is wrong and requires correction or amelioration. The therapist seeks to ascertain the specific problems the patient is having in performing self-care, work, and leisure occupations. Disruptions in occupational role are commonly of two major types: an inability to perform socially defined age-appropriate tasks and an inability to coordinate these tasks effectively in daily life. To the extent that a person has disruptions in occupational role, or impairments that we can predict will result in such disruptions, that person is an appropriate candidate for occupational therapy. The occupational therapy diagnosis clearly articulates the disruption in occupational role that is of concern for treatment. For example, we might state that Tom Smith is totally dependent in hygiene and dressing and requires physical assistance with feeding. This diagnosis indicates that these are the major problems at this time.

The occupational therapy diagnosis has a temporal quality. Participation in daily living tasks may change over the course of an illness or other disorder. For example, as Tom Smith gains competence in self-care, the diagnosis may switch to dysfunctions in home management. Similarly, as an individual matures and needs and interests change, the occupational therapy diagnosis changes, and intervention is refocused. Thus, the range of problems that comprise the occupational therapy diagnosis is broad and variable, and the diagnosis may change over time.

Often, the occupational therapy diagnosis indicates not only the disruption in occupational role, but also the suspected cause or causes for this disruption. This is the etiological component of the diagnostic statement and it offers an explanation of why the individual behaves or fails to behave in some way.

The most prevalent perspective for defining the etiology of occupational role dysfunctions is based on the biopsychosocial model. This enables us to pinpoint the causes of performance dysfunctions in terms of biological, psychological, and social variables. For example, we might state that Ida Cox cannot dress herself because she has contractures in her upper extremities, thus attributing the cause to a biological variable. Or, we might suggest that she cannot dress herself because of a memory problem, thus attributing the cause to a psychological variable. Or, we might conclude that the reason she is unable to dress herself is because she cannot reach her clothes from a wheelchair. In this case, the dressing dysfunction is attributed to the interaction of a biological variable, motor impairment, and a social variable, the man-made environment. Such attributions allow us to plan appropriate treatment. We can plan to remediate the contracture or memory deficit or to circumvent their effects on performance. We can remove the architectural barriers.

An occupational therapy diagnosis stemming from the biopsychosocial model is so specific that it is applicable to only one patient. For instance, an occupational therapy diagnosis might state: Homemaking disability secondary to a lack of endurance for shopping to procure groceries, and postural instability in negotiating the stairs to the laundry facilities in the basement; ability is complicated by blurred vision in both eyes as a consequence of cataracts.

Such a diagnosis is unlikely to be appropriate for more than one patient. Although the diagnostic statement is highly descriptive, it is also highly prescriptive. For example, the above diagnosis suggests such interventions as: employing homemaker services, scheduling and performing activities in such a way as to control fatigue, using good light with no glare, and using mobility aids or environmental supports.

In addition to a description of what the patient cannot do and why, the occupational therapy assessment includes a description of what the patient can do and how well it can be done. Although the problem is diagnosed, it is the person who is assessed. The need to acknowledge positive factors was well expressed by the little boy who reacted to the scolding he received about his report card by saying, "Daddy, I think your eyes need fixing. You only saw the D and not the four As." Knowing a person's problems or deficits tells us little about his or her strengths. The image of the patient drawn from problem behaviors is distorted. It needs to be supplemented with snapshots of the patient's occupational competencies and strengths to enable the therapist to construct a fair and valid impression of the patient.

The assessment of occupational competence requires a wide-angled lens. Occupational performance emerges from a complex network of transactions between the internal characteristics of the individual and the external properties of the surrounding environment. Just as features of a particular situation may account for a limitation of ability, so they may also allow the expression of ability. The qualities of the environment are important enablers of human performance. You cannot swim without water or play tennis without a partner. Both the physical and the social environments influence the patient's ability to occupy time productively. To assess occupational competence, the therapist evaluates the people, places, and objects associated with the patient's occupational endeavors to determine the extent to which they support occupation.

The final requirement of the occupational therapy assessment is to summarize the patient's motivation to engage in occupation. Who among us has never pondered over the patients with excellent potential who fail to achieve and those with intractable conditions who surpass all expectations. We cannot understand the patient without an appreciation of the way in which the urge toward competence has been habitually satisfied. The ontogenetic aspects of occupation have critical implications for recovery and growth. The patient's history of occupation informs us whether the present dysfunction is extenuated by a pattern of adaptive behavior or augmented by a career of maladaptive behavior. The patient's mastery of the environment is documented in occupational achievement, while exploration of the environment is recorded in the use of time. Since time is occupied by doing things of value, the patient's use of time provides insight into the varieties of occupations that are meaningful to him or her. The patient's past is reviewed to shed light on how occupational behavior is organized and to lend perspective to activities that are important and incidental to the life plan.

Historical assessment is directed toward a deeper understanding of the patient's occupational nature. The normative sequence of occupational endeavors begins in childhood play and self-care. Participation in arts and crafts, games, academics, chores, and part-time work are added to the repertoire through young adulthood. Productive occupation in the

form of employment predominates in adulthood. This often changes to leisure pursuits during later maturity. The therapist thus captures the development and balance of self-care, work, and leisure occupations in studying the sequence of pre-school, school age, worker, and retiree roles.

The yield of the occupational therapy assessment is a model of the patient that describes and explains his or her unique functioning in occupation. The model superimposes current functional abilities on disabilities, and relates these to environmental demands and to past performance. It is from this comprehensive model of the patient that future capacity is predicted and treatment goals are recommended.

Process. Having described the requirements of the occupational therapy assessment, I will now turn to the cognitive processes used to formulate it. What is involved in clinical inquiry? How do we go about the task of constructing a model of the patient? The approach used here for looking at the cognitive processes that undergird practice reflects on information-processing view of cognition. The human mind is thus conceptualized as a computer that has certain information processing capabilities. It can do some things better than others and uses certain labor-saving strategies to overcome its limitations. A primary limitation of the human mind is its small capacity for short-term or working memory. Because of this limitation, data must be selected judiciously, processed serially, and managed through simplifying strategies (2). In assessment, the clinician has as intake to the information-processing system cues gathered from the patient or about the patient. The output is the conclusions summarized in the occupational therapy assessment. The conversion of intake data to output conclusions is a critical feature of clinical reasoning.

The therapist begins the assessment by choosing a plan for studying the patient. We say to ourselves, "Of all things that I could consider about this patient, what am I going to think about?" We typically respond to this question by constructing an image of the patient from the pre-assessment data and use this image to direct our plan. Our pre-assessment image tells us what to include and what to exclude as we observe the patient. Thus, the first labor-saving device the therapist uses is to limit the parameters within which the patient will be studied.

The pre-assessment image of the patient is derived from the conceptual frame of reference or postulate system of the therapist. A conceptual frame of reference represents a therapist's unique view of occupational therapy. It consists of facts derived from research studies, empirical generalizations drawn from experience, theories and models accepted by the therapist, and principles of practice obtained from instructors and colleagues. My frame of reference represents what I believe about occupational therapy practice. A frame of reference operates largely as a nonconscious ideology in forming the pre-assessment image. The therapist links his or her frame of reference with the pre-assessment data to construct an image of the patient that furnishes the outline for the clinical investigation.

Two salient pre-assessment factors are the medical diagnosis and age. By knowing even these elementary facts, we can predict certain things about a patient. For example, if we know that a patient's dominant arm has been amputated, we can anticipate problems in manual dexterity and bilateral coordination. If, in addition, we know that the patient is 6 years of age,

rather than 76, we can expect to direct treatment toward habilitation of hand skills as opposed to rehabilitation.

The pre-assessment image of the patient is used to generate a series of testable working hypotheses. The therapist reasons that, if a particular hypothesis is valid, then it should follow that such and such will be found in further study of the case. For example, a therapist learns from the occupational therapy referral that the patient is a 40-year-old woman with depression. The therapist reasons that, if this patient is depressed, she is likely to be disheveled, to have a low level of involvement in activities, and to concentrate on events associated with negative affect. In other words, by knowing that the patient is depressed, the therapist is able to view the patient as a representative of the class of depressed patients, and, thus, hypothesizes that she will exhibit characteristics of depression. The therapist then sets out to perform the procedures needed to substantiate the hypothesis.

Up to this point, the reasoning process is essentially deductive in nature. The therapist recalls some general postulates from memory and applies them to a specific patient. The open-ended question of what is wrong with the patient has now been refined to a set of better-defined problems for exploration and resolution.

The working hypotheses provide a plan for acquiring cues from the patient to test the hypotheses. A cue is any bit of information that guides or directs the assessment (3). Cues arise from the observational process that employs three general types of data-gathering methodologies: testing or measurement; questioning, including history taking and interviewing; and observation. Accurate clinical decisions are dependent on the collection of good cues. Two tests of the goodness of cues are reliability and validity.

Cues can be used to test the working hypotheses developed from deductive reasoning. By comparing each cue to the working hypotheses, sense may be made of the data. The therapist reasons, "This is what I expect to find, now what do I find?" A cue may be interpreted as confirming a hypothesis, disconfirming a hypothesis, or noncontributory to a hypothesis. Thus, as information is collected about the patient, the therapist decides repeatedly whether or not a finding is related to the patient's problems. Confidence in each hypothesis increases or decreases, based on the interpretation of additional data. Extensive case data are reduced by eliminating, or holding in reserve, data that do not appear significant. Hypothesis testing is thus another of the mind's strategies for simplifying data management. Hypotheses direct the collection of data and determine how they are organized and filed in memory. This organization prevents the mind from becoming overloaded with irrelevant facts and assists the therapist in retrieving information from memory.

Cues may also be combined to formulate new hypotheses. As cues are collected to test the validity of the deduced hypotheses, some cues may not fit well. Some of the performance problems we had expected to find will not be found, and others that we had not anticipated will become manifest. Our thinking begins to move from the classical, textbook picture of the disorder, to the disorder as it is uniquely manifested in this patient. The reasoning process now becomes inductive, with problem definition induced from empirical study of the patient, rather than deduced from the therapist's frame of reference. Additional cues may then be collected to test the inductively derived hypotheses. Clinical reasoning proceeds by

developing hypotheses that pull together several inferences into a broader pattern or model of the patient.

After gleaning a clear perception of the patient's problems, the therapist then begins to search for cues indicative of the health of the patient as avidly as the search was conducted to identify dysfunction. Inductive reasoning and hypothesis testing are the basic processes through which the clinician assesses the patient's competencies, motivation for occupational achievement, and the environments in which the patient operates or will operate. These kinds of data are highly personal and hence are less likely to be deduced from knowledge of disease or disorder.

Data collection cannot continue indefinitely, and at some point the therapist decides that adequate information has been collected. How much data constitutes adequate data is dependent on the ethical consequences of an error in judgment (2, 4). A recommendation to institutionalize a patient because he or she is unable to look after his or her self-care needs would require more evidence than that required for the prescription of a rocker knife. Regardless of how many data are collected, however, the data base remains incomplete. The data base represents only a sampling of the patient's behavior. The therapist's task is to use this incomplete information to make a judicious decision. Decision making takes place under conditions of uncertainty.

Throughout the process of data collection, the therapist's pre-assessment image of the patient has been revised and elaborated, based on the accumulated cues. Once cue collection is stopped and no new information is being generated, hypothesis testing also ceases. The clinical reasoning of the therapist now resembles the dialectical process in which the therapist argues or defends the interpretation of the data in much the same way as a lawyer pleads a case in court. Does the patient have a dressing problem that is of concern? Is the cause of the patient's performance difficulties visual-perceptual problems? Is the mental status of the patient adequate for self-care? The evidence supporting or opposing each alternative is weighed with the objective of rendering one explanation more cogent than another. Inferences that are compatible are retained and others are rejected or modified as contradictions appear. Through the dialectical process the model of the individual patient is polished and repolished. In this way, the therapist arrives at a cohesive conception of the patient, and, having grasped the whole, re-interprets the parts in the light of this understanding. Once a holistic picture of the patient has been devised, the function of the assessment moves from model building to decision making.

#### What Are the Available Options?

The second of the three general questions guiding clinical inquiry is the therapeutic question: What can be done for this patient? Having proposed a model of the patient's occupational status, we then begin to explore the actions that could be taken to enhance occupational role performance. The intent is to generate a list of the treatment options available for the problems and assets presented by this patient. For example, suppose a patient's problems in self-care were attributed to hemiplegia subsequent to a cerebral vascular accident. To treat this problem, we might consider a neurological approach aimed at

regaining controlled action in the involved arm, or a rehabilitative approach aimed at training the uninvolved arm to perform skilled activities, or a combination of these approaches. The aim, at this stage of clinical reasoning, is to foster an awareness of the range and kind of treatment possibilities. In effect, the therapist uses the model of the patient to construct a theory of practice for the patient.

Knowledge. The therapist's consideration of what could be done includes a review of the relative effectiveness of each treatment approach. If a particular treatment option is initiated, what results can be expected, and how long will it take to achieve them? Any hazards associated with the various treatments, or with no treatment, are evaluated in the light of the potential benefits.

Decision making concerning the appropriate action can approach certitude if the deleterious effects of a disorder without treatment are known, and if there is substantial evidence of how these effects can be altered by a particular treatment. We know, for instance, that if joints are not moved, contractures develop and the joints become immobile. Thus, movement becomes the scientifically acceptable treatment for preventing contractures.

For most occupational therapy approaches or procedures, however, the scientific evidence is not definitive. Rarely are the outcomes of research so specific that they allow us to know with 100 percent accuracy what will happen. Scientific findings generally emerge as probabilities rather than as certainties. They may, for example, tell us that 95 percent of the patients with right hemiplegia receiving self-care training will become independent in self-care. But when we apply this finding to Edith Jones, we do so with the recognition that her chances of becoming independent remain 50-50. The response of a patient to treatment cannot be predicted with certitude. Scientific knowledge can improve our chances of making accurate technical decisions but it cannot assure this. When the scientific evidence is inconclusive, the therapist has considerable leeway in devising treatment recommendations.

In the absence of scientific knowledge about the effectiveness of treatment options, clinicians rely on knowledge gleaned from their own clinical experience or from the experiences of others. Knowledge derived from practice rather than research indicates what works but may not indicate what works best.

*Process.* To draw up a list of the patient's treatment options, the therapist searches memory for relevant scientific and practice knowledge. Clinical experiences are stored and classified in memory and retrieved as needed for application to new patients. Each time a therapist treats a patient, a clinical experiment is performed in which the objective is to replicate a successful outcome of a past experiment (5). As a first step in reproducing the experiment, the therapist mentally reviews previous patients whose occupational status resembled the patient at hand. Although no two patients are exactly alike, the therapist assembles a subgroup of patients who are most similar to the patient under study (6). Treatment is selected for the new patient by analyzing and comparing the therapeutic actions and outcomes of the patients in the reference group. If there is a high degree of similarity between the patient being treated and previous patients, the therapist will select a treatment that is highly replicative. If the similarity is low, or if previous treatment was not very effective, the therapist will propose a treatment that is more inventive.

The cognitive process involved in the selection of treatment is again that of dialectical reasoning. The therapist argues one treatment option against another without recourse to new clinical data. The process of enumerating the patient's treatment alternatives relies heavily on the content of long-term memory. The more clinical experience therapists have, the more empirical data are available to guide decision making. It is impossible for therapists to consider a treatment with which they have no familiarity. Similarly, clinicians cannot debate the scientific merits of one procedure over another, unless the procedure has been scientifically investigated and the research has been assimilated.

## What Ought to Be Done?

The third and final question to be considered is the ethical question: What ought to be done to enhance occupational competence? Simply because a goal appears technically feasible for the patient does not mean that it should be set as a goal. And, simply because a treatment approach can be initiated does not imply that it should be instituted. We must avoid confusing action that can be taken with action that ought to be taken. From an ethical standpoint, decisive action must take the patient's valued goals into account. It must conform to the patient's definition of health, accomplishment, and the "good life."

*Knowledge.* Ethical principles arise from reflection on the nature of humanity and human dignity. Respect for individuals requires that each individual be regarded as autonomous. Each individual has a definite pattern and characteristic style for mastering the environment in the pursuit of occupational competence. The life plan is guided by personal and cultural values. Values give meaning and direction to one's life by inciting future goals and sustaining involvement in activity.

The concept of respect for the individual implies that the occupational therapy treatment plan should not interfere with the patient's intentions for recovery. To develop an appropriate plan, the patient's values are distilled from the thematic continuity of the assessment of occupational status and taken into account in the review of technically feasible treatment options. When there is a range of possibilities for treatment goals and substantial lack of certitude concerning the technical merits of treatment alternatives, the therapist has considerable latitude in shaping recommendations. Expert advice is based more on opinion than fact. Ethical decision making requires the therapist to search for an understanding of the patient's life rather than to make an evaluation of it. This understanding facilitates the selection of options to be discussed with the patient.

The goal of the clinical encounter is to devise a therapeutic plan that preserves the patient's values and represents a mutual understanding between the therapist and patient. Occupational therapy involves habit training and often requires major restructuring of the way in which personal values are to be satisfied. If habits are to be developed, patients must choose the objects and processes that they want to master in occupational therapy. Worthwhile achievement is the end product of personally deliberated decision making. Occupational achievement begins with the choice to develop one's capabilities. It is the patient who restores, maintains, and enhances occupational performance. The patient, not the therapist, is the agent of change. The patient's active participation is required not only in

determining and prioritizing the goals of treatment, but also in deciding on the methods to be used to achieve the goals. As a result of assuming personal responsibility for treatment decisions, the patient emerges from the assessment with an increased sense of self-determination and control, and a sense of commitment to accomplishing planned goals. In the capacity of expert advisor, the therapist guides patients through the decision-making process, and helps them fuse the intellectual and emotional aspects of decision making into choices that are right for them.

It cannot be assumed that the goals selected by a patient for himself or herself will match those the therapist would select. Each may have a different view of the "good life." Because most persons with quadriplegia secondary to a spinal cord lesion at the level of the 6th and 7th cervical vertebrae can relearn dressing skills, the therapist may reason that Tim Robbins should work toward this goal. However, Tim may conclude that he would prefer to spend his limited energy relearning how to manage his home computer.

When the therapist and patient have different goals, the potential for conflict is high, and the resolution of conflict can easily be tipped in favor of the therapist's view. Two factors contribute significantly to the therapist holding the balance of power (1). First, the therapist has the knowledge and skills to alleviate the problems facing the patient. The patient is thus dependent on the therapist for help. Second, the patient's position of dependency is compounded by the patient's vulnerability. As a result of disease or other disorders, patients sustain insults to functions regarded as integral to human life and living. The very fact that they need help may diminish their sense of autonomy. Adaptive functioning in basic life tasks, such as eating and dressing, may be impeded. Patients may even be unable to express their own values or make rational choices. Such impairments place a patient's moral agency at risk, and often make it easy to take advantage of the patient's right to control his or her life.

Process. The methods used to answer ethical questions differ from those used in science. While scientific questions are answered by accumulating data and testing hypotheses, ethical questions are resolved by coming to grips with values and making value judgments (7). To empower the patient to act as his or her own moral agent, the therapist provides the patient with the knowledge needed to participate effectively in decision making. The patient's choice must not only be autonomous, it must also be informed. Patients are not adequately informed to make choices, unless they can anticipate the results of their choices. The ethical and scientific dimensions of clinical reasoning are closely intermingled. The therapist presents the possible options for treatment, projects the outcomes of each option, explains how the outcomes are achieved, and outlines a time sequence for goal attainment. Together the therapist and patient consider each recommendation and evaluate the consequences of each alternative in terms of the patient's occupational potential and goals. If necessary, the therapist tempers unrealistic expectations, corrects inaccurate information, and points out any inconsistencies in rationalization. In effect, the therapist assists the patient in imagining what might occur, if treatment is to be undertaken or rejected. The strength of arguments for one action over another is assessed by dialectic. Greater weight is assigned a position according to the importance it holds for the patient. The selection of treatment becomes more difficult

as the merits of one action over other actions become more ambiguous. The therapist makes known his or her preferences for the patient's treatment as well as the rationale for this decision. The patient ends the deliberation by making a choice.

Once the patient has determined the course of action, the therapist supports or confirms the decision. The therapist captures the persuasive elements of the dialectical argument, and uses them to instill in the patient a belief that treatment X is the best course of action and should be undertaken. At the same time, the therapist strives to bolster the patient's belief that he or she can carry out the treatment and achieve the goals. The reasoning process ends, therefore, in persuasive rhetoric, which we call "motivating the patient." In situations where therapists judge that they cannot lend support to the patient's choice, responsibility for providing occupational therapy services is terminated.

The therapist is privileged to help the patient select from the available opportunities those that are to be brought to fruition. As the patient executes and fulfills his or her choice, the therapist learns about the healing power of occupation. Occupational choice rekindles the will to live, and mobilizes the mind to discipline the body, in enacting the creative processes associated with reversing disability. The subtle wisdom of participation in self-initiated and self-directed occupation becomes apparent as confidence is rebuilt and hope is restored. Choices are not confined to the outset of treatment. Assessment and planning are on-going processes and there are repeated occasions to consider if treatment should be continued, terminated, modified, or supplemented.

This discussion of the ethical dimension of clinical reasoning has been based on three cogent assumptions: 1. that patients can serve as their own moral agents; 2. that the patient's choice is the ultimate one, and 3. that the therapist acts independently. None of these conditions may be met in a particular situation, which introduces further complications into the already complex process of ethical decision making. Surrogates may substitute for patients in the planning process because patients are too young, too impaired mentally, or too emotionally disturbed to participate in decision making. The rights of family members and the values and resources of society may limit the choices patients can make. The conjoint decision of therapist and patient may be modified or set aside by the health care team. These are vital issues that cannot be avoided in clinical decisions.

In summary, the data collected in clinical inquiry play three roles in clinical reasoning. First, clinical data are used to describe the patient's occupational status. This description includes an indication of the patient's adaptive skills, performance dysfunctions and their presumed causes, and competency motivation. Second, clinical data are used to conjure up a group of patients who have an occupational status and history comparable to the patient under consideration. These patients serve as a reference group for the identification of treatment options and prediction of treatment outcomes. Third, clinical data are used to identify therapeutic options appropriate to the specific needs of the patient, and to recommend a course of action consistent with the patient's values. As the clinical reasoning process moves from an assessment of occupational status, to a review of treatment options, to a selection of the right action, the scientific mode of reasoning gives way to nonscientific intellectual processes. Choosing a course of action involves many value considerations. The closer we

come to making a clinical judgment, the less use is made of facts and hypothesis testing, and the more reliance is placed on the dialectical process, opinion, and persuasion.

## **Perfecting Clinical Inquiry**

Now that what is involved in clinical study has been considered, it seems appropriate to ponder how our habits of inquiry can be improved. My suggestions are intended to be directional rather than comprehensive.

#### Model of the Patient

The therapist's understanding of the patient is highly dependent on the development of a model of the patient. It is pertinent to point out that studies conducted with counseling professionals have consistently supported the value of inductive theory building for practice, as opposed to the application of deductive theory. McArthur (8), for example, found that psychologists who applied existing theories in a doctrinary fashion turned out to be the poorest appraisers of personality. The critical element in devising a model of the patient is meticulous attention to the cues obtained from the patient. The ability to use assessment-related data to develop hypotheses is a vital professional skill.

Although hypotheses have adaptive value for organizing and managing data, they represent strong conceptual biases. In collecting and interpreting data, we have a tendency to overlook evidence that does not support our hypotheses. This is accompanied by an inclination to overemphasize positive evidence. In other words, we are psychologically prone to confirm our ideas and feel less compelled to refute them (4, 9). Agnew and Pyke (10) drew a salient comparison between the blindness imposed by hypotheses and that generated by love. They commented: "The rejection of a theory once accepted is like the rejection of a girlfriend or boyfriend once loved—it takes more than a bit of negative evidence. In fact, the rest of the community can shake their collective heads in amazement at your blindness, your utter failure to recognize the glaring array of differences between your picture of the girl or boy, and the data." (p. 128) The rigid application of a conceptual bias emerged as a major concern in my study of occupational therapists' thinking (11). The medical diagnosis was used to formulate the pre-assessment image of the patient and that image remained stable, even in the face of cues portending a revision.

Once cognizant of the pitfalls involved in hypothesis use, the therapist can initiate steps to avoid them. Obtaining a second opinion through consultation is one method commonly used to check the validity of one's interpretation. Consultants should perform their own assessments without reference to the patient's data base. Objectivity will be destroyed if consultants read reports or participate in discussions about the patient before conducting their own evaluations. The consultant's final opinion, however, should be based on the total available data (5).

A fixed data collection schedule is another mechanism used to prevent premature closure of hypothesis generation. The Occupational Therapy Uniform Evaluation Checklist (12) is an example of a fixed data collection schedule. It specifies the boundaries of occupational therapy practice and lists the variables to be reviewed for assessment. The Checklist forces the therapist to examine occupational performance from a panoramic view rather than microscopically. In so doing, it fosters the search for information that might suggest hypotheses the therapist might not otherwise have entertained. Adherence to a fixed routine assures the therapist that observations will be conducted that afford a fair and adequate opportunity to disprove as well as to confirm favorite hypotheses (13).

Research on the assessment process suggests that practitioners' "favorite" hypotheses concentrate on the dysfunctional aspects of patient performance (14, 15). We seem to be more interested in exploring why Alice Thompson falls so often than in ascertaining why she maintains her balance for so long. This preoccupation with problematic behaviors probably stems from the fact that they are the reason for the patient's referral to occupational therapy and constitute the focus of interventive efforts. Our first response to the question concerning the patient's occupational status is that it is dysfunctional. Our image of the patient changes as we collect additional cues and make adjustments in the initial picture. However, once our thoughts are anchored in dysfunction, it becomes difficult to switch our focus and too few modifications may be made in the image (16). Wright and Fletcher (14) point out that the perception of strengths and weaknesses as a unit, that is, as belonging to one person, requires the therapist to integrate two dissimilar qualities and that such synthesis is difficult. The same rationale may also be used to explain why practitioners are prone to see more pathology in their patients than the patients themselves perceive. Patients live with disability and adapt to it. Professionals regard disability as something to be eliminated. From this vantage point it is hard for professionals to see how disability can have any positive implications. Unfortunately, an emphasis on negative perceptions results in a skewed image of the patient. Dysfunctions are overestimated and abilities are underestimated (14).

Research also indicates that practitioners are more likely to hypothesize that a patient's problems are caused by factors within the patient as opposed to factors in the patient's physical and social milieu (14, 15). For instance, we are more apt to attribute a patient's distress to an inability to deal with authority figures than to an unreasonable supervisor. One reason for this tendency is that we generally have a clearer picture of patients than we do of the situations in which they live, work, and play. We generally see patients in health care settings and rarely sample their behaviors in natural settings. Thus, the patient's environment has a quality of vagueness about it compared to the patient, who appears more real. Another explanation for our neglect of the environment is that it is often impossible or very difficult to change the environment. Even if the patient's supervisor is irrational, the patient still has to learn to manage the situation or to find another job. Nevertheless, it should be recognized that our "clinic-bound" view of the patient may lead us to ignore or underestimate impediments to occupational performance residing in the environment. Furthermore, since patients often attribute their difficulties to situations rather than to themselves, there is a potential conflict between the therapist's and patient's perceptions of causation. The validity of the patient's causal attribution should not be dismissed lightly by the therapist because patients are attuned to situational exigencies by their struggle for occupational competence.

Recognizing the distortion that may occur because of the exploration of hypotheses oriented toward dysfunction rather than function, and emphasis on the person as opposed to the environment, the therapist can take steps to countermand these biases. The data collection schedule can be arranged to include both assets and liabilities for every aspect of occupational performance evaluated. Since a patient's self-perceptions of competence are as important for participation in activity as is competence itself, the checklist should also highlight the patient's subjective impressions of occupational status. The schedule can also be extended to include the physical and social environments. These additions will serve to remind us of the significance of these variables for occupation and to foster the habit of routinely evaluating them.

## **Integration of Data**

The challenge presented to the mind by the occupational therapy assessment is intensified by the need to integrate the wide variety of information gathered about the patient. Although we may isolate aspects of human functioning for the purposes of data management, humans function as unities or wholes. Competence requires the individual to function as an integrated organism, with the physical, mental, emotional, and social dimensions of occupational behavior interacting with the surrounding human and nonhuman environment. The selection of treatment proceeds from a holistic conception of the patient. If the therapist is to manage the array of complex clinical data required to understand occupational behavior, a simplifying strategy is needed to ward off chaos in the information processing capabilities of the human mind. Clinical judgments are not made on the basis of one or two test scores. And, although the statistical integration of clinical data may be possible in some situations, it is impractical in most. We need a labor-saving device to assist the mind in integrating data. General systems theory provides such assistance.

According to the systems metaphor, data are framed in terms of relationships between systems and systems are ordered hierarchically based on increasing levels of complexity. In the assessment of a patient with a traumatic spinal cord injury, for example, we would look at the effects of disorder on other biological systems, such as the musculoskeletal and integumentary. At the same time, the rules of systems hierarchy would direct our attention to factors in the psychological system, such as competency motivation, which will strongly influence the recovery of the biological system as well as the social re-integration of the patient. Although the assessment checklist is useful for reminding us of the spectrum of occupational performance, general systems theory provides rules for organizing the list so that the assessment data can be meaningfully related and stored in memory.

#### **Occupational Therapy Assessment**

Once an occupational therapy assessment has been made, viable therapeutic approaches are selected. The selection of treatment rests on a comparison between the patient under consideration and similar patients previously treated. Thus, the effective application of treatment requires that patients be accurately identified and grouped together according to characteristics that are salient for occupation. If the results of a clinical experiment are to be

replicated, we must begin with a patient who closely resembles those used in the original experiment.

At the present time, occupational therapy has no meaningful way of systematically describing occupational role performance and of differentiating homogeneous subgroups based on occupational characteristics. The medical diagnosis is inadequate for delineating the diverse levels of occupational performance that occur in patients with the same diagnosis. It also lacks utility for identifying the similar levels of occupational performance that occur in patients with different medical diagnoses. Occupational therapy lacks a standardized way of classifying the functional disabilities that result from disease and other disorders. In the absence of an agreed upon system for thinking about, remembering, and expressing our clinical observations, each therapist develops his or her own idiosyncratic system for describing occupational performance. To the extent that these informal descriptions facilitate a comparison of patients, based on salient occupational characteristics, the inferences resulting from the comparison will be valid. However, until a systematic scheme for describing and organizing clinical data is developed, we will not be able to communicate meaningfully with each other, either in informal exchanges in the clinic, or in more scientific dialogue in our journals.

#### **Selection of Treatment**

We have seen that a treatment recommendation is largely based on the therapist's recall of similar cases. Some memories are more easily recalled than others (6). We are more likely to think of patients treated recently than those treated in the past. It is easier to remember patients who are seen frequently than those treated less often. Exceptional cases, either of success or failure, make strong impressions. Inferences gleaned from patients who happen to come to mind are likely to be less accurate than those derived from systematic analysis. Although we can all recount our brilliant successes, how many of us know what our batting average is? How good are we as judges of occupational potential? By keeping a score of the accuracy of our clinical predictions, our judgmental abilities can be improved. Checking our initial predictions against discharge data is something that can be readily incorporated into the clinic routine. Did the patient accomplish what I predicted he or she would? If not, why not? Since the ultimate test of treatment is what happens after discharge, mechanisms should also be sought for testing the accuracy of our discharge predictions with follow-up data.

A common error made by therapists in arriving at a clinical judgment is to assume that the patient is like oneself (17). This assumption enables us to know the patient through ourselves. In using the self as a referent, one rationalizes, "I will treat the patient as I would wish to be treated if I were in this situation." This kind of reasoning risks denying the validity of the patient's values. The therapist ascribes meaning to the patient's situation according to his or her own criteria. The patient is presented with a decision, rather than a list of options, and the choice of occupation is denied. Respect for the individual implies giving the patient the same opportunity to express and achieve what the patient sees as worthwhile as one would desire for oneself. We must be sensitive to the human spirit and curb the offering of pseudo choices of activity that have little meaning for the patient.

#### Instrumentation

The validity of clinical reasoning is grounded in the collection of good cues. This is a critical point to consider as we concentrate our energies on developing assessment instruments for practice. The nature of the phenomena we are interested in evaluating dictates the appropriate kind of instrumentation. As clinicians, our primary interest lies in evaluating performance in self-care, work, and leisure occupations. Our concern is with the ability to do and that doing is observable. You do not need to infer that I can dress from my grip strength, or mental acuity. You can observe my ability. Performance is not an abstract construct as is intelligence, anxiety, or sensory integration. We can see performance. Furthermore, we know that performance in occupation depends on the environment or situation as much as it does on the patient. Recognizing the interplay between the patient and the environment leaves us with two fundamental ways of evaluating occupational performance. First, we can go into the environments where our patients live, work, play, and observe their performance. Second, we can simulate the occupational environments of our patients by providing test stimuli, such as beds, chairs, games, arts and crafts, and work and collect a series of behavior samples in our clinics. In this case, the validity of our evaluation depends on how well we approximate the places where function is to occur.

There is inherently little uniformity in the occupational environments of our patients and, if we try to establish that uniformity, we will obscure the validity of our evaluation. The strength of occupational therapy assessment lies not in placing patients in contrived and standardized situations and recording their responses, but rather, in observing them in real life settings and evaluating their adaptive competence. Thus, development of occupational therapy instrumentation depends on a conceptualization of the task environment, since this constitutes the test stimulus that evokes behavior. Our description of occupational behavior will be incomplete until we can mesh it with a description of the task environment.

#### The Art

Our exploration of the intellectual technology of clinical reasoning has focused on the scientific and ethical aspects. We have not considered the art except by implication and innuendo. In the peroration, I return to the therapist who says, "I don't know how I know, I just know that I know." While the scientific dimension of clinical reasoning is directed toward specifying the correct treatment from a technical standpoint, and the ethical dimension is geared toward selecting the treatment that meets the patient's criteria of right occupational role performance, the artistic dimension pursues excellence in achieving a right action—and it does this in the face of individuality, indeterminacy, and complexity (6). Artistry involves the orchestration of broad strategies for grappling effectively with the uncertainties inherent in clinical practice.

### **Skill in Thinking**

Artistry is knowing as it is revealed in our actions (6). It is exhibited in knowing what to do and how to do it, rather than in knowing about something. In the early stages of acquiring a

skill, such as dressing or piano playing, our actions are slow and clumsy. We have to think a lot about what we are doing and we make a lot of errors. But as skill develops, our actions become smooth, flexible, and spontaneous, and our thinking becomes automatic. We get a feel for the skill and that feeling allows us to repeat our performance. You know how to touch the piano keys to play a Mozart piano concerto, and your artistry is apparent in your music. If you were to describe your "knowing how to" play the piano, you would find this difficult, if not impossible, just as someone else would find it difficult to acquire the skill of piano playing by following your instructions.

Clinical reasoning may be viewed as a skill akin to piano playing. The skill consists of reducing the ambiguities inherent in clinical practice to manageable risks, and by so doing, enabling the formulation of prudent decisions (6). In each clinical transaction, the therapist is challenged to apply the theories and techniques of occupational therapy to a particular patient. Our textbooks inform us of the implications of blindness, hemiplegia, and age-related changes, but the hiatus between theory and practice becomes readily apparent when 90-year-old John Green, accompanied by his loving wife and devoted daughter, stands before us with hemiplegia, blindness, and the beginning signs of brain failure. Who among us has not experienced the gap between what we learned in school and what we need to know in the clinic.

Clinical problems are not neat. They are messy and complex. Everything that could be known about the patient is not known and much of the data collected are flawed and imperfect. Clinical problems deal with the uniqueness of patients rather than with their similarities. And, as Gordon Allport (18) reminds us, uniqueness is not equivalent to the sum of the ways in which a person deviates from the hypothetical average human. Unlike the simple cause and effect problems associated with basic science, clinical problems involve a complex interplay of multiple variables, the effects of which are largely unpredictable. The outcomes of occupational therapy treatment cannot be guaranteed. Clinical problems change as patients progress and regress and as the occupational opportunities provided by the environment fluctuate.

No one can provide "cookbook" recipes for dealing with situations in which uniqueness, uncertainty, complexity, and instability are the chief characteristics. There are no formulas or algorithms that tell us how to use the interneuronal processes associated with perception, memory, reasoning, and argument. In the clinical situation, the therapist is under pressure to act and to act now. One cannot interrupt an assessment to go to the library and read up on a critical point. In handling the uncertainties contained in clinical practice, therapists rely on their accumulated experience, conceptual and judgmental heuristics, intuition, and insight to "apply their knowledge" and make clinical judgments. In spite of defective data and incomplete information, artistic inquiry enables the therapist to make prudent decisions and to know why a treatment will work for a particular patient.

The artistry of clinical reasoning is exhibited in the craftsmanship with which the therapist executes the series of steps that culminates in a clinical decision. It is expressed in the interpersonal skills through which the therapist invites involvement in decision making, builds trust, explains treatment alternatives, and offers encouragement. Artistry manifests itself in the adeptness with which the therapist gathers cues: by selecting questions, probing

for information not volunteered, clarifying discrepancies, administering tests, and observing performance. The degree of perfection with which the data to be processed are obtained influences the reliability and validity of the data, and hence sets limits on the quality of the final judgment. The art extends to grouping cues effectively, recognizing patterns, and depositing in memory organized reference images. The knowing derived from perceptual acuity, such as that needed to discern spasticity and achievement motivation, is also contained in the art of clinical reasoning. Linking the model of the patient with the appropriate memory structures to build a theory of practice for the patient requires considerable acumen. Artistic insight reaches its peak in combining evidence and opinion to support arguments convincingly, thus bringing closure to the decision-making process. Although each of these processes is difficult to master in and of itself, getting them coordinated and "on line" so that one can think "on one's feet" is an even vaster task.

### **Experts and Novices**

The automation of clinical reasoning is not merely a matter of thinking faster. Experts think differently from novices. Because of the limited capacity of short-term memory, the human mind can only consider five to nine units of information at a time (16). This is why we find it difficult to remember telephone numbers. If I asked you to remember 9 1 9 9 6 6 2 4 5 1, chances are you would have forgotten the number long before you arrived at a telephone to dial it. However, if you knew that the area code for Chapel Hill is 919, and that all university numbers begin with the prefix 966, it is likely that you would have remembered the number 919-966-2451 correctly. Memory is aided by organizing and chunking information into larger units. By chunking telephone digits into familiar patterns, the number of units to be remembered is reduced and falls within the capacity of working memory.

Evidence is accumulating that expert and novice problem solvers differ in their use of problem-solving strategies, such as chunking (19). The expert sees and stores cues in patterns and configurations, whereas the novice records individual cues. Experts chunk data into larger information units than novices do. The expert creates memory structures by classifying data according to how they are to be applied in practice. The novice's memory structures, on the other hand, arise from features more peripheral to functional usage. The novice relies on conceptual principles to get things out of memory. The expert retrieves knowledge on the basis of situational cues as well as on conceptual stimuli. As the reasoning process unfolds, experts monitor their own thinking and understanding, which enables them to curtail errors and omissions. The ability to think faster is thus a result of thinking more efficiently, more functionally, and more critically.

Simply because our knowledge is in our action does not mean that we cannot think about it. When skill breaks down, and we strike a discordant note, drop a stitch, or fall off a bicycle, we step back, slow down our pace, and reflect on our actions. In clinical reasoning, skill breakdown occurs when clinical data are incongruous with our expectations and experience. Artistic inquiry is spurred by perplexity. As long as we are assessing patients whom we perceive as highly similar to those we have treated in the past, the clinical encounter presents no challenges, our intuitive understanding of the situation remains tacit. However, when we are no

longer able to see things as we previously saw them, or do things as we previously did them, our curiosity is engaged, our anxiety is aroused, and we become inquisitive practitioners.

Expert clinicians are those who are competent in action and, simultaneously, reflect on this action to learn from it (6). They create opportunities for introspection by critically examining their reasoning to disclose bias and inconsistency. Artistic inquiry is also initiated through reframing, that is, by looking at the clinical situation from a new perspective. For example, a therapist might reason, "What would happen if this patient with low back pain were treated by diverting attention from back pain to pleasurable activity, instead of with exercises to improve body mechanics."

As thinking becomes less automatic and more conscious, through self-criticism and reframing, it also becomes more accessible to explanation. Although our explanations and descriptions of clinical reasoning may never be complete, they can become progressively more adequate through reflection, and the artistic dimension can be better understood. The conversion of our practice into theory revolves around a cycle of concrete experience, reflective thinking, conceptual integration, and active experimentation.

In conclusion, the clinician functions as a scientist, ethicist, and artist. The scientific, ethical, and artistic dimensions of clinical reasoning are inextricably intertwined, and each strand is needed to strengthen the line of thought leading to understanding. Without science, clinical inquiry is not systematic; without ethics, it is not responsible; without art, it is not convincing. The intentions and potentials of chronically disabled patients are difficult to discern, but a therapist of understanding will elicit them, and use them to help patients discover health within themselves.

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