skeptically, despite benediction by appellate courts, than the criterion of demeanor. The discussion on this point prompted one of the lighter moments of our meetings when Professor Bernstein asked Judge Ferguson, "Can you recognize a liar when you see one?" With characteristic exactitude, Judge Ferguson responded, "No, he's got to talk to me first!" Professor Bernstein observed that, as regards demeanor, what witnesses say is far more important than facial expressions or other body language, a point endorsed by all panel members.

It must be acknowledged, however, that the importance of demeanor as a credibility criterion is sometimes useful as one factor among many in evaluating testimony if considered with appropriate reservation. The limitations of demeanor were highlighted in the following observation of a veteran arbitrator:

> "Anyone driven by the necessity of decision to fret about credibility, who has listened over a number of years to sworn testimony, knows that as much truth must have been uttered by shifty-eyed, perspiring, lip-licking, nail-biting, guilty-looking, ill-at-ease, fidgety witnesses as have lies issued from calm, collected, imperturbable, urbane, straight-in-the-eye perjurers."[5]

In many cases, credibility may decide the outcome; in most, however, it is simply one important element of the decision-making process, the subject to which we now turn.

II. Decisional Thinking

Judges and arbitrators decide cases daily; yet, most of us would find it difficult to raise to a conscious level the complex reasoning processes that guide our choice one way or another. Relatively few legal scholars have undertaken to describe the inner nature of decisional thinking. A most notable contribution is by Judge Jerome Frank, a leading exponent of the school of American Legal Realism. His provocative writings have stimulated considerable discussion and controversy over the past half-century. The field of psychology, however, has contributed the most significant findings concerning the nature of human consciousness at work in resolving complex problems. We ven-

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[5]Edgar A. Jones, Jr., *Problems of Proof in the Arbitration Process: Report of West Coast Tripartite Committee,* in Problems of Proof in Arbitration: Proceedings of the Nineteenth Annual Meeting, National Academy of Arbitrators (Washington: BNA Books, 1966), at 208.

ture upon this uncertain terrain, quite aware that many aspects of decisional thinking are not fully understood by researchers. We seek primarily to determine whether general guidelines have evolved in those mental processes which produce, out of conflicting evidence and contradictory arguments, a reasoned decision.

For purposes of this initial discussion, the decision-maker's thought-processes may be divided into two broad categories: (1) analytic thinking, and (2) intuitive insight. It should be noted, however, that in practice there can be no clear separation between these two concepts. They are two aspects of an organic unity, of a total unitary process. They may be separated for purposes of analysis and study, but not in practice, in life itself.

The analytic aspect of thinking—the process most recognized by us—involves an intensive scrutiny of the case record: a step-by-step evaluation of the pertinent evidence and argument, a careful sifting out of the relevant from the less relevant and the irrelevant. This sifting is an ordering process to develop a ratio decidendi, a line of logic leading to the validation or invalidation of a decisional hypothesis. Analytic thinking, therefore, is above all purposeful. One does not study a record aimlessly. The objective is to reach a decision, a goal wholly or partially crystallized in the mind of the trier of fact. This goal is an essential ingredient in the process of weighing the essential facts and resolving issues of credibility.

Intuition (or the "judicial hunch" as Judge Jerome Frank and other legal scholars have characterized it) provides a guiding idea, an operating hypothesis[6] that the trier seeks to prove or disprove by an analysis of the case record. This goal-directedness of the decision-making process, an essential aspect of judicial thinking used by most judges (but acknowledged by few, according to Frank), is described in his seminal work, *Law and the Modern Mind:*

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[6]The following pertinent, if somewhat facetious, definition has been offered: "*hypothesis.* A hypothesis is an assumption, usually made for one of two basic purposes: either to determine by further testing whether it is correct, or to serve as a basis for action in the absence of more certain information. In either case, assumption would be a perfectly good word to use, but hypothesis is somewhat fancier, and sounds 'solider' and more scientific. It is foolish to act on a mere assumption, for instance, but not so foolish to act on a hypothesis. If either the assumption or the hypothesis turns out to have been wrong, however, the crash is about as loud in one case as in the other." James S. LeSure, Guide to Pedaguese (New York: Harper & Row, 1965), at 91.

> "The process of judging, so the psychologists tell us, seldom begins with a premise from which a conclusion is subsequently worked out. Judging begins rather the other way around—with a conclusion more or less vaguely formed; a man ordinarily starts with such a conclusion and afterwards tries to find premises which will substantiate it. [Footnote omitted.] If he cannot, to his satisfaction, find proper arguments to link up his conclusion with premises which he finds acceptable, he will, unless he is arbitrary or mad, reject the conclusion and seek another."[7]

A more detailed general description of the intuitive thought-processes that occur at the conclusion of a trial was expounded more than a half century ago by Judge Joseph C. Hutcheson, Jr.:

> ". . . I, after canvassing all the available material at my command, and duly cogitating upon it, give my imagination play, and brooding over the cause, wait for the feeling, the hunch—that intuitive flash of understanding which makes the jump-spark connection between question and decision, and at the point where the path is darkest for the judicial feet, sheds its light along the way. . . . [I]n feeling or 'hunching' out his decisions, the judge acts not differently from, but precisely as the lawyers do in working out their cases, with only this exception: that the lawyer, having a predetermined destination in view—to win the law suit for his client—looks for and regards only those hunches which keep him in the path that he has chosen, while the judge, being merely on his way with a roving commission to find the just solution, will follow his hunch wherever it leads him. . . ."[8]

Bertrand Russell, mathematician and philosopher, has provided another illuminating insight into the intuitive process at work. When frustrated by repeated unsuccessful attempts to write some serious new work, he would place the subject into "subconscious incubation" and let the work go on "underground." As Russell explained:

> ". . . after first contemplating a book on some subject, and after giving serious preliminary attention to it, I needed a period of subconscious incubation which could not be hurried and was, if anything, impeded by deliberate thinking. . . . Having, by a time of very intense concentration, planted the problem in my subconscious, it would germinate underground until, suddenly, the solution emerged with blinding clarity. . . ."[9]

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[7]Frank, Law and the Modern Mind (New York: Anchor Books, 1963), at 108.

[8]Hutcheson, *The Judgment Intuitive: The Function of the 'Hunch' in Judicial Decision,* 14 Cornell L.Q. 274, 278 (1929).

[9]Robert E. Egner and Lester E. Dennon, eds., The Basic Writings of Bertrand Russell (New York: Simon & Schuster, 1961), at 64.

It must be stressed that the intuitive process described by Frank, Hutcheson, and other noted legal realists presupposes a thorough knowledge of the subject and extensive experience with the judicial process. It is this vast reservoir of knowledge and experience that permits the decision-maker to assimilate the facts expeditiously and come to a tentative conclusion which is then tested by a stringent analysis of the case record.[10] Frank's emphasis upon the "dominance of the conclusion" should not obscure the need for a thorough analysis of the case which is necessary to determine whether the "hunch" can be supported by the salient facts in the record. Only after the "hunch" withstands this critical scrutiny will the hypothesis be accepted as valid.

The tentative formulation referred to by Frank and others as the "judicial hunch" is sometimes taken out of context by some critics and misunderstood to mean a premature decision or little more than an unsupported guess. This is a most erroneous view. The "hunch" is the "judicial leap" of a mind trained in the legal or arbitral decisional process. It should also be emphasized that the "hunch" is a prelude to the decisional process, not the conclusion of it. Nevertheless, to minimize possible confusion or misunderstanding because of terminology, we have opted for more descriptive terms such as "operating hypothesis," "guiding idea," or "tentative conclusion" in place of "judicial hunch."

In cases involving uncomplicated fact situations, familiar interpretation problems, or cases that turn on credibility, the decision-maker may be prepared to render a "bench decision" at the conclusion of the case. Extensive experience with familiar subject matter and issues has prepared the decision-maker to assimilate information quickly, reach a tentative conclusion, and analyze it at the conclusion of the hearing or shortly thereafter.

In more complex or unfamiliar cases, a preliminary study of the record, a mulling over of the evidence is the necessary preparation for comprehending the nature of the problem to make possible an intuitive leap, a tentative conclusion, often only dimly sensed at first. The initial study of the record entails

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[10]The concept of intuitive thinking is, by no means, limited to judicial decision-making. It is an integral part of virtually every decision-making process. For an excellent discussion of the use of intuitive thinking in the physical sciences, see Jerome S. Bruner, The Process of Education (Cambridge, Mass.: Harvard University Press, 1963), esp. Ch. 4, *Analytic and Intuitive Thinking;* also, Peter Achinstein, Law and Explanation—An Essay in the Philosophy of Science (New York: Oxford University Press, 1971), at 137–141.

a mental groping for a line of logic, a rationale, which must have a conclusion, a goal in mind. One does not examine the record with the mind a clean slate and then, by syllogistic reasoning, arrive at a conclusion that was nowhere in the mind in the beginning of the sifting-out process. Facts do not automatically associate themselves together into a chain of reasoning without the intervention of human purpose. As Emerson wrote: "Behind the writer there must be a man"—a reasoning mind to decide how the facts relate to each other. Before the decision-maker can weigh the evidence, decide what is relevant and to what degree, and what is irrelevant, he must have a goal, a working hypothesis, however dimly, in mind.

One does not "think" (i.e., employ logic) intuitively. Thinking is a process of ratiocination which best describes analysis and synthesis to reach a predetermined, even if tentative, goal or objective. At the risk of overemphasis, it must be reiterated that in decisional thinking the objective is established by an operational hypothesis, a guiding idea. Hypotheses are tentative conclusions concerning evidentiary relationships derived from the record. One propounds a hypothesis by a qualitative leap, a leap facilitated by a considerable preliminary familiarization with the raw data contained in the case record. The decision-maker, as previously noted, mulls over the record until he is ready to postulate a hypothesis. Once the hypothesis has jelled, then and only then can he meaningfully analyze the record to produce the relevant line of logic in support of his operational hypothesis. Columbia University Philosophy Professor Justus Buchler, in a critical study of methodology, summarizes a basic thesis of Coleridge (a philosopher as well as poet): "The guiding idea [hypothesis], guarantor of unity, dominates the material and fixes the purview of relevancy. In sublime singleness of purpose, it paves the way toward consummation."[11]

From the above analysis, the reasoning process may be summarized into four stages: (1) preliminary study of the record; (2) operating hypothesis or tentative conclusion; (3) analysis of the total case record; and (4) rationale (explanatory justification of the conclusion). In some cases (e.g., those which turn on credibility), the hypothesis may become jelled by the end of the trial or arbitral hearing and then be tested by analysis of the record;

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[11]Buchler (Johnsonian Professor of Philosophy), The Concept of Method (New York: Columbia University Press, 1968), at 48.

in other cases, particularly those that involve an evaluation of complex issues (e.g., a patent case or job-incentive program), a prior intensive study of the record is required in order to formulate a tentative conclusion. Three of the four neutral panel members estimated that, in approximately half of their cases, the tentative conclusion was reached by the close of the hearing. In all instances, the tentative conclusion is subjected to a test of the case record by a factual analysis which ultimately validates the conclusion or compels its rejection. When the hypothesis is considered valid, the relevant particulars will readily link together into a supporting line of logic. If not, the hypothesis must be modified or rejected. If it is rejected, a new tentative conclusion will be adopted which in turn must stand the test of the record.

As previously noted, the major research and theorizing on decisional thinking has been carried out by psychologists (who, incidentally, profoundly influenced Judge Frank). The guiding role of the hypothesis (i.e., intuition) in the decisional process is endorsed by an overwhelming number of psychologists who have studied these elusive concepts. Consider, for example, the following summary description of the reasoning process employed by scientists or others simply seeking a solution to a particular complex problem:

> "John Dewey [*How We Think* (1910)] was perhaps the first psychologist to analyze *the steps in the problem-solving process:* (1) a difficulty is felt, (2) the difficulty is located and defined, (3) possible solutions are suggested, (4) consequences are considered, and (5) a solution is accepted. . . . An early and influential analysis of the *creative process* was that of [Graham] Wallas [*The Art of Thought* (1926)]. The similarity to the analysis of problem solving is apparent. Wallas's four steps were: (1) preparation (information is gathered), (2) incubation (unconscious work is going on), (3) illumination (an 'inspired' synthesis emerges), and (4) verification (the new idea is tried out and elaborated). Later writers and researchers have usually accepted the Wallas framework and attempted to fill it in." [Emphasis added.][12]

It is especially noteworthy that both Dewey and Wallas place the hypothesis (Step 3 in both) before the rationale—that is, prior to "verification" or "consequences are considered."

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[12]Leona E. Tyler, Individuality: Human Possibilities and Personal Choice in the Psychological Development of Men and Women (San Francisco: Jossey-Bass Publishers, 1978), at 198.

While the role of intuition (operating hypothesis) is widely recognized and accepted in the physical and social sciences, it is still regarded skeptically by many, if not a majority of, arbitrators and judges. However, this is not the only area where a disparity exists between what actually occurs and how it is often perceived.

III. Decision-Making

Two principal aspects of the decision-making process in a given case involve: (1) fact-finding—an evaluation of the factual record of the case; and (2) rule determination—establishing the applicable rules or contract criteria:

Fact-Finding

Probably no task is more significant in determining the decision in a case than the trier's fact-finding role. The fact-determinations made at this stage direct the path of decision in one direction or another. Appellate courts place great reliance upon the findings of fact made by trial courts, particularly as regards credibility. For example, Rule 52(a) of the Federal Rules of Civil Procedure prescribes that findings of fact in actions tried without a jury "shall not be set aside unless clearly erroneous, and due regard shall be given to the opportunity of the trial court to judge of the credibility of the witnesses." An arbitrator's findings of fact, for most practical purposes, are conclusive. Therefore, to comprehend fully the nature of the decision-making process, it is necessary to understand the fact-finding role and, even more importantly, to be aware of its limitations.

The term "fact-finding" does not convey an accurate impression of the raw unevaluated record of the case at the close of the trial or hearing. The facts in a given case are seldom "found" —they must be "extracted," refined as it were, from the often conflicting accounts of fallible witnesses. The trier, with no infallible antenna for determining which version is closer to the truth, must make a choice between these contradictory accounts. The agony of decision in choosing the facts to be credited has been discussed previously in "Evaluating Testimony."

Despite what we perceive to be the crucial importance of fact-finding, most legal scholars in their analysis of decision-making have largely concentrated their attention on the func-