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THINKING AND MANAGING: A VERBAL PROTOCOL ANALYSIS OF MANAGERIAL PROBLEM SOLVING

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While thinking aloud, 12 general managers from six corporations solved a short business case. Three college undergraduates performed the identical task. Content analyses of the verbal protocols suggested that the managers began planning courses of action relatively sooner, used more reasoning processes, and made fewer requests for specific information than did the students. Correlations with independent ratings of the effectiveness of action plans suggested that those managers who employed analogical reasoning and whose recommendations were specific generated better action plans than other managers. These findings are discussed in terms of a model of opportunistic thinking.

The cognitive processes that lead managers to understand the multitude of events, information, and other stimuli that continully confront them in their jobs are central to organizational and managerial behavior (Duhaime & Schwenk, 1985; Isenberg, 1984; Kiesler & Sproull, 1982; Sproull, 1984; Srivastva, 1983; Ungson, Braunstein, & Hall, 1981; Weick, 1979a, 1979b). Much of the recent research and theorizing on cognitive aspects of managerial work has focused on how managers impose meaning on the stimuli that they encounter (Ford & Hegarty, 1984; Ranson, Hinings, & Greenwood, 1980; Weick, 1979a, 1979b). According to this research, the interpretation of events or data is not intrinsic to stimuli, but rather is the result of managers fitting stimuli to their own beliefs, biases, and assumptions (Donaldson & Lorsch, 1983). Presumably, different managers with different sets of assumptions or interpretive schemes (Ranson et al.) would come to different understandings given identical objective stimuli to interpret. This prediction has been explored using clinical (Donaldson & Lorsch, 1983) and historical methods (Brief & Downey, 1983) and has been extensively studied in social psychological research (e.g., Snyder, 1981), but it has not yet received empirical confirmation in the managerial domain.

Closely related to how managers understand is the question of how practicing managers allocate attention. Sproull (1984) found that the attention spans of seven low-level managers were very short and broken by interruptions by others as well as by the managers themselves. Another finding,

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consistent with that of observational research on managerial behavior (e.g., Mintzberg, 1973), was that these managers primarily paid attention to orally communicated information that was not directly relevant to any particular decisions they were in the process of making (Sproull).

The literature on managerial understanding has helped alert researchers and managers alike to the fact that perceptions of organizational reality are fragmented, varied, and subject to pluralistic interpretations, thereby making communication and coordination in organizations problematic at times. Nevertheless, this literature has not generally been informative about the dynamic process of understanding. Instead, researchers have focused on static cognitive structures such as cause maps (Bougon, Weick, & Binkhorst, 1977), knowledge structures (Isenberg, 1982), interpretive schemes (Ranson et al., 1980), and implicit theories of organizing (Brief & Downey, 1983). For example, we do not understand the extent to which managers make inferences based on incomplete data, when in a problem-solving process they make those inferences, and whether the interpretive or inferential process varies from manager to manager. A major review of the literature likewise concluded that the cognitive processes underlying managerial information processing were little understood (Ungson et al., 1981:130). Schweiger, Anderson, and Locke (1985) made a parallel criticism of research on the cognitive processes underlying decision making, commenting that only a very limited understanding of decision making has been derived from the traditional input-output studies.

How managers attend to and interpret stimuli is only one important aspect of management. A manager's job requires action as well as understanding, and the cognitive processes that transform understanding into action are also critical to a comprehensive grasp of managerial behavior. Unfortunately, the cognitive processes that guide managers from understanding to behavior have received even less research attention than those that lead to understanding. In previous research (Isenberg, 1984, 1985, 1986a,b), the author presented an argument, based on field observations, that intuitive processes underlie managerial behavior in a number of ways. They appear to help managers get ideas about what to do and to help them perform routine, well-learned, behaviors. The author further observed that managerial understanding and action are intimately related and that managers engage in *thinking/acting cycles*, in which actions they take lacking complete understanding feed back to complete their comprehension. Weick (1983) similarly speculated that the actions managers perform embody managerial thinking and that action can be (1) more or less thoughtful, (2) provoked by thinking, and (3) intensified by thinking. Weick's delineation of "thoughtful action" (1983: 226-227) as careful, attentive, reflective, and purposeful, is consistent with Schon's (1983) argument that an essential element of skilled professional practice is a practitioner's ability to reflect on actions while performing them.

Like the data on managerial understanding, the data informing our current ideas about the cognitive underpinnings of managers' planning and

implementation of actions are generally based on indirect inference and speculation. One helpful source of information is the literature comparing the cognitive structures and processes used by experts and novices in a variety of complex tasks in such areas as chess (Chase & Simon, 1973), computer programming (Adelson, 1981), physics (Larkin, McDermott, Simon, & Simon, 1980), and accounting (Bouwman, 1984). These empirical studies[1] suggest that the extensive repertoires of experiences and solutions, organized hierarchically in their memories, and accessed more through recognition than through conscious search, underlie the performance of the experts (Simon, 1978a). When confronted with problems, experts use these experiential bases as well as the rules of inference they have learned to form representations of problems. Such representations are based on inferences that go beyond whatever meaning may be inherent in the actual facts of a problem. Whereas novices' representations of problems may be based on superficial features of situations, experts have learned to draw on such functional principles as chess strategies or physical laws.

Recent research on action planning and implementation in mundane settings (Hayes-Roth & Hayes-Roth, 1979; Wilensky, 1983) is another nonmanagerial source of ideas about the cognitive processes underlying action planning and implementation. Hayes-Roth and Hayes-Roth studied the think-aloud protocols of people attempting to run a large number of hypothetical errands in a fictitious town, given a map and a time limit. One of their major conclusions was that people are *opportunistic* in implementing their plans. Rather than defining and prioritizing goals, refining them into subgoals, and implementing plans in order of priority, subjects in these experiments frequently replanned in the midst of implementation in response to previously unforeseen opportunities that arose as they were running their errands. Furthermore, they often performed actions that were either of low priority or unrelated to any previously specified goal.

What cognitive process do managers use when they come to understand and solve business problems? This exploratory research project was designed to further our understanding of these processes. This study also investigated whether there is anything distinctive about the way managers think and what cognitive processes account for more and less effective managerial problem solving and action planning.

METHODS

Overview

Subjects were tape-recorded thinking aloud as they analyzed and solved a short business case. The tape recordings were then transcribed and the transcripts analyzed with a 17-category scheme containing codes for various cognitive processes. A research assistant abstracted action plans (case solutions) from the transcripts, and blind expert judges independently rated

[1] Chase and Chi (1981) and Glaser (1984) summarize the expert-novice literature.

these plans. Relationships between scored cognitive processes and both group membership and quality of action plans were explored.

Researchers studying cognitive phenomena (Ericsson & Simon, 1984) frequently use the think-aloud method, called *verbal protocol analysis*, and researchers in management-related disciplines have also employed it (Bouwan, 1982, 1984; Schweiger et al., 1985). Discussions of the methodological issues have also appeared (Ericsson & Simon, 1984; Payne, Braunstein, & Carroll, 1978; Ungson et al., 1981). Such issues include the accuracy and completeness of subjects' verbal reports (Nisbett & Wilson, 1977) and the obtrusiveness of the thinking-aloud process (Schweiger, 1983). In a comprehensive summary of the literature, Ericsson and Simon (1984) argued that verbal protocols are usually accurate and representative measures of cognitive processes, particularly when subjects are reporting memory traces that are already in verbal form before they begin the process of verbalizing about them. This condition was presumably met in this study, because individuals verbalized while reading and analyzing a written business case.

Subjects

Subjects were 12 general managers of divisions from six corporations in the United States and three Harvard-Radcliffe seniors interested in pursuing business careers.[2] The managers completed the think-aloud task in the context of a larger study of managerial thinking, during which they were observed over a period of several days, interviewed, and asked to think aloud while engaged in various managerial activities. Two managers per corporation participated; each had been nominated by at least one senior corporate executive. Three of the corporations were large (multibillion dollar) manufacturing companies, one was a medium-sized ($250 million to $1 billion) manufacturing company, and two were medium-sized service and telecommunications companies with negligible manufacturing. Division sizes ranged from $3 million to $1.5 billion. The general managers all had profit-loss responsibility for their divisions and had multiple functions reporting to them. The college students were solicited as part of a study on how people think. They were nominated—by individuals who were the equivalent of dormitory proctors—because they planned to pursue business careers.

[2] The focus of research was on general managers, and the three students were included as a comparison group. This small number decreases the power of any statistical comparisons as well as the generalizability of the results. There were two reasons for the small size of the group as a whole: (1) the high cost of transcribing and coding the protocols, which require approximately 15 person hours each, and (2) professional precedent. The cost of the protocol analysis has led all researchers using the technique to restrict sample sizes drastically. Thus, a group of 15, with three in the comparison group, is consistent with similar research in different fields and is even on the high side. Bouwman (1984) compared three expert C.P.A.'s with five novices; Adelson (1981) compared five expert computer programmers with five novices; Chase and Simon (1973) compared a total of three chess players of different levels with each other.

Procedures

All subjects were instructed that they were going to analyze and solve a standard business case chosen for its brevity (approximately 750 words) and for not requiring any particular body of technical knowledge for solution. They were also told that the case had been put onto seven randomly arranged cards in order to better simulate managerial reality, in which problems do not necessarily arise in any particular order. They were free to work on the case in any way they wanted, to rearrange the cards or leave them in the received order, and to use paper and pencil if they so wished (only one did). They were instructed to think aloud constantly, even though they were reading the cards, not to censor their thoughts, and to be unconcerned about grammar or about talking in complete sentences. The researcher then demonstrated the think-aloud procedure by multiplying two 2-digit numbers while thinking aloud.

The case used, the Dashman Company case (Harvard Business School Case Services, 1947), is a very short business case describing how Mr. Post, a new vice-president of purchasing for Dashman, has decided to centralize certain aspects of the purchasing process for the company's 20 plants in order to ensure adequate supplies of certain essential raw materials. Over the objections of his experienced assistant, Post sends out a letter describing a new purchasing process. He receives supportive letters from the 20 purchasing managers, along with total noncompliance with the new procedure. The research participants were asked to analyze what, if any, are the problems facing Mr. Post, and to spell out what, if anything, he should do.

Measures

Content categories. The transcripts of the think-aloud Dashman protocols were scored using a 17-category scheme that is reproduced in the Appendix. The coding categories reflect current research and theory about cognitive functioning in complex tasks (Sternberg, 1984, 1986). Of particular concern were how people (1) encoded the information by forming and instantiating concepts (categories 3-6), (2) reasoned from the encoded information in order to develop mental representations of the problem (categories 7-10, 12), and (3) planned action (categories 14-17). These categories were refined from in-depth, qualitative analyses of two trial protocols generated in a pilot study. The author and the research assistant took two transcribed protocols generated by nonparticipants and, taking one phrase at a time, studied each phrase in each protocol. They made a tentative categorization for every phrase and discussed each one in order to sharpen the operational definitions of the categories and to make the decision rules explicit.[3] Two categories, 11 and 13, which were not suggested by previous research, were added as a result of these analyses.

A trained research assistant, blind to the identity of the subjects, parsed and coded all protocols. The author also scored a random sample of 10

[3] The codebook is available from the author.

percent of all scored comments; these were stratified by content category because some categories had low frequencies. Agreement between the author and the assistant was 86 percent for the 72 comments. The two categories that were the source of most of the disagreements were subsequently combined into the information focus category.

Effectiveness of action plans. In order to derive an independent measure of the quality of the action plans, a research assistant abstracted an outlined plan from each protocol. This task involved very little judgment, since the managers clearly indicated when they were specifying or reiterating.[4] A written outline of each plan was presented to three members of the faculty of the Harvard Business School, all of whom had taught the Dashman Company case dozens of times and had had extensive experience evaluating similar written action plans. Each of these experts rated each action plan on six 7-point scales: internal consistency, complexity, completeness, appropriateness of the sequencing of action steps, realism, and overall effectiveness. These scales are closely related to measures used by other researchers studying action planning (Streufert & Swezey, 1986). After making the six ratings for all 15 action plans, each expert rater ranked them in terms of quality. Raters were blind to subjects' identities. Since all of the six ratings, as well as the rankings, were positively intercorrelated, a composite scale was constructed representing the average of all of the seven scores for each action plan.[5] Effective interrater reliability for the resulting composite scores was .75.[6]

RESULTS

Comparing Managers and Students

What is *managerial* about managerial problem solving? In order to statistically and quantitatively explore this question, the 12 general managers were compared to the three college students. Table 1 reports analyses as correlations, in order to facilitate comparing effect sizes. This information can be transformed into the *t*-statistics by the standard computational formula: t = square root $[r^2 \times df/(1-r^2)]$ (Rosenthal, 1984).

Protocols varied from 767 words to 4,490 words in length, a factor of about 6, with the average being 1,910. Although the difference between students and managers was not significant, it was substantial enough to raise

[4] For example, most subjects were as explicit as the manager who said, "One of the first things I would do would be to talk to ahh Mr. Manson. And I think I would also talk to—who was it, Larson? . . . I think I'd start with Larson and I'd ask him . . . . " This would be typed as: "step 1—talk with Larson." If no other steps were considered, step 2 would be, "talk with Manson."

[5] The composite equaled the sum of [(16 minus the effectiveness rankings) divided by 2] plus (the sum of the ratings on all of the six scales, summed across raters) and divided by 21, which is the number of variables multiplied by the number of raters. Raw scores were used since the standard deviations of the component ratings ranged from 1.01 to 1.08.

[6] See Rosenthal and Rosnow (1984: 163–166) for a discussion of interrater reliability with multiple raters.

TABLE 1
Comparisons of Managers and Students Derived from Analyses of Protocols

Variables	Managers[a]		Students[b]		Difference Correlations[c]	
	Means	s.d.	Means	s.d.	Unweighted	Weighted
Length of protocol[b]	1659.30	1021.90	2913.67	1514.85	−.44	N.A.
Information focus	15.92	11.80	35.33	25.60	−.49*[e]	−.19
Clarifies	1.67	3.03	2.00	2.65	−.05	.06
Evaluates[d]	63.08	48.43	117.67	151.41	−.30	.17
Specific to general	14.58	6.19	29.33	16.07	−.60**[e]	.04
General to specific	0.42	0.90	0.67	1.15	−.11	.11
General to general	0.58	1.51	0.33	0.58	.08	.16
Causal reasoning	1.08	1.31	0.00	0.00	.36	.40
Conditional reasoning	6.83	3.86	6.00	4.36	.09	.53**
Analogical reasoning	1.42	1.38	1.00	1.00	.13	.30
Explicit inference	7.08	6.02	6.33	3.06	.06	.41
Sum of all reasoning categories	16.42	11.26	13.33	6.65	.12	.73***
Reflects on task[d]	55.50	65.31	378.33	273.09	−.75***	−.65***[e]
Summarizes[d]	126.42	127.52	163.00	168.77	−.12	−.06
Empathizes[d]	44.58	59.64	24.67	42.72	.15	.25
Number of steps in plan	18.25	20.77	10.67	6.35	.17	N.A.
Number of contingencies in plan	2.08	2.19	0.33	0.58	.35	N.A.
Goal references	1.92	2.19	2.00	1.73	−.02	N.A.
Action plan begins (number of words elapsed)	58.46	15.72	79.00	4.14	N.A.	−.53**

[a]$N = 12$

[b]$N = 3$

[c]Managers were coded as 1, students as 0. Therefore, a negative correlation indicates that students showed a particular variable (e.g., information focus) more than managers, and a positive correlation that managers showed more of a variable than students; N.A. = not applicable for conceptual reasons.

[d]Number of words.

[e]Not significant when calculated as Spearman rank order correlation (see text).

*$p < .10$; all values for p reflect two-tailed tests, 13 *df*.

**$p < .05$

***$p < .01$

the question as to whether or not protocol length would confound other differences. This is as much a conceptual as a statistical question, in that it involves the extent to which certain categories of thinking can be expected to vary directly as a result of number of words. Since there is no a priori way of deciding this issue for many variables, analyses of protocols both weighted and unweighted by length are reported when both make sense conceptually, and both kinds of results for most variables are treated as informative in the exploratory spirit of this research. Five of 31 differences between managers and students were statistically significant ($p < .10$, two-tailed tests).[7]

Perhaps the strongest and most coherent pattern in the findings fits both the stereotype and the emerging empirical picture of senior executives as people of action as opposed to analysis (Mintzberg, 1973). The managers commenced action planning sooner in their protocols than did the students ($p < .05$, weighted) and used fewer words reflecting on the task process ($p < .01$, weighted; $p < .05$, unweighted). For 7 of the 12 general managers, it was possible to identify a specific action seed or idea that they verbalized before explicitly beginning to plan courses of action. Six of these action seeds appeared less than one-third of the way through the total protocol; for all seven managers, an average of 26 percent of the protocol elapsed before they mentioned their first ideas for action. For the 12 managers, action planning appeared on the average 40 percent of the way through the protocol, either as an action seed or as the beginning of explicit action planning.

Also noteworthy was that managers showed more conditional reasoning than did the students ($p < .05$, weighted). When all reasoning categories were summed (causal, conditional, analogical, and explicit inference), it became evident that the managers reasoned more than did the students ($r = .73$, $p < .002$, weighted). On the other hand, the managers generalized less from specific facts than the students ($p < .05$, unweighted). Reasoning involves more explicit speculation and figuring out the meaning of facts ("I would have had the sense that I had made an error because . . . , but I have not received any such indication . . . so perhaps I was not in error"), whereas generalization involves categorizing based on a specific fact ("Mr. Larson is a liaison between Mr. Post and the rest of the company"). Consistent with this finding, the results for information focus show that managers asked less often for additional information than did the students ($p = .06$, unweighted); instead they interpreted and reasoned from the facts that were available in the case, usually in the order in which they were presented on the cards. Apparently, the inference processes that managers use when presented with uncertain or ambiguous information play a central role in their thinking processes (Bouwman, 1982, 1984).

Since only a small number of subjects participated in this research, the possibility of the data distribution's violating the assumptions of normality inherent in the use of parametric statistics was tested for those variables reported as statistically significant. The Kolomogorov-Smirnov statistic

[7] The alpha level of $p < .10$ was used because the research was exploratory.

(SAS Institute, 1979) indicated that a number of the variables did in fact significantly depart from normality. For these variables, several different nonparametric statistics were calculated. In most cases, statistical significance was confirmed ($p < .05$). The exceptions (noted on Table 1) were all in the same direction and of approximately the same magnitude; they missed achieving significance in part due to the large amount of information ignored in nonparametric analyses. The Spearman rank-order coefficients for the equations were: generalizing from specific information (unweighted, $r = -.37$, $p = .18$), information focus (unweighted, $r = -.41$, $p = .13$), and reflection on task (weighted, $r = -.50$, $p = .06$).

Effectiveness of Action Plans

Although imperfect reliability probably attenuates relationships between the scored variables and composite effectiveness, a number of variables did significantly predict the effectiveness of action plans. Since the focus of this research was on managerial problem solving, the predictors of effectiveness were computed for the 12 managers only.[8] Specifically, concretizing and instantiating from general information (general to specific) was significantly correlated with effectiveness ($p < .05$). The strongest predictor of an action plan's effectiveness was also a reasoning process, analogical reasoning ($p < .02$), or using personal experience to understand Mr. Post's situation. In addition, there was a tendency for the number of contingencies managers planned for to predict experts' ratings of the effectiveness of their action plans ($p < .10$). There was also an intriguing suggestion that those managers who focused more on the specific facts of the case ended up with action plans rated as less effective by the experts ($p < .10$, weighted).

DISCUSSION

To summarize this study's major findings, managers commenced action planning sooner than students; were less reflective about how they went about performing the case analysis; tended not to ask for additional specific information; and reasoned from, rather than categorized, the information. Effectiveness of a manager's action plan was predicted by their specifying and providing instances for general ideas, analyses, and plans; reasoning by analogy; focusing less attention on specific case facts; and having plans that considered some key contingencies, demonstrating conditional reasoning.

One of the more interesting findings concerns how the managers used the information that was sequentially presented to them in the Dashman case. Rather than collecting all of the available information, formulating a comprehensive analysis of Mr. Post's situation, and then devising a course of action, the managers frequently came up with ideas about what to do with

[8] Snedecor and Cochran (1967: 193) specifically stated that parametric statistics may be used provided that one variable is normally distributed. In these analyses, therefore, since the composite rating of effectiveness was distributed normally, the product-moment correlations were considered sufficient.

TABLE 2
Correlations of Dependent Measures with Effectiveness of Managers' Action Plans

Variables	Values of r (df = 10)	Values of r, Weighted (df = 10)
Length of protocol[a]	.39	N.A.
Information focus	−.12	−.55*
Clarifies	−.04	−.04
Evaluates[a]	−.09	−.20
Specific to general	.30	−.31
General to specific	.62**	.37
General to general	−.22	−.22
Causal reasonsing	−.03	−.21
Conditional reasoning	.48	−.02
Analogical reasoning	.71**	.40
Explicit inference	.29	.21
Reflects on task[a]	−.14	−.30
Summarizes[a]	−.10	−.15
Empathizes[a]	.43	.28
Number of steps in plan	.42	N.A.
Number of contingencies in plan	.52*	N.A.
Goal references	.39	N.A.
Action plan begins (number of words elapsed)	.21	−.39

[a]Number of words; N.A. = not applicable for conceptual reasons.
*$p < .10$, two-tailed test.
**$p < .05$, two-tailed test.

neither complete information nor a thorough analysis. Qualitative analyses of the protocols revealed many instances in which managers judged Mr. Post, or reached conclusions about the case, after reading only three or four cards out of the seven. Furthermore, managers used their experience rather than additional case information to interpret quite heavily from the presented information. What is surprising is that the managers did all of these things with the full knowledge that complete information was available at no extra cost.

These observations are consistent with Simon's concepts of satisficing and search costs, with one important qualification. Managers did severely restrict their information searches. However, Simon predicted, or at least implied (Simon, 1978a, 1978b), that search will vary as a function of such costs as time, energy, attention, and money. It would be very difficult to argue that further search would have been at all costly for this study's subjects, since they knew that complete information was available to them by simply reading the additional cards.

The concept of opportunistic thinking (Hayes-Roth & Hayes-Roth, 1979) accounts more completely for the present observations. If people consider certain information both valuable and scarce, and its presence unpredictable, they can be expected to milk each piece of data for its maximum usefulness

in interpreting a situation by making speculative but plausible inferences based on limited data (Collins, 1978). Furthermore, under the assumption of opportunistic thinking, people will not expect answers to all of their factual questions; they will ask few questions like "How long has Mr. Post been in his position?" but rather will make do with the data at hand. Having interpreted or figured out the situation, they are then free to begin planning action relatively soon.

It is quite conceivable that managers learn to think opportunistically through their experience with the economics of information processing and search costs. Thus, a manager might begin planning action with the first appearance of a reasonable idea, having learned through experience to satisfice, to take advantage of ideas that are good enough and that emerge before all of the data are in.

It is also plausible that an habitual awareness of search costs leads managers to reason much from small amounts of actual data. In other words, managers' opportunistic thinking leads them to use higher-order mental processes more often than inexperienced nonmanagers do. Furthermore, it is very likely that once managers are engaged in the process, they will act and plan action rather than continue to verbalize or to analyze situations in a pedestrian manner.

Interviews with the 12 general managers support this somewhat speculative argument. They reported that they believed information to be a precious commodity of which they should take maximum advantage. Although there were differing opinions about the amount of information that was ultimately available, they believed that they could neither expect nor afford complete information because of the scarcity of time and attention, and thus had to derive maximum benefit from the information at hand. However, given the paucity of such information, one could hypothesize that managers add value to the sparse facts through the use of inferential processes, speculations, hypothesis generation, what if scenarios, and the like.

This analysis and interpretation implies a need to better understand higher-order mental processes as used by senior managers. How are prior conceptions applied in any particular situation? How are these prior conceptions formed via experience? The finding that a higher-order reasoning process, reasoning by analogy (Duhaime & Schwenk, 1985), is the best predictor of the effectiveness of action plans underscores the need to address these questions. Finally, questions surrounding the obvious problems inherent in opportunistic thinking, such as local maximization and the possible inaccuracy of premature conclusions, need to be answered. Perhaps some managers have learned through experience to restrain their opportunism, or to temper opportunism by introducing strategic concerns. Further research should clarify to what extent, and how, managers both act and think opportunistically, yet remain within strategic frameworks.

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APPENDIX

Protocol Coding Scheme

1. Information focus. Requests, repeats, or ponders specific information, for example, "What kind of equipment?"
2. Clarifies. Clarifies the meaning of a particular fact, for example, "Why is it his first decision?"
3. Evaluates. Evaluates, for example, "That's crazy!"
4. Specific to general. Moves from specific to general, for example, "so Mr. Post sounds like some kind of consultant coming in from outside . . . . "
5. General to specific. Moves from general to specific, for example, "Typical corporate problems now (generalization). Somebody up there is trying to make decisions without knowing what the real world is. Mr. Post has not met with . . . the persons . . . he might like to visit . . . he had so many things to do at the head office (specific case fact)."
6. General to general. Moves from general to general.
7. Causal reasoning. For example, "They didn't respond because . . . . "
8. Conditional reasoning. For example, "If you don't depend on . . . people, then you can do what you want. But if you need them to give you inputs, you better make sure that they are lined up on your side."
9. Analogical reasoning. For example, "I don't know the particular problem yet, but I do know though from our company . . . . "
10. Explicit inference. For example, "I would have the sense that I had made an error, because I got back a very nice letter that said that everybody was going to cooperate with me, but I have not received any indication that they are."
11. Reflects on task. Reflects on task process, for example, "The first thing I want to do is get a feel for how long everything is on the cards . . . so . . . the first thing I'm doing is to thumb through them all."
12. Summarizes. Summarizes to form a total picture, by tying together a number of case facts, inferences, evaluations, etc., clearly punctuating the analytic process.
13. Empathizes. For example, "If I was a person receiving this letter I would think . . . . "
14. Number of steps in action plan.
15. Number of contingencies in action plan.
16. Goal references. Explicit reference to goals in action plan.
17. Action plan begins. The percentage of the protocol that precedes the first attempt at action planning.

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