DIAGNOSING PROBLEMS WITH INVENTION

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For years researchers have been discussing and experimenting with methods of invention. Kenneth Burke first published his work on the *pentad* in 1945; D. Gordon Rohman popularized the concept of pre-writing in 1960; Kenneth Pike released his influential work on *tagmemic invention* in 1967; and researchers such as Janice Lauer have, throughout the 1970's, refined the concept of *problem solving.* During this three- to four-decade period, researchers have busied themselves with developing heuristics and refining our understanding of that infinitely complex and essential part of the writing process: invention. Oddly enough, however, while researchers have worked strenuously to discover methods which help students who do not invent well, they have virtually eschewed studies meant to determine exactly what constitutes a problem with invention and how to identify a student who has one. In fact, there is no systematic study directed at discovering what specific elements, if any, must be present in prose in which the author *is* inventing well. Similarly, it seems that most composition teachers have no specific, pre-established criteria or no diagnostic tool to help determine if a student is experiencing problems with invention. This lack of a formal diagnostic instrument may be of small consequence to the experienced composition specialist, but it is not so inconsequential to the graduate assistant or the inexperienced writing instructor.

In an informal study conducted in 1981, I gathered information which seems to confirm that this lack of a diagnostic instrument exists among beginning writing instructors. In this study, I surveyed beginning writing instructors (both graduates and professionals) in several colleges and universities in the southeast, soliciting specific information about the use of heuristics. Among other things, the survey revealed that of all the respondents who use heuristics (55), not one employs a systematic method of identifying which student should work on pre-writing. Instead, the respondents stated unanimously that *intuition* is the primary method for targeting students for work with invention. For example, in answer to the question "How do you identify students needing work with invention," respondents replied,

"Students who seem to have no direction," and "Students who complain that they can't get started--have nothing to say," and "Students usually identify themselves by announcing they are confused or don't know how to begin." In other words, my informal study revealed that not one respondent employs pre-determined criteria which help him or her determine which students need assistance with the invention process. Perhaps many instructors do not need pre-established criteria, but it has been my experience that neophyte teachers (graduate or professional) generally lack confidence in their own diagnoses of invention-related problems; they often are diffident, afraid to "make the wrong decision."

Since beginners often seem unsure of their diagnoses, it seems that they would most benefit from a diagnostic instrument which helps them determine what constitutes a probelm with invention. In order to fill this need, I devised two diagnostic instruments and asked graduate students and faculty (with less than two years of teaching experience) from five institutions to use and evaluate them. Model I is based on work by Lee Odell, and Model II is based on my own methodology.

MODEL I:

While scholars have conducted research on heuristic procedures, few have attempted to define "problems" with invention. The most significant research related to this subject is Lee Odell's "Measuring Changes in Intellectual Processes as One Dimension of Growth in Writing." In this expansion of work done by Kenneth Pike, Odell attempts to isolate the basic intellectual strategies writers can use (and therefore the cognitive processes involved in the writing process). The six intellectual strategies are *focus, contrast, classification, change, physical context,* and *sequence* (temporal and logical). The theory is that when an evaluator examines a sample of prose and determines how many of these strategies the writer is using and how often he or she employs them, the evaluator is able to make a judgment about the piece of writing that is more accurate than a simple holistic evaluation. In order to help an evaluator identify these strategies in a piece of prose, Odell isolated certain *linguistic cues.* For example, the linguistic cues which help indicate whether a sample of prose refers to *physical context* are as follows:

> Nouns that refer to a geographical location(e.g., the name of a city, a geographical region, a point on the map), an object in a physical setting (e.g., a house or a tree), a sensory property of a physical setting (e.g., the sound of wind in the trees).
>
> (Odell 119)

These indicators allow an evaluator to judge whether a writer is using

one of the six intellectual strategies: physical context. According to Odell's paradigm, if an author fails to use several of the strategies frequently in a piece of writing, then the evaluator knows which areas to work on with the student. Also, the instructor can measure the growth of the student's writing ability by continuing to monitor the use of the six strategies in subsequent papers.

Odell's six strategies are meant to describe intellectual processes reflected in an author's prose. These processes are integrally related to problems of content (as opposed to organization or style, though they are all interrelated) and therefore are related closely to the invention process. If so, then we ought to be able to simplify the six evaluative strategies and their corresponding linguistic cues and use them as a diagnostic device that will enable us to determine a student's facility with *invention* in particular. Hence, I transformed Odell's evaluation procedure into a diagnostic tool that, if it works (and this study suggests that it does), graduate assistants and instructors can use to help them make diagnoses with confidence. The following is Model I:

—MODEL I—

INSTRUCTIONS: This list of six questions should help you diagnose if a student is experiencing problems with invention. Simply refer to the list as you evaluate your students' papers. If a student fails to use most of the six *strategies* frequently, then it is likely that he can benefit from extra work on invention (heuristics, etc.). The linguistic "cues" accompanying each question can help you diagnose if and when a student is using a particular strategy.

1) Does the writer often change *FOCUS,* discussing or describing *different* details or facets of a topic (just as a photographer might take wide-angle, close-up, and distance shots of the same subject)?

   CUES: Look especially at grammatical subject(s) of each clause.

2) Does the author often employ *CONTRAST, distinguishing* between persons, places, things, qualities, or events (especially opposites?

   CUES: Connectors (or, but, however, nevertheless, although, despite); comparative and superlative forms (more/most, er/est); negatives (no, nothing, without); negative affixes (anti, in, dis, un, less); words such as *contrast, paradox, distinction, difference.*

3) Does the student often *CLASSIFY* people, places, things, qualities, or events, illustrating similarities and how items fit into larger groups of similar items?

CUES: Phrases such as *for example, for instance;* noun, verb, adjective, and adverb forms of words such as *similar, resemble, class.*

4) Does the writer discuss how people, places or things undergo *CHANGE*?

CUES: *Forms of or synonyms for change;* verb phrases containing *began, stop* (or synonyms); verb phrases which can be plausibly rewritten so as to include *become* (e.g., realize=become aware).

5) When appropriate, does the author describe the *PHYSICAL CONTEXT,* surroundings or environment in which people, places, or things are in interplay?

CUES: Geographical locations (city, region); an object in a physical setting (house, tree); a sensory property of a physical setting (sound of wind in the trees).

6) Does the writer order events according to a *TEMPORAL OR LOGICAL SEQUENCE?*

CUES: Adverbial elements indicating something existed before, during, or after a moment in time (then, next, later, meanwhile); words implying a cause-effect relationship (because, therefore, consequently).

MODEL II:

To complement and perhaps to compete with Odell's instrument, I devised Model II. In this instrument I attempted to describe formally how I, as a professional, unconsciously diagnose problems with invention. It does not seem probable that all graduate assistants and professionals make judgments based solely on intuition, as my informal study suggested. It seems more reasonable to assume that we make many professional-oriented decisions based partly on what Michael Polanyi calls *tacit knowledge* [*The Tacit Dimension*]. According to Polanyi, we are cognizant of many things though we are unable, sometimes, to vocalize or explain this knowledge, its origin, or how it works; for example, we are able to recognize one face out of a thousand but cannot explain how or why we can do so. Richard Young recognizes the role of tacit knowledge in many of our professional decisions when he says "The main difficulty

in discussing the current-traditional paradigm, or even in recognizing its existence, is that so much of our theoretical knowledge about it is tacit" (30).

In trying to determine what tacit knowledge I use to diagnose invention problems, I concluded that invention is closely linked with the *quantity* of information that an author introduces into a piece of writing. While *quality* of thought clearly is essential to good prose, we are most likely, I theorized, to accuse a writer of failing to invent well if the prose is barren of information; devoid of detail, descriptive or otherwise; lacking in assertions and supporting evidence. Conversely, when a writer does invent well, the prose is teeming with ideas, details, and supported assertions. I further theorized that these ideas and bits of information must be *relevant* to the issue being discussed (which is a qualitative consideration itself). In other words, when examining student writing I tacitly notice whether the prose is *information dense,* whether it contains a satisfying *quantity* of relevant information. Certainly, a student can write poorly while introducing a great deal of information, but such problems are likely to be stylistic or organizational concerns. And the diagnostic instrument based on these tacit considerations is not meant to indicate unequivocally whether an invention problem exists; it is meant only to be a support mechanism that inexperienced instructors can use to supplement their intuitions about a sample of prose. The following is Model II.

—MODEL II—

INSTRUCTIONS: If we assume that a writer who is not experiencing problems with invention writes prose that is "information dense" (full of relevant facts, descriptions, etc.), then the relative density of a piece of writing should indicate whether an author is pre-writing adequately. To determine if a student needs help with the invention process, review the sample essay and determine if the writer introduces *at least one* of the following in almost every sentence:

1) a relevant* *FACT*
2) a relevant *ASSERTION*
3) a relevant *DETAIL*
4) a relevant *OPINION*
5) a relevant *COMPARISON OR CONTRAST*

**relevant* to the particular context of the passage.

NOTE: It is possible but not necessary to make a statistical comparison between the total number of sentences in an essay and those barren of any of the five criteria.

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I typed both of these models onto a legal-size stencil and distributed copies to graduate assistants and inexperienced instructors at five institutions: the University of North Carolina at Wilmington, the University of Alabama, Auburn University, Stillman College, and Shelton State Community College. The participants were asked to refer to the models when reviewing student papers. To facilitate their tasks, I highlighted with a yellow marker the key word in each of Odell's six categories and in my five classifications; hence, the instructor merely had to glance at the eleven key words in order to apply the diagnostic criteria to a student's paper.

Once the participants had worked with the diagnostic models for at least one semester, I asked them to complete an evaluation questionnaire. Clearly, such a questionnaire elicits only subjective evaluation, but it is important to know whether the respondents believe the models helped them personally; at the very least, such information helps us predict whether other graduate assistants and professionals might find the instruments valuable. The questionnaire is printed below:

QUESTIONNAIRE

1) Are you a A) faculty member; B) graduate teaching assistant?

2) How many years of teaching or tutorial experience do you have?

_____

3) In the past, how have you diagnosed whether a student is experiencing problems with invention?_____

_____

4) Have you ever used any method other than your own professional judgment to help you diagnose invention-related problems? If so, please describe it_____

_____

5) Have you always felt confident with your method of diagnosing invention-related problems? yes no

6) Did you find the instruments useful in diagnosing invention problems? More so than simple professional judgment?_____

_____

7) Did a judgment based on the instruments usually correspond with your first impression? _____

8) Do you find one instrument significantly more helpful than the other? Please explain. _____

_____

9) How would you rate the effectiveness of instrument #1? A) very effective: B) effective; C) moderately helpful; D) not very helpful.

10) How would you rate the effectiveness of instrument #2? A) very effective; B) effective; C) moderately helpful; D) not very helpful.

11) Do you have any suggestions for improving either of the instruments?_____

I collected data from forty respondents: twenty-nine graduate teaching assistants and eleven faculty members. The level of experience of the respondents ranged from one to five years, with an average of three years. All of the respondents claimed that they had never used any method other than "professional judgment" to help diagnose invention-related problems. In fact, when asked how they had diagnosed problems of invention in the past, most respondents provided answers identical to those collected in my original survey: "If students did not seem to have clear ideas behind their work," and "If a piece was not well-thought out," and "When a writer had little to say." Clearly, the respondents had never used any pre-established criteria for judging invention problems, only a subjective-tacit method.

Significantly, twenty-four of the twenty-nine graduate assistants (83%) and five of the eleven faculty members (45%) claimed that they *did not* always feel confident with their own methods of diagnosis. In other words, a high percentage of respondents felt that their methods of diagnosis could be improved. Understandably, those participants with the least experience (the graduate students) were the least confident about their diagnoses, but the fact that some professionals also lacked confidence is revealing. These data strongly suggest that there is a *need* for some type of diagnostic instrument, especially among inexperienced writing instructors.

Both instruments fared well in the evaluation. All respondents but one found that judgments based on the instruments corresponded with their original impressionistic diagnoses. This information illustrates that the instruments did not produce diagnoses divergent from tacit estimations; rather, they produced diagnoses *supportive* of the tacit. Eighty-six percent of the graduate students and forty-five percent of the professionals indicated that the instruments were "useful in diagnosing invention problems;" that is, an overwhelming majority of the graduates and a sizeable number of professionals

found that the instruments helped fill the *need* for a formal diagnostic procedure. In addition, the respondents split almost down the middle on whether one instrument is significantly more helpful than the other; fifty-five percent felt that Model I is superior because it seemed more comprehensive and "focused," while forty-five percent felt that Model II is better because it seemed easier to use and not "overly involved as Model I is."

Finally, the respondents rated both models on a four-point scale: very effective, effective, moderately helpful, and not very helpful (see Table). Both instruments received a remarkably similar rating. While only one rater (2%) found Model I to be very effective, three (8%) found Model II to be very effective. In the "effective" category, twenty-nine (73%) voted for Model I and twenty-five (62%) for Model II. Eight respondents (20%) thought Model I is "moderately helpful," while ten (25%) voted similarly for Model II. Significantly, only two raters (5%) perceived Model I to be ineffective, while another two felt similarly about Model II. It is interesting to note that all four respondents who gave one of the instruments a negative rating are faculty; in other words, the graduate assistants felt unanimously that the models are effective.

TABLE

	Very Effective	Effective	Moderately Helpful	Not Very Helpful
Model I	2%	73%	20%	5%
Model II	8%	62%	25%	5%

Certainly, much investigation and research is needed into how to define and diagnose problems with invention. The present study suggests that most instructors do not use any diagnostic instruments to assist tutors in making accurate decisions about invention. It also shows that *some* graduate assistants and even some professionals are not always confident about their own methods of diagnosing invention problems, and that many feel a *need* for some type of support mechanism such as a diagnostic instrument. Further, it reveals that some instructors find that the two diagnostic models set forth in this study can be effective. The evaluators felt that both instruments are equally effective, though there was a slight preference for the Odell Model. Perhaps, as more research is conducted into the subject, researchers will develop more refined diagnostic tools. Until then, those of us who train graduate assistants and inexperienced faculty

may wish to experiment with one or both of the models introduced in this study.

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