



Defining by Assessing

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Defining College-Level Writing: What Kind of Question Is This?

Not as simple as it appears to be. One's first instinct is to give a purely personal definition: *This* is what I take to be college-level writing. But merely personal answers to social and linguistic questions are really indulgences and quite useless. Take one example: I like to think of college-level expository writing (notice how I slipped in a qualifier) as writing that makes assertions and then develops an argument using evidence well, taking account of opposing arguments. I actually enforce that definition in my advanced composition courses. But note: most political and other public discourse, almost all of which is produced by college graduates, routinely fails this criterion. Actually, what I like to consider college-level writing is relatively rare, even in my classes. No, we cannot simply assert a personal preference and hope to get away with it on this matter, no matter how plausible, even self-evident our definition may seem to ourselves. A definition of what college-level writing is must embrace considerable consensus both on and off campus.

So we should put aside the personal and go with the pragmatic: college-level writing is the writing that is done in college by students receiving passing grades from their professors. This definition has a nice tautological economy and happens to reflect reality, a pleasant if rare bonus on such matters as this. But it is no better than my first attempt. If those posing the question were

comfortable with the quality of writing produced by the average run of college students, the question would not be asked. Buried in the question is a dark surmise: present-day college students are writing so badly that their screeds should *not* be considered college level; not all students, surely, but a goodly number. In fact, the large number of basic writing programs in most American colleges, called *remedial writing* or even *bonehead English* by the less decorous public, argues for this surmise, as do the writing across the curriculum programs in perhaps a third of our universities. Too many of our writers in college are not producing college-level writing, and the world is filled with horrible examples. So the pragmatic response would not only fail to meet the expectations of the question but would be seen as evasive and nonresponsive.

I will be proposing a way around these definitional problems by way of certain testing procedures. But before we go to specific examples, we should further examine the root problem we are dealing with: Why is this question so hard to answer, so hard to deal with?

There are a number of terms like *college-level writing* that are commonly used *as if* they had a commonly agreed-upon meaning, when they do not. Let me take two other examples: *insanity* and *pornography*. My friend and occasional collaborator Bill Lutz of Rutgers University, English professor and attorney, tells me that *insanity* is a stipulated legal term, with definitions in law that differ widely from state to state. That is, *insanity* has no medical meaning, since medical diagnosis will use much more precise terms for such disorders as schizophrenia or bipolar disorder. But the term persists in ordinary speech, as a descriptor for people someone perceives as mentally abnormal in some way or other, and as a legal term for someone who cannot make moral judgments as set out in certain statutes. But we cannot pretend that there is some actual mental state that modern medicine (as opposed to earlier times) would call *insanity*. That is, the word has no actual referent in the world, but takes on its meaning from its context.

Again, I pick *pornography* as another such term, because I wound up as an expert witness in court in the 1960s, when the state of Massachusetts sought to declare that the Putnam Press

edition of John Cleland's eighteenth-century novel *Memoirs of a Woman of Pleasure*, otherwise known as *Fanny Hill*, was obscene and hence publication of it could be criminal. In those more innocent days, a book could be declared pornographic if it met three tests set out by the Supreme Court. (Charles Rembar, the attorney for Putnam Press, wrote *The End of Obscenity* in 1968, which was about that case and several others he won, giving us the right to read *Ulysses* and *Lady Chatterly's Lover*, as well as *Fanny Hill*.) Later court decisions have altered those tests, so the definition of pornography has since changed. But once again we have a term whose meaning must be stipulated by learned judges, even though it remains in more or less common use as whatever someone takes to be overly sexual.

And so it is with *college-level writing*, a term with little intrinsic meaning, though in common enough use. About all we can say with assurance about it is that it is distinct from the writing produced by young children in most cases, although, as this book witnesses, teachers seem much more confident about the act of defining the term than I can be. If we are to infuse the term with meaning that will stand up in the court of educated users, we need to include within it properties and concepts that can gain some consensus, without falling into the fallacies of merely personal or meaninglessly pragmatic definitions. Perhaps our ancient discipline of rhetoric will offer some help here.

The Rhetorical Issues That Lie behind the Term *College-Level Writing*

When we apply some simple rhetorical concepts to the term *college-level writing*, we see clearly why the term lacks intrinsic meaning. Rhetoric requires a rhetorical situation, that is, a purpose and an audience, for speaking or writing if we are to take it seriously. It seems obvious that writing without either purpose or audience is at best an empty exercise that, by definition, defies any reasonable college-level designation. We cannot call writing only to be graded as having a rhetorical purpose, though it has a purpose as a kind of display, like bringing an apple to the teacher. James Britton mocked such school exercises in his classic study

of British schools two generations ago, calling the writing a “dummy run” in which the ill-informed presumably enlighten the well-informed in order to gain a grade. The minute we ask what audience and purpose infuse college-level writing, the full complexity of all possible collegiate writing situations spring to life before us. Shades of what some call process pedagogy, and others call classical rhetoric, hover over this concept: we cannot deal with writing simply by examining its textual features, without considering the rhetorical situation that produced it. Many universities have taken to portfolio assessment as a way to measure and define college-level writing for this reason; portfolios by definition include a variety of rhetorical situations and forms of expression. But this sensible way to proceed as an institution will not help us solve our problem with definition, since it is an elaborated form of the pragmatic definition I dealt with in the second paragraph of this essay. For more generalizable definitions, we need to turn to the writing tests given by colleges that seek to embody in their scoring a succinct description of the writing traits they require for particular students under particular situations. These writing tests normally use scoring guides for those grading the writing, and these scoring guides take some account of the rhetorical situation for the test.

For instance, if we look at assessment situations that seek to assess student writing proficiency, we notice that we could do this at four different stages of a student’s college career. When we say “college level,” we need to be clear about what stage of college we are talking about. Do we mean writing ability at point of entry, as with a placement exam? Or do we mean after completion of a college writing course, as with the portfolio assessment program at the State University of New York Stony Brook popularized by Pat Belanoff and Peter Elbow? Or do we mean at the time of movement from lower-division, or community college completion, to upper-division work, as with the “rising junior” tests given by the states of Georgia and Arkansas? Or do we mean just before graduation with a college degree, as in fact the California State University graduation writing assessment requirement is implemented? Each one of these assessment points implies a different level of achievement, although that difference seems less clear when one examines some of the modalities of

assessment in use. But we can't stop there. Many, probably most, graduate and professional programs (e.g., medicine, law, business) also assess the writing of those applying for entrance, seeking assurance that their new students can write at the college level. In every instance that demands actual writing, and I need not say (though I do, with a sigh) that some institutions put their faith in multiple-choice tests, as if identifying errors in test-maker prose represents an ability to produce college-level writing, student writing takes as audience some anonymous group of test readers and takes as its sole purpose impressing that group with the writer's college-level skills, whatever that may be taken to mean.

If we look at such writing rhetorically, an inherent contradiction becomes clear. The rhetorical situation of the test is usually not designed to produce the kind of writing that college students actually are expected to turn out: writing on a topic of interest to them, after some reading and reflection, with some time for feedback and revision, for an audience of peers and professors with some genuine interest in what the writer has to say. The best of these tests, such as the last example I give below, make an attempt to duplicate the rhetorical situation of college writing for that institution at the appropriate level, and thus give us reasonable working definitions. But we must generalize from these tests with great caution, always defining the situation under which the writing has been generated.

Using Test Scoring Guides as Definitions

Thus we do have documentation of what postsecondary institutions, as opposed to individuals, consider to be college-level writing from these exams, flawed and localized though they are: the scoring guides for their writing assessment programs at various levels. Many colleges, systems of higher education, and, now, the national testing firms publish a list of criteria by which they evaluate student test writing for different purposes. As I have said, some of these sit-down exams focus on entering students, usually seeking to distinguish those ready for college-level work from those who are not; some of the exams make a different distinc-

tion, between those ready for college work and those who are declared by the college board (with its advanced placement and college-level examination program tests) to write at the college level before they have so much as walked into a college classroom. Other assessments attempt to measure writing ability as students move into upper-division status or even as they apply for graduation. Again, the Educational Testing Service offers the Test of English as a Foreign Language nine times a year all over the world to ascertain if those from other language cultures can produce college-level writing in English. Can we use any of these tests or their scoring guides as rough and ready definitions?

Looking closely at the criteria for these examinations might be the best way to proceed, if only the tests would agree with each other, which they do not, or with those administering college writing programs, generally faculty with little confidence in any of the test scores they receive. While it would be absurd to pretend that college-level writing at Open Admissions Community College means the same thing as at Selective Ivy League University, or that first-year students in agriculture at Anywhere Tech wrote the same as graduating seniors in the history of science at the same institution, we would at least have working examples of what some institutions have decided on the matter for some of their students. But we have to be careful about exaggerating the generalizing power of these statements, even from a single campus. We might be able to say what Professor Smith at State University sees as college level for his class in Shakespeare, but Professor Jones down the hall would beg to differ. The exams, even the one no doubt painstakingly constructed at State University, offer generalized descriptions of standards that must be interpreted in every case by the Joneses and Smiths who make the decisions in their classes every term, usually by personal standards (see paragraph 1), which they fiercely defend when they join (as they sometimes do) college-wide scoring sessions of writing exams.

Despite all of these caveats, I will give in the next section two different scoring guides used in these exams. They have the virtue of being institutional documents, argued over and agreed on by committees, and hence are not merely personal. Some of the textual qualities they describe and presume to measure actually

lead to important administrative decisions: They serve to hold back students from junior standing or even from college graduation, so they have a certain kind of credibility for their own institutions. But since no institution of higher education borrows such statements from any other such institution, we can only use them as definitions, or pious hopes, of college-level writing at one college. When we study such documents, to seek out what, if anything, they have in common, we find that the general terminology of these scoring guides depends on actual scored samples of student writing on a particular campus to flesh out their actual meaning. Therefore, I amplify one of the scoring guides by the published examples of student writing that exemplify the meaning of the criteria for that particular campus.

A Sample Scoring Guide for First-Year College-Level Writing

Here is a compact and useful scoring guide developed by a team of experienced writing faculty from the California State University system in 1988 for a variety of testing programs (White 298–99). It is intended to lead to reliable scoring of an essay question, which should be carefully developed for the purpose the scores are intended to serve. (There is an extensive literature on the design of writing assignments, much worth consulting, but rather off our topic here.) It uses the now-standard six-point scale for holistic scoring of writing.

Score of 6: Superior

- ◆ Addresses the question fully and explores the issues thoughtfully.
- ◆ Shows substantial depth, fullness, and complexity of thought.
- ◆ Demonstrates clear, focused, unified, and coherent organization.
- ◆ Is fully developed and detailed.
- ◆ Evidences superior control of diction, syntactic variety, and transition; may have a few minor flaws.

Score of 5: Strong

- ◆ Clearly addresses the question and explores the issues.
- ◆ Shows some depth and complexity of thought.
- ◆ Is effectively organized.
- ◆ Is well developed, with supporting detail.
- ◆ Demonstrates control of diction, syntactic variety, and transition; may have a few flaws.

Score of 4: Competent

- ◆ Adequately addresses the question and explores the issues.
- ◆ Shows clarity of thought but may lack complexity.
- ◆ Is organized.
- ◆ Is adequately developed, with some detail.
- ◆ Demonstrates competent writing; may have some flaws.

Score of 3: Weak

- ◆ May distort or neglect parts of the question.
- ◆ May be simplistic or stereotyped in thought.
- ◆ May demonstrate problems in organization.
- ◆ May have generalizations without supporting detail or detail without generalizations; may be undeveloped.
- ◆ May show patterns of flaws in language, syntax, or mechanics.

Score of 2: Inadequate

- ◆ Will demonstrate serious inadequacy in one or more of the areas specified for the 3 paper.

Score of 1: Incompetent

- ◆ Fails in its attempt to discuss the topic.
- ◆ May be deliberately off topic.

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- ◆ Is so incompletely developed as to suggest or demonstrate incompetence.
- ◆ Is wholly incompetent mechanically.

When we look closely at the criteria for high grades on this test, we can notice that those scoring it put a particularly high value on responding to the question asked, in all of its parts and with attention to its complexity. These are the first two descriptors for most of the scores, with the quality of that student response to the question descending as the scores get lower, until the worst paper is deliberately or accidentally off topic. The third criterion has to do with organization; the worse the organization of the student writing, the lower the score. The fourth descriptor focuses on development of ideas, with supporting detail. Once again, the weaker the development, the worse the score; the lower scores are likely to have generalizations without detail, or detail without generalizations, or no development at all. The final criterion on the scoring guide has to do with correctness, clearly less important than an organized and well-developed response to the question asked, but increasingly important to the lower range of scores.

It is also useful to notice what is *not* listed as criteria for scoring of the essay test in the minds of the developers of the scoring guide. There is no mention of creativity, or style, or allusions to literature or literary devices. Such matters as these may enter peripherally into the scoring, which is holistic, meaning that the whole of the judgment is greater than the sum of its parts. But the definition of college-level writing in this particular scoring guide for an essay test yields a definition based on careful attention to the question, full and organized development of a response, and reasonable mechanical correctness given the nature of first-draft writing. Since so much of the debate about college-level writing does focus on writing tests, despite the problems we have noted, this scoring guide gives useful clues to the working definition embodied by experienced college writing teachers as they work together to grade these tests.

A Sample Scoring Guide, with Examples, for Graduation-Level College Writing

The following examination was administered in spring, 1996, at the California State University, San Bernardino (CSUSB). All campuses of the CSU have their own procedures for certifying the *upper-division* writing ability of their graduates, some by way of examinations and others through required courses. CSUSB requires an upper-division writing course offered in the various schools, but also offers an examination for students who think they already have met the goals of that course. Called the Writing Requirement Exemption Exam (WREE), it defines for that institution the kind and level of writing it demands of those receiving any undergraduate degree. As director of that program at the time, I put together the following brochure for students preparing to take that test. As with the previous scoring guide, it was devised as a practical working document, based on the practice of grading teams over a number of years, and so has the authority of an empirical definition.

It is important to notice the difference between the requirements of the WREE exam below and those of a lower-division or entry-level impromptu test. In the first place, only upper-division students are permitted to take the test, so its concern for college-level writing is beyond the first-year requirement that takes up so much writing program time and attention. Passing the test fulfills the university upper-division writing requirement for graduation. In the second place, the test is defined as a challenge examination for an upper-division course; that is, it looks for the same outcomes that are expected from students completing an advanced general education writing class. (In fact, most students satisfy the writing requirement by passing the course and do not attempt the test.) In the third place, the test is based on readings that are announced well in advance of the test, in an attempt to establish a rhetorical situation closer to that of most college courses. While not all test takers will read, discuss, and reflect on the essays in advance—so pervasive is the expectation that a writing test will be impromptu—they are given the opportunity to

prepare and order their thinking about the readings before they sit down and see the particular questions they are asked to write on. And finally, the testing time is three hours, enough time for organizing, drafting, revision, and editing of the writing.

The question and the four responses that follow illustrate the demands of this testing program and give its definition of college-level writing.

CALIFORNIA STATE UNIVERSITY SAN BERNARDINO
WRITING REQUIREMENT EXEMPTION EXAMINATION
Spring, 1996

This examination is based on two essays that appear in Lynn Z. Bloom and Edward M. White, *Inquiry* (Englewood Cliffs: Prentice Hall, 1993): Thomas Kuhn, "The Route to Normal Science" (pp. 147–156) and Isaac Asimov, "Those Crazy Ideas" (pp. 370–380).

You will have three hours to plan, write, revise, and edit your response to the following question. Be sure to read the question carefully, for responses that do not handle carefully all parts of the question will not pass, no matter how well they may be written.

Your response will be graded according to the degree to which you demonstrate:

1. Ability to understand the essays and show that understanding through written summary, analysis and integration of ideas and passages from them into your own essay;
2. Ability to develop a single, coherent essay in which you develop and support an idea of some depth;
3. Ability to use source material properly: to use a consistent and accepted format for citation of sources and to use quotations to support, not to substitute for your own ideas;
4. Ability to respond to a specific question in clear prose that does not distract the reader by mechanical or grammatical errors.

WRITING TOPIC:

Write a unified, coherent paper comparing and contrasting the two essays. In the course of your response, address the following questions:

- ◆ What is alike and what is different in the two authors' ideas about how science progresses?
- ◆ To what degree do the two authors agree about the definition and importance of "normal science"?
- ◆ What similarities and differences do you see in the authors' respective uses of the terms "paradigm" and "crazy ideas"?
- ◆ To what degree does your own experience with the same issues in your own field of study support or not support the conclusions of the two authors?

Four Sample Student Essays in Response to the Question

High Pass

"Merging Creativity and Process:
the dual engines for scientific advancement"

In Isaac Asimov's "Those Crazy Ideas" and Thomas Kuhn's "The Route to Normal Science" the keys to scientific advancement are explained in ways that allow a lay reader to easily understand both the requirements and preconditions for scientific exploration. Asimov concentrates on the elements of creativity. Kuhn develops the rationale for and importance of paradigms. Together the characteristics and attributes of creativity which Asimov discusses and the evolution of procedures delineated in Kuhn's essay reveal the prerequisites of discovery and the orderly advancement of research.

Isaac Asimov's writing is described as "encyclopedic, witty, with a gift for colorful and illuminating examples and explanations" (p.370). He is quick to point out that he doesn't really know where ideas come from, but he has concluded that those people we generally consider creative share several important characteristics:

1. The creative person must possess as many “bits” [of information] as possible, i.e., he must be broadly educated.
2. The creative person must be able to combine “bits” with facility and recognize the combinations he has formed; i.e., he must be intelligent.
3. The creative person must be able to see, with as little delay as possible, the consequences of the new combinations of “bits” which he has formed; i.e., he must be intuitive.
4. The creative person must possess courage (and to the general population may, in consequence, seem a crack pot).
5. A creative person must be lucky (pp 374-8).

He describes, within these characteristics, the essential elements and tools which a creative person possesses and can lead to major breakthroughs. He uses the example of Charles Darwin and Alfred Russel Wallace and their work on developing the theory of evolution as examples. It was only when each of them had read Thomas Malthus's *An Essay on the Principle of Population* that they were able to move from an observation of evolution to a governing principle controlling the phenomenon. Both men used their accumulated knowledge “bits” in combination with new “bits” garnered from reading Malthus's work to come up with new combinations (characteristic #2, above) and consequences (#3 above).

Kuhn applies much of what Asimov postulates in his description of the development of the fields of science. He proposes that it is only when a group of scientists have reached a general, if tacit, agreement on “a common set of assumptions, theories, laws, or applications” (p.147) that real progress in a given arena can be made. Much of “The Route to Normal Science” is devoted to elaborating on this postulate. He says, “In the absence of a paradigm or some candidate for paradigm, all of the facts that could possibly pertain to the development of a given science are likely to seem equally relevant. As a result, early fact-gathering is a far more nearly random activity than the one subsequent scientific development makes familiar” (p.151). He illustrates his point by describing the various schools of exploration which led to the early theories of electricity. “What the fluid theory of electricity did for the subgroup that held it, the Franklinian paradigm later did for the entire group of electricians. It suggested which experiments

would be worth performing and which . . . would not" (p.153). He demonstrates "how the emergence of a paradigm affects the structure of the group that practices the field" (p.153). Indeed, in various disciplines, we have come to be paradigm driven.

The use of a shared paradigm, which can and does gradually mutate, not only undergirds scientific research, but also lies at the foundation of cultural development. Every culture has at its core a central model, shrouded in the mists of time, around which it coalesced. With the passage of time, this model acquired iconic status, and became the source of myth and legend. Eventually, entire thought systems emerged, men shared their parochial knowledge, and in the resulting eclectic were born mores, customs, traditions, legal systems, economies, governments, and so on.

All these developments can be related to the essential elements of Asimov's and Kuhn's arguments: that creativity is essential to the generation of ideas and that exploration and progress occur most rapidly when there is a shared paradigm to assist in structuring and focusing activities. Perhaps the best example of this in recent memory is the Manhattan project. When the United States brought together the group of astrophysicists and support personnel who ultimately developed the atomic bomb, certain established principles of thermodynamics and physics were well understood and accepted by the entire staff. Additionally, all were thoroughly familiar, indeed inculcated, with the principles and methods of scientific inquiry. Thus, from the outset there was an implied paradigm shared by the team. The exigency of time, however, demanded that provision for change—paradigm shift—be integral to the culture of the group. Therefore, when one of the scientists got one of Asimov's "crazy ideas," he had the freedom to explore it. The project team, brought together as a group of "brain busters," a collection of thinkers and scientists, was conceived in part in the hope that they would cross-fertilize one another into startling breakthroughs (p.377). When the idea of implosion emerged, the young astrophysicist was willing to expose himself to ridicule (he possessed courage) because he had synthesized sufficient information through experiments to make the leap to this new theory. As his idea was explored and expanded by the rest of the team, a significant shift occurred, and ultimately the paradigms for astrophysics were changed. Indeed, new branches of science emerged.

This anecdote illustrates the threads of commonality which exist in Asimov's and Kuhn's essays. While one can say that creativity (the exploration of which is central to Asimov's essay) is an essential and preexisting component in the path to scientific breakthrough, it is equally true that without orderly processes and methods, which support most scientific paradigms, are keys to discovery as well. In a world as full of information as is the late twentieth century, organizing systems and procedures are essential. Without some agreement on paradigms, our arsenals of information would leave us wrangling incessantly.

No doubt it is easier for the non-scientist to read Asimov. He expresses himself clearly and simply, writing in a style which is easy to like. Kuhn is a bit more challenging. There is a tone of rigorous and unrelenting emphasis on method and process to his essay. Nonetheless, the two share much in common, and have implications well beyond the scientific community, to which I alluded earlier in this essay. In combination, evolving paradigms and encouragement of creativity are cornerstones of societal progress, and can be and are frequently employed in the field of education. As a teacher of history, I seek to develop themes. Students can not understand those themes without first accepting some common foundation (paradigms, if you will) and then using their creative energies to generalize and relate the impact of past events on present developments. Out of this process, they come to develop their own frameworks for understanding. "The transformation of paradigms, and the successive transition from one paradigm to another" (p.149) helps lead students to the possession of a broad education and the ability to permutate and combine that knowledge in order to form new combinations and understand their consequences (p.374-76).

Note: Quotations and parenthetical page numbers refer to Asimov, Isaac, "Those Crazy Ideas" and Kuhn, Thomas, "The Route to Normal Science," in *Inquiry :A Cross Curricular Reader*, edited by Bloom, Lynn Z., and White, Edward M. (Englewood Cliffs: Prentice-Hall, 1993).

Reader Comments on the "High Pass" examination:

This paper answers all parts of the question and demonstrates successfully all four criteria for passing: (1) It shows full and detailed

understanding of both assigned readings and integrates material from the readings into a well-structured essay; (2) It develops a focused and coherent essay which has something interesting to say beyond mere summary of the readings; (3) It uses cited source material to support the central idea the paper develops and explicitly connects the citations to that idea; and (4) It is written in clear and acceptable prose which, though not perfect, does not distract the reader from the ideas being expressed.

Marginal Pass

Thomas S. Kuhn and Isaac Asimov who were both educated in the sciences, have their own unique approach to explaining how the science field progresses. Kuhn believes that science progresses by first establishing models that lay a foundation for rules and standards. This foundation provides an equal base for others to use and build upon, thus progressing.¹ Similarly, Asimov provides an example of how the concept of evolution progressed through Charles Darwin and Alfred Russel Wallace. Both Darwin and Wallace created their own base of knowledge through observation of animals throughout the world. Darwin and Wallace could see a relation among the animals, and that the animals changed over long periods of time.² Neither could provide the answer of why evolution occurred until they stumbled upon Thomas Robert Malthus' research that suggested that population increased faster than the food supply and cut itself down by starvation, disease or war.³ Darwin and Wallace needed to base their research on Malthus' work and share assumptions.

The differences that surface between Kuhn and Asimov's ideas on how science progresses lies with Kuhn believing that one that studies in the field of science must first learn all the rules and standards and add upon it theoretical and methodological belief that permits selection, evaluation and criticism.⁴ You must go to outside sources if it is not in the specific field already. Asimov on the other hand believes that in addition to the knowledge of "bits" that one must attain in the science, one must also be able to combine the bits and know that new information has been created, the person must be intuitive, intelligent, and realize consequences. The person must also possess courage

to announce one's findings and the person according to Asimov must also have luck, on his or her side.⁵ All of these criteria are required for the person to have scientific Creativity, a factor that was left out by Kuhn.

Kuhn throughout his article refers to "normal science." Kuhn defines this as "research firmly based upon one or more past scientific achievements, achievements that some particular scientific community acknowledges for a time as supplying the foundation for its further practice."⁶ I feel that Asimov would agree with this definition. Asimov in his article refers to the amount of "bits" that one must acquire in order to work out theories. Asimov takes this further, however, to go beyond "normal," into creative. I feel that Asimov, unlike Kuhn, believes that "normal science" has little importance and now provides little advancement in science.

Kuhn's paradigms are models for other scientists to follow.⁷ Similarly Asimov's crazy ideas have to originate from a base of knowledge on what could be referred to as paradigms. Asimov's "bits" could be Kuhn's "Paradigms." Crazy ideas on the other hand are entirely different from paradigms. Crazy ideas are generated after digesting the paradigms and bits of information and *creatively* going beyond what a paradigm would bring as an outcome.

In the field of Public Administration, the advancement has often been determined in a consistent manner such as "normal science." There are models and assumptions that are used as rules and standards. These paradigms are taught throughout academia as a groundwork for students to then build upon. Each student is given knowledge in accounting, government processes, and theory behind government, and also foundations for budgeting and management. Unfortunately there is demise in our bureaucracies, the foundations taught in school are enough. "Crazy Ideas" are needed to help our government systems run effectively and efficiently. Of course not all of these ideas are good ones. One idea to be innovating and enhance the quality of government was Management by Objectives, (MBO) which has failed. "Crazy ideas" in public administration will keep surfacing until solutions to problems are found. Reinventing government is the current "Crazy idea." Both authors can lend support for my field of study.

End Notes

1. Lynn Z. Bloom and Edward M. White ed., *Inquiry: A Cross Curricular Reader*. New Jersey: Prentice-Hall, Inc., 1993, *The Route to Normal Science* by Thomas S. Kuhn, 147

2. Lynn Z. Bloom and Edward M. White, ed., *Inquiry: A Cross Curricular Reader* (New Jersey: Prentice-Hall, Inc., 1993, *Those Crazy Ideas*, by Isaac Asimov, 371-372

3. *Ibid.*, 372

4. Kuhn, 152

5. Asimov, 374-378

6. Kuhn, 147

7. *Ibid.*, 147

Reader Comments on the "Marginal Pass" Examination:

This paper is much weaker than the "High Pass" and barely passed after much discussion by the faculty readers. They concluded that the examination met the demands of all the questions, if minimally, and satisfied the four criteria: (1) It shows genuine understanding of both readings and some ability to use insights from the readings as part of an argument; (2) though the central idea emerges slowly and seems scattered, the paper does analyze the readings and go beyond mere summary in developing an idea; (3) though the citation system is old-fashioned and somewhat idiosyncratic, the paper does discuss its quotations and connect many of them to developing ideas; and (4) the writing is generally clear and does not distract the reader by too many errors.

Marginal Fail

Thomas Kuhn and Isaac Asimov address the issue of science and the development of new scientific ideas. These two authors present similar, as well as, different definitions and names of many key words or ideas. The progression of science and what is necessary for new discoveries is explained by these two men with many similarities and differences.

Thomas Kuhn notes that prior to the eighteenth century scientists did not share ideas and any new creative idea had to be documented with evidence. This documentation could not be from another scientist. The documentation had to be new and not referenced to another scientist's work.

After the eighteenth century Kuhn indicates that there was more of a sharing of ideas (150). This leads to Kuhn's definition of normal science: "normal science means research firmly based upon one or more past scientific achievements, achievements that some particular scientific community acknowledges for a time as supplying the foundation for its further practice (147). Asimov does not give a similar spelled out definition of normal science, however, he does give an example of science and its process. By using Darwin's discovery of natural selection, we can see the strands of what makes science. The creation of new principles or ideas must begin with the study of an area of interest. After studying, the scientist must make observations. These observations postulate new theories and ideas. After hypothesizing, the scientists must make observations. These observations are the gathering of facts, that will subsequently help scientists postulate new theories and ideas. After hypothesizing, the scientists may share information with others.

Both men agree that there needs to be time to study information and documents for the area of interest, research. Research is the basis for new scientific discoveries. The biggest difference between these men is that Kuhn implies that research is to be from past scientific achievements only and not from any other source. Asimov, on the other hand, goes to the trouble of defining how information or "bits" are obtained. He indicates that one can be educated by others in the same field, schools, or "self educated." "Self educated" does not mean uneducated it means one obtains information by reading and by personal observation. Both men agree that research must occur.

As this research occurs, there is a process to how science progresses. Prior to looking at the different perspectives for the progression, there needs to be a definition of "paradigm" as used by Kuhn and "crazy ideas" as used by Asimov.

A "paradigm" is a term to suggest that there is some accepted examples of science theory. Kuhn notes that the paradigm allows the next researcher to take for granted certain information as stated in the "paradigm." New facts to prove the paradigm are not necessary. The

similarity of a “paradigm” and “crazy ideas” is that both are startling new principles or conceptual breakthroughs (Asimov, p.371). Both are new ideas.

The greatest difference between these two phrases is that Kuhn’s “paradigms” seem to be concretely founded by research and past achievements. Asimov acknowledges the importance of past achievements and their necessity but also acknowledges that a new discovery can happen by luck and hence the term “crazy ideas”. Although, Kuhn does admit that spontaneous ideas can occur, he notes it is rare.

Now that we have defined “paradigm” and “crazy ideas”, we can proceed to discuss the similarities and differences of how science progresses as described by Kuhn and Asimov. Asimov sets up five criteria for scientific creativity: 1) the creative person must be broadly educated 2) intelligent 3) intuitive 4) courageous and 5) lucky (378). Kuhn’s progression can be made to fit into some of these 5 criteria. There are similarities as well as differences.

The first criterion is that a creative person must be broadly educated. The scientist must have a foundation of knowledge by which he studies and observes old and new information. As noted previously, Kuhn’s writings imply that research must be based on previously accepted achievements or paradigms. Asimov believes that crazy ideas can occur because of past achievements, as well as new ideas that have never been tested or tried.

Criterion two is that the creative person or scientist must be intelligent, not only must the person be book smart, he must be able to combine old ideas with new ideas and to come up with new hypotheses with no reference to old achievements. Kuhn would disagree with the last statement. Again Kuhn believes new ideas must have their bases on old achievements.

Intuition is a necessity of any scientist. This is accepted by both authors. Both authors note that once “bits” of information are combined there must be the acknowledgement of what information is necessary and what information is useless. Without this immediate knowledge of what is useful and useless the scientist will waste valuable time testing inconsequential information.

The fourth criterion is courage. The scientist must be courageous. He must be willing to share his ideas with others as well as publish his new discovery. Kuhn does not agree with this idea. He notes, “The new paradigm implies a new and more rigid definition of the field

(154).” This implies that new discovery does not need the scientist’s courage, since it reinforces an old achievement. Asimov contends that if a new idea is too closely related or is happened upon quickly the idea is merely a “corollary” (376). Asimov says “the more profound the breakthrough, the more solidified the previous opinions; the more against reason the new discovery seems the the more against cherished authority (378).” The fifth criterion is luck. Asimov indicates that to some degree the scientist must be lucky to come across a new discovery by means of a certain combination. Not all combinations are educated guesses or planned. Some combinations merely happen by chance. Kuhn is not completely convinced of this area. He acknowledges that some discoveries just happen; but, it is rare. He believes firmly that research produces sound discoveries that are planned.

As can be seen, there are many similarities and differences of how science is perceived by Thomas Kuhn and Isaac Asimov. The process of how the sciences progress is nearly identical, the only difference being that Kuhn believes in sound research as the basis of new discoveries and Asimov sees the importance of luck and that not all discoveries are founded on concrete research only. These differences can be seen not only in science but also in the field of education.

Often times, teachers are taught theory and practice as two separate entities. Just as Kuhn sees theory and research as the most important; some educators only see theory and research as the only important tool to take into the classroom. Asimov realizes that you need the theory and research; however, there is the practicality of the matter. Asimov sees that success in the classroom can sometimes be just by luck.

New discoveries or new ideas in education are continually being presented to educators. Goals 2000 is a reform document that is attempting to change how schools operate. This new program is attempting to change traditional schools into college prep pathways or career pathway for students not interested in college. Some of the document relies on research that shows our schools are not successful. However there are new “crazy ideas” that educators want to try. They want to try new ideas so that all students can have success. These new ideas require courage on the part of the educators willing to implement a new program. As educators, we must, be intuitive to know what might work and what definitely won’t work. Education is a science and it has its process. This process can be two separate ideas as presented by

Kuhn and Asimov or it can be a blend of theory, research, and luck. By having a balance of the two many new discoveries and successes can happen.

Kuhn, Thomas. "The Route to Normal Science." *Inquiry A Cross Curricular Reader*, (New Jersey: Prentice Hall, Inc., 1993.)

Asimov, Isaac. "Those Crazy Ideas." *Inquiry A Cross Curricular Reader*, (New Jersey: Prentice Hall, Inc., 1993.)

Reader Comments on the "Marginal Fail" examination:

This paper contains many ideas, is generally clear, and demonstrates some understanding of the two readings, along with some confusion and misreading. It does not, however, develop a single coherent essay (criterion 2), moving as it does from idea to idea, nor does it use quotations to support rather than substitute for the paper's ideas (criterion 3). It basically summarizes the two readings and makes random observations about their likenesses and differences. This writer might well pass a future WREE if he or she took time at the beginning of the test to organize a coherent and focused response. The writer would be likely to pass a minimum proficiency test (which the WREE is not—this is a course equivalency examination) and ought to work independently to improve organizational skills in preparation for a subsequent WREE.

Low Fail

The two authors share a similar view that science progresses by building upon established principles. Kuhn illustrates how scientific research builds upon established principles or paradigms. He defines paradigms as structures or patterns that allow scientists to share a common set of assumptions, theories, laws or applications as they look at their fields.¹

The two authors differ in their opinions about how new theories are developed. Kuhn states that in order to be accepted as a paradigm, a theory must seem better than its competitors, but it need not explain all the facts with which it can be confronted.² A theory is accepted as long as it cannot be disproved. Asimov believes that new discoveries

come about through a creative process. A creative individual must possess the following characteristics.³

1. He must be broadly educated
2. He must be intelligent
3. He must be intuitive
4. He must be courageous
5. He must be lucky in the sense that he must be in the right place at the right time.

The two authors agree that normal science is important because it provides a foundation to build upon. Considering the overwhelming amount of facts and figures utilized in the research process, a paradigm provides a springboard for further study. It allows the scientist time to concentrate on more specific study

Crazy ideas generally go against the norm. For crazy ideas to be accepted, they must be proven. If they don't work, they're useless. Many crazy ideas are not accepted because they are ahead of their time. A receptive atmosphere is one where people are willing to accept these crazy ideas. This usually involves the element of luck. Being lucky means being in the right place at the right time.

My own experience supports the conclusion of both authors. While pursuing a baccalaureate degree, in biology, I was confronted with tremendous of data.

Reader Comments on the "Low Fail" Examination:

This paper fails three of the four criteria: (1) Understanding of the two readings is superficial and confused; (2) The essay is not focused, developed, or coherent; (3) Sources are not cited (though we seem to have footnote numbers) nor are they used to support the writer's ideas; and (4) the writing, though largely free from grammatical and mechanical errors, consists of a series of disconnected observations. This writer needs to develop a writing process that allows coherent development of a focused idea and probably should plan to take an upper-division course to learn such a process.

Conclusion

The term *college-level writing* is meaningless in itself, ignoring as it does the enormous variety of institutions, rhetorical situations, levels of education, and fields of study of college students. Personal definitions tell us about the person defining the term, not the term itself, and most institutional statements are too general to be useful. The clearest way to approach a genuine definition is by way of the actual criteria and sample writings used by colleges and universities to make distinctions that matter about student performance for specific purposes. No doubt, the term will continue in common parlance to mean a vague sort of good writing, left undefined, that suits the user's particular purpose—often a lament that standards have declined from the good old days, whenever they were. But for those seeking a serious definition of the kinds of writing that colleges actually require, the best place to look is at the scoring criteria used by the institutions that have decided to take student writing as a general responsibility. While far too many colleges and universities neglect that responsibility, those that accept it and enforce it through specific courses beyond the first-year level, essay tests, or portfolio assessments are able to define what they mean and demonstrate that most of their graduates eventually attain that ability.

Works Cited

- Britton, James. *The Development of Writing Abilities (11–18)*. London: Macmillan, 1979.
- Rembar, Charles. *The End of Obscenity: The Trials of Lady Chatterley, Tropic of Cancer, and Fanny Hill*. New York: Random House, 1968.
- White, Edward M. *Teaching and Assessing Writing: Recent Advances in Understanding, Evaluating, and Improving Student Performance*. 2nd ed. San Francisco: Jossey-Bass, 1994.