Truth-seeking Versus Confirmation Bias: How Richard Paul's Conception of Critical Thinking Cultivates Authentic Research and Fairminded Thinking

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Abstract

This article, written in response to a kind invitation by Linda Elder, Gerald Nosich, and Frank Fair to contribute a reflective piece honoring the life, work, and intellectual contributions of Dr. Richard Paul, focuses on the ways in which his conception of critical thinking fosters fairminded, authentic, ethical reasoning and research. Richard Paul's framework for critical thinking emphasizes and cultivates Socratic, "strong-sense," fairminded thinking and intellectual humility, enabling students to understand the implications of fairminded research and providing them with valuable strategies to combat egocentrism and confirmation bias. This article explains not only why the Paul/Elder conception of critical thinking fosters fairmindedness and ethical reasoning in both students and teachers, but it outlines how the application of this framework for critical thinking can transform classroom teaching and research paper assignments in order to encourage and cultivate metacognitive analysis and authentic research in student writers.

Key words: Critical thinking, fairmindedness, research writing, strong-sense critical thinking, confirmation bias

I. Introduction

"Strong-sense critical thinkers are not easily tricked by slick argumentation, by sophistry and intellectual trickery. The striking characteristic of strong-sense critical thinkers is their consistent pursuit of the fair and just. These thinkers strive always to be ethical – to behave in ways that do not exploit or otherwise harm others. They work to empathize with the viewpoints of others. They are willing to listen to arguments they do not necessarily hold. They change their views when faced with better reasoning."

> Richard Paul and Linda Elder, *Critical Thinking: Tools for Taking Charge of your Learning and Your Life*, p. 3

In *The Improvement of the Mind*, Isaac Watts (1741/1821) delineated necessary character traits, dispositions, and habits associated with substantive learning and intellectual discovery. Watts, an eighteenth-century Nonconformist theologian and logician, cautioned students to guard against intellectual arrogance, stating, "Remember this, that if upon some few superficial acquirements you value, exalt, and swell yourself . . . you are thereby building a most unpassable barrier against all improvement" (p. 6). He further encouraged students to approach subjects in a deep and substantive manner and to seek to unearth new truths and new discoveries:

> Do not hover always on the surface of things, nor take up suddenly with mere appearances; but penetrate into the depth of matters . . . do not indulge yourselves to judge things by the first glimpse, or a short and superficial view of them; for this will fill the mind with a errors and prejudices, and give it a wrong turn and ill habit of thinking . . . [Instead] call yourselves to an account what new ideas, what new proposition or truth you have gained. (pp. 10–11)

Above all, Watts cautioned, "Maintain a constant watch at all times against a dogmatical spirit" (p. 12); refuse to adhere to any belief "till you have some firm and unalterable ground for it, and till you have arrived at some clear and sure evidence; till you have turned the position on all sides and searched the matter through and through, so that you cannot be mistaken" (p. 12). According to Watts, who had seen his own father imprisoned for holding unpopular and dissenting beliefs, authentic intellectual inquiry begins and ends with a commitment to seek truth at all costs and to persevere in learning even when it is difficult and costly.

In the opening chapters of his popular educational treatise, Watts anticipated several key claims and assumptions reflected in the framework of critical thinking developed and promoted by the late Dr. Richard Paul and his colleague Dr. Linda Elder of the Foundation for Critical Thinking. Paul's framework of critical thinking provides instruction not simply on how to reason through complex information and to apply rigorous intellectual standards to assess that reasoning (Paul & Elder, 2006, pp. xvii–xxix); fundamentally, it emphasizes cultivating an acute understanding of our innate egocentrism, our tendency toward intellectual laziness, and our unwillingness to accept facts that challenge preconceived notions of what we believe must or should be true. Substantive, authentic intellectual growth involves much more than simply learning techniques for analyzing, synthesizing, and assessing information and claims. It involves a capacity and willingness to see below and beyond our own process of thinking and to apply rigorous ethical standards to that process, as well as to engage in an almost ruthless critical assessment of the logic and reasonableness of our own deeply held assumptions, preconceptions, and beliefs.

For over twenty years, I have taught composition, research writing, literature, and critical thinking at the college level, instructing students in how to conduct academic research, write analytical papers, and organize arguments. In both introductory and graduate-level courses, I require the application of micro-skills such as gathering and assessing sources, taking notes, organizing ideas and claims, constructing thesis statements, and integrating borrowed material into arguments. However, one aspect of the research-writing process has remained consistently challenging for me. While my students can often demonstrate a measure of improvement in research and writing skills over the course of a semester or even an assignment, they sometimes employ these skills to construct arguments that seem sophistic, disingenuous, or inherently misleading. Whether they engage in occasional "cut and paste," mosaic Internet plagiarism, or, more frequently, simply choose a preliminary argument and selectively choose sources that support that argument, students often miss the most important point of intellectual inquiry and research: allowing one's own conclusions to develop authentically from a broad and deep investigation of evidence with an awareness of one's own biases and intellectual limitations. Like most educators, I find that challenging and changing my students' assumptions about what it means to research, reason, and think in an authentic and fairminded way is one of the most important goals I have as a teacher; yet it is also one of the most difficult tasks I encounter in the classroom. In this paper, I address the ways in which the adoption and incorporation of Richard Paul's concepts of the intellectual character traits; of first-order, *strong-sense* critical thinking; and of authentic, substantive learning have transformed the way I teach student research and writing.

II. Integrating the Paul/Elder Conception of Critical Thinking

With the 2003 integration of Paul's conception of critical thinking into the required, General Education advanced research and critical-thinking course at my institution,

Winthrop University, I was introduced to a practical and highly transferable method to teach my students how to analyze, synthesize, and assess data and claims. More importantly, and wholly unexpectedly, I also encountered in the Paulian model a powerful conceptual framework to clarify and modify my students' understanding of cognitive dissonance, authentic research, and fairminded thinking, thus furthering their intellectual transition from weak-sense to strong-sense critical thinkers. This *affective* component of Paul's model of critical thinking – its rich, highly developed concept of intellectual fairness, empathy, and rigor – has proven to be remarkably valuable to me as a teacher, for it has enabled me to address and teach in an explicit, deliberate way what it means to be a fairminded thinker and why it is so important for both teachers and students to cultivate this disposition.

In their seminal work *Critical Thinking: Tools for Taking Charge of Your Learning and Your Life*, Richard Paul and Linda Elder (2006) classify all thinking as either *first-order* (spontaneous, non-reflective, and often ineffective) or *second-order* (critical, conscious, metacognitive, and deliberate) (p. xxv). As teachers, we strive to teach our students how to reason through complex information and persuasive claims in a deliberate, self-aware, and critical way, but often lack a systematic method to teach these concepts. Though traditional pedagogical methods, including even Watts' *Improvement of the Mind*, focus on cultivating intellectual skills such as reading, taking notes, "fixing the attention of the mind," and "inquiring into causes and effects" (1741/1821, pp. 155, 223), many of these methods lack a comprehensive explanation of what the mind must *do* in order to read or analyze *well* (identify an important purpose; articulate key questions at issue; assess the accuracy, breadth, and depth of information; draw logical and relevant conclusions; understand and articulate assumptions; consider the implications of ideas and claims; define key concepts; and consider multiple points of view and contexts). By applying Paul's elements of reasoning and the intellectual standards to information, arguments, and claims, students quickly move from mere recall of facts to deeper understanding. Once students can clearly articulate an argument's purpose, questions at issue, assumptions, and implications, they can often demonstrate substantive understanding and mastery of a subject or topic. In addition, once they can assess the accuracy and relevance of information, the clarity and precision of claims, the logic of arguments, and the depth and breadth of analysis – intellectual skills taught in the Paul/Elder articulation of critical thinking – they are equipped to draw meaningful and well-supported conclusions about their research.

But even these important analytical and evaluative skills rely for their effectiveness and legitimacy on a deeper, ethical component. Student researchers must be willing to use and interpret data in ways that reflect the reality or truth about a situation rather than the desired outcomes of the researchers. In *Critical Thinking: Tools for Taking Charge of Your Learning and Your Life,* before presenting even an initial description of their comprehensive method of critical analysis and assessment, Paul and Elder (2006) emphasize to the reader that, in order to become a critical thinker:

> You will have to catch yourself in acts of selfishness and begin to correct your behavior. You will have to become committed to living a rational, compassionate, contributory life, to look outside yourself and see how your behavior affects other people. You will have to decide, again and again, that being fair-minded is crucial to your identity as a person. (p. 1)

This commitment to cultivating a fairminded approach to data and claims and to responding to others with empathy and compassion must

reside at the center of everything we do in our classrooms as teachers. Prior to integrating the Paul/Elder conception of critical thinking into my research writing courses, I sometimes felt a nagging fear that I might teach students methods of argument, analysis, and data collection only to see those skills used in sophistic, unethical ways. What if my students simply become skilled at presenting biased arguments or hiding disconfirming evidence? How can I get them to understand that there is a larger ethical context to the choices we make as researchers and scholars, and that this ethical component of scholarship is foundational to the larger goals of higher education, expressed in the American Association of Colleges and Universities' "The Principles of Excellence" (2007) as the deliberate cultivation of "civic, intercultural, and ethical learning" and the development of "personal and social responsibility" (p. 1)? The Paul/Elder conception of critical thinking places fairmindedness and exemplary intellectual character traits at the heart of critical thinking, providing teachers and students with not only the *intellectual strategies* but also the *ethical context* for what we do as researchers and scholars.

Paul and Elder (2006) explain that "critical thinking can be used to serve two incompatible ends: self-centeredness or fair-mindedness" (p. 2). Our students can use the intellectual skills and strategies we teach them to manipulate data and facts in order to "win" arguments, engage in sophistry, or construct eloquent but fundamentally dishonest rhetorical appeals. Conversely, they can use these same skills to assess their own reasoning, hold themselves to the same high standards they apply to their intellectual and political opponents, and pursue truth even if it is costly or unpopular. Paul and Elder (2006) call the first type of critical thinkers, those we might call sophists, *weak-sense critical thinkers;* they designate the second type of critical thinkers, those who "consistent[ly] pursu[e] the fair and just" and "strive always to be ethical," as *strong-sense critical thinkers* (p. 3). One of the most difficult and persistent problems teachers face is finding ways to address students' pervasive misunderstanding about the nature of authentic research and intellectual inquiry. Having taught both traditional, advanced composition courses focused on research writing (WRIT 102: Argumentative Writing) and a modified version of that course integrating Paulian critical thinking in a substantive way (CRTW 201: Critical Reading, Thinking, and Writing), I have found that the Paul/Elder framework of critical thinking provides an invaluable method for instructing students in how to function as ethical, fairminded thinkers and authentic researchers through its explicit emphasis on metacognitive self-analysis and its instruction in the impediments to critical thinking and the intellectual character traits.

III. The Pervasiveness of Confirmation Bias in Research

Writing teachers are trained to offer students techniques in paper organization, library research, and note-taking, but a deeper and more troubling problem persists: students' concept of research consists of searching for data that support their preconceived notions about what must or should be true or what is commonly believed about a topic. Their research methods often conform to the following pattern: students select a research topic, identify a question at issue, answer that question by writing a tentative thesis or hypothesis, and then search the Internet or library databases for supporting evidence. Information in articles or books that challenges or disconfirms the proposed argument is usually ignored, and, if necessary, quotations and statements may be stretched out of context in the most uncomfortable ways to "fit" or support the original thesis. This pattern of selecting and emphasizing data that fit a preconceived conclusion is called confirmation bias, defined more precisely by Tufts

University Research Professor of Psychology Raymond Nickerson (1998) as "the seeking or interpreting of evidence in ways that are partial to existing beliefs, expectations, or a hypothesis in hand" (p. 175). No matter how articulate, eloquent, or persuasive the final product may be, a student's research paper is only legitimate if its conclusions reflect the way things really are, based on what experts know to be true about a topic, and if its findings are uncompromised by confirmation bias.

Those who teach writing or research in secondary or higher education probably easily recognize this familiar pattern of weak-sense critical thinking and confirmation bias; we may even reassure ourselves that we would never fall prey to its temptations. But researchers at the highest academic levels are not immune to confirmation bias; in fact, they display it, in varied forms, in their own research at alarmingly high rates. In a meticulously researched and comprehensive article titled "Confirmation Bias: A Ubiquitous Phenomenon in Many Guises," Nickerson (1998) analyzed the presence and extent of confirmation bias in academic research across multiple disciplines and concluded, "a great deal of evidence supports the idea that . . . confirmation bias is extensive and strong and that it appears in many guises" (p. 3). Nickerson's exhaustive research into the presence of confirmation bias in academic research revealed that highly trained and specialized researchers in diverse fields such as psychology, geology, physics, medicine, and education participate in both "deliberate selectivity in the use of evidence" and "unwitting selectivity in the acquisition and use of evidence" (p. 175). (In a personal communication, Gerald Nosich has helpfully suggested that we align the term confirmation bias with Nickerson's second category here, "unwitting selectivity in the acquisition and use of evidence," which connotes an unconscious bias in favor of confirming evidence.)

According to Nickerson, confirmation bias is evinced in a wide range of guises, such as "hypothesis-determined information seeking and interpreting" (p. 177); "belief persistence" in the face of contradictory evidence (p. 187); and "own-judgment evaluation," in which researchers display over-confidence in the accuracy of their own judgments in the face of contradictory evidence (p. 188). Nickerson's evidence led him to conclude not only that confirmation bias is prevalent even in published, peer-reviewed academic research, but that the very purpose of academic research is profoundly impacted by the persistence of confirmation bias among researchers. "The evidence . . . supports the view," Nickerson concluded, "that once one has taken a position on an issue, one's primary purpose becomes that of defending or justifying that position" (p. 211).

This practice of searching for evidence in order to justify one's own position or a discipline's status quo stands in stark contrast to Richard Paul's (2012c) concepts of "autonomous thinking," a process of intellectual inquiry in which researchers "use critical skills and insights to reveal and eradicate beliefs to which they cannot rationally assent" (p. 400), and "fair-mindedness," an intellectual trait focused on overcoming "our egocentric tendency to identify truth with our immediate perceptions of longstanding thought or belief" (p. 404). Confirmation bias persists in both our students' papers and our own research and poses significant impediments to our efforts to engage in authentic research and fairminded thinking. But what accounts for its pervasiveness and its subtle, yet powerful, appeal, even in the face of continual and institutionalized academic instruction on the correct use of borrowed information and analytical interpretation of research data?

IV. "Believing is Seeing": Confirmation Bias and Blind Spots

Our tendency to only see, validate, and accept claims, facts, and evidence that conform to our ingrained beliefs and assumptions has been well-documented by scholars. Francis Bacon, for example, explained that "the human understanding when it has once adopted an opinion (either as being the received opinion or as being agreeable to itself) draws all things else to support and agree with it" (*Novum Organum,* 1620/2000, p. 43). Similarly, Thomas Kuhn, in his seminal text *The Structure of Scientific Revolutions*, revealed the ways in which "shared paradigms" within a scientific community effectively blind researchers to non-conforming evidence: "no part of the aim of normal science is to call forth new sorts of phenomena; indeed, those that will not fit the box are often not seen at all" (1962/1970, p. 24). According to the social psychologists Carol Tavris and Elliot Aronson (2007), all of us confront daily what Watts calls "most unpassable barriers" constructed from our own egocentrism and cognitive blind spots: "the brain is designed with blind spots, optical and psychological," Tavris and Aronson explain, "and one of its cleverest tricks is to confer on us the comforting delusion that we, personally, do not have any" (p. 42). Impassable barriers, blind spots, boxes, walls, labyrinths – Watts, Kuhn, Tavris, and Aronson offer a number of metaphors to describe the cognitive conditions that create or support what Paul (2012) terms "*weak-sense* critical thinking" – the type of thinking that "fails to consider, in good faith, viewpoints that contradict its own . . . [and] lacks fair-mindedness" (p. 2).

In *Mistakes Were Made (but not by me): Why We Justify Foolish Beliefs, Bad Decisions, and Hurtful Acts*, Tavris and Aronson (2007) catalog and analyze instances of confirmation bias, cognitive dissonance, and blind spots across multiple disciplines, including law, politics, pharmacology, and psychology. Perhaps one of the most important conclusions offered by their revealing analysis involves the deeply embedded and complex nature of the relationship between confirmation bias, cognitive dissonance, and blind spots. Because of our tenacious and psychologically ingrained need to feel justified in our behavior and beliefs, we resist evidence and arguments that challenge our preconceived notions of what is true or possible. The uncomfortable cognitive dissonance we feel when confronted with disconfirming information leads us to engage in irrational and self-deluding behaviors such as denial and confirmation bias. A mental technique as powerful as cognitive dissonance can cause us to believe that "no evidence – the *absence* of evidence – is evidence for what we believe" (p. 20). Cognitive blind spots operate as mechanisms that enable our confirmation bias and belief perseverance to hum along unhindered. We cease to be able to see where we are wrong, mistaken, and biased, and our research is propelled not by the dictum "seeing is believing" but by the motto "believing is seeing" – the very phenomenon analyzed by Kuhn (1962/1970) in his discussion of a "switch in visual gestalt" when researchers switch belief paradigms (p. 111).

V. Developing Strong-Sense Critical Thinking in Student Researchers

If Tavris, Aronson, and Kuhn are right, then, we appear to be locked in a hopeless situation: our own compulsion to feel justified and right in our conclusions will lead us to engage in confirmation bias while also being sheltered from the knowledge of our inherent bias by our own cognitive blind spots. And this situation might be hopeless, except for one important – and accessible – remedy: self-awareness. Tavris and Aronson (2007) note, "We cannot avoid our psychological blind spots, but if we are unaware of them we may become unwittingly reckless, crossing ethical lines and making foolish decisions" (p. 44). Cultivating self-awareness involves both deliberate introspection and the act of surrounding oneself with "a few trusted naysayers" (Tavris & Aronson, 2007, p. 66),

people who are willing to contradict and challenge our claims and beliefs and to protect us from what Kuhn (1962/1970) called a sort of intellectual "insulation" that can happen in academic communities knit together by shared assumptions (p. 164). One of the best ways to cultivate this type of critical self-awareness is to offer explicit instruction in authentic intellectual inquiry and fairminded thinking. Paul's framework of critical thinking provides instructors and students with a comprehensive intellectual system that accounts for and emphasizes both *cognitive strategies* (including macro-abilities such as comparing or classifying concepts or beliefs and micro-skills such as using critical vocabulary or evaluating facts) and *affective strategies* (such as exercising fairmindedness, developing intellectual humility, suspending judgment, and developing insight into egocentricity) (Paul, 2012c, p. 394). Embedded within the concept of intellectual humility is the idea of being teachable, of reaching out to others for feedback and of welcoming constructive criticism of one's own ideas. As students integrate the concept of intellectual humility into their understanding of what it means to be a researcher, they must see themselves as one part of a larger community of thinkers and scholars who will sometimes sharpen or correct their assumptions and conclusions.

Apart from a commitment to be fairminded, display intellectual humility, and to seek truth above all, one's reasoning and research methods remain ethically indeterminate and possibly unfettered from logic or truth. Moreover, given the tendency for educators either to evade ethical considerations entirely or to approach ethical considerations "as a collection of learnings . . . separate from other learnings" and "independent of cognitive development" (Paul, 2012b, p. 255), they miss a valuable opportunity to clarify *why* it is important that students and teachers alike handle data and claims with integrity and hold their thinking to rigorous intellectual standards. Paul's model of critical thinking, with its focus on the affective dimensions of thinking such as the intellectual character traits and the awareness of and sensitivity to egocentrism, enables educators to both integrate ethical components into classroom discussions of research methods and to create an academic environment in which strong-sense critical thinking is valued, modeled, taught, and practiced.

Redesigning Instruction to Encourage Authentic Research

Richard Paul (2012a) stresses the necessity of consciously and deliberately redesigning instruction in order to achieve a desired outcome: self-reflective, self-aware students who have mastered and who can apply the intellectual skills, moves, and strategies of the accomplished critical thinker. As Paul (2012a) explains, classroom instruction must include "time to practice [critical-thinking] moves, to talk about the principles that underlie them, [and] to critique and assess one's own, and others', use of them" (p. 325). But, just as importantly, students must be encouraged to "strive continually for excellence in practice . . . [and to] be willing to learn from [their] mistakes" (Paul, 2012a, p. 325). Paul advocates designing instructional methods that reflect his deep conviction that "the depth with which [students] understand anything is in direct proportion to the degree to which they have engaged in intellectual labor to figure it out for themselves (2012a, p. 325). "Whatever is to have meaning *to them* must be given meaning *by them*" he emphasizes, and thus students "must actively and intellectually participate in the 'figuring out' process" (2012a, p. 322). *Practically, this approach involves allowing more time for students to talk and write; to pose and modify questions; to revise, assess, and critique conclusions; and to analyze and assess information and their own reasoning both in class and out of class.*

More importantly, in addition to

requiring students to engage in active, substantive learning, educators must insist that students cultivate and practice excellence, or fitness, in thinking:

> A fit mind can successfully engage in the designing, fashioning, formulating, origination, or producing of intellectual products worthy of its challenging ends. To achieve this fitness the mind must learn to take charge of itself, to energize itself, press forward when difficulties emerge, proceed slowly and methodically when meticulousness is necessary, immerse itself in a task, become attentive, reflective, and engrossed, circle back on a train of thought, re-check to ensure that it has been thorough, accurate, exact, and deep enough. (Paul, 2012a, p. 331)

Paul's description here reflects what instructors desire and demand of students engaged in academic research and higher-order thinking: autonomous, creative, substantive thought subjected to rigorous intellectual standards and motivated by intellectual traits such as perseverance, curiosity, and methodical exactitude. The Paul/Elder method of critical thinking, when substantively integrated into a research-writing class, enables instructors to place instruction in macro-skills and micro-abilities within a context of deeper, more foundational affective traits that bring a necessary ethical dimension and motivation to student research.

Modifying My Classroom Instructions and Assignments: The Impact on My Teaching

In order to demonstrate more precisely how my own instruction has changed in response to the integration of the Paul/Elder method of critical thinking, I am going to focus on how I have modified classroom instruction and assignments, specifically my research-paper assignment, in our required CRTW class, a course designed to provide sustained, focused instruction in critical thinking as well as instruction in research methods, the construction of arguments, and rhetorical analysis. Having taught advanced research-writing courses for many years at several institutions, I initially thought that teaching this revised course would simply involve "adding on" some critical-thinking techniques and strategies to my traditional way of teaching research and writing. I was completely unprepared for how profoundly my own assumptions about what it means to research, reason, and draw logical conclusions would be challenged as a result of learning and practicing Paulian critical thinking. I also did not anticipate how much my teaching, including my most basic assumptions about what it means to teach and learn, would change. As I taught students the elements of reasoning, the intellectual standards, the impediments to critical thinking, the universal critical thinking character traits, and the SEE-I strategy (see appendices), it soon became clear that I was not simply providing students with strategies and techniques for analysis and assessment. I was really asking them to become *different kinds of thinkers* – thinkers who are fair and just, who seek the truth at all costs, who genuinely want to understand the perspectives of those with whom they disagree, who are quick to listen and slow to pass judgment, and who persevere through difficult intellectual tasks.

In addition, I became much more intentionally purpose-focused and ethically-minded in my teaching. For every assignment, I began to clarify explicitly both to myself and to my students what I hoped to achieve, what I wanted them to learn, and what I desired as outcomes. My teaching took on a heightened joy and intensity when I felt free to address the "whys" behind what we do as students, teachers, and thinkers. *Why* is it important to develop awareness of our own egocentrism? *Why* should we work hard to understand others' perspectives even when we are inclined

to disagree with them? *Why* must we withhold judgment until we are certain that we fully understand the assumptions and implications of an argument? *Why* is it important that we search diligently and widely for information before drawing conclusions? What kind of people do we want to be – as students, as researchers, as professionals, as spouses, as parents? How do we handle information and claims, draw conclusions, and treat those with whom we disagree? Determining answers to these implied questions assumes an enhanced importance when it becomes clear that we are ultimately training our students to become fairminded, productive, ethical citizens; logical thinkers; and rational consumers of information.

While my instruction in the traditional Writing 102 courses reflected an emphasis on macro-abilities such as comparing analogous situations, generating or assessing solutions, reading critically, and analyzing arguments, the affective, ethical dimensions of cognitive development were almost completely excluded from the course, with the exception of some discussion of ethical integrity in incorporating borrowed information into papers. My Writing 102 course description emphasized some skills aligned with macro-abilities such as constructing arguments and understanding "writing as problem-solving," and individual units in the course focused on micro-skills such as "writing and revising paragraphs," "constructing thesis statements," and "using and citing sources" – all important skills, but all largely taught outside of a context of fairminded thinking. Conversely, my instruction in CRTW 201 (our critical-thinking and research-writing course) begins with a reflection on our own innate egocentrism and a consideration of the concept and practice of metacognition. Students begin the course by reading David Foster Wallace's (2005) Kenyon College graduation speech "This Is Water," a provocative text focused on our relentlessly egocentric response to the world around us, and reflect in class discussions and writings on the implications of choosing to cultivate metacognition and compassion in our lives. What is truly at stake when we deliberately choose to decide "what has meaning and what doesn't," to reject "our natural default setting" of intellectual arrogance, and to develop "just a little critical awareness" about ourselves and our assumptions (Wallace, 2005, para.10, 19, 7)? What does it mean to master one's own mind rather than let it function as the "terrible master"? Why does Wallace equate such mastery with true freedom?

Students follow this line of inquiry with a study of the impediments to critical thinking outlined in Gerald Nosich's (2012) text *Learning to Think Things Through: A Guide to Critical Thinking Across the Curriculum*, including egocentrism, and apply these concepts in an essay in which they analyze a past mistake or current belief using the elements of reasoning or the impediments to critical thinking. Early in the semester, it becomes clear to students that the central focus of this course is significantly different from typical research writing courses they may have taken in the past. Before students are asked to analyze claims, investigate topics, or assemble data into arguments, they are required to think about how they think, how they draw conclusions, and what hinders them from reasoning and analyzing in ways that are fairminded, ethical, or logical. Whether they are reading texts by Paul and Elder, Nosich, Wallace, or Tavris and Aronson, students are confronted repeatedly with the same provocative claim: we humans are inherently and deeply mired in an egocentric viewpoint, and we are naturally wired to justify our own preconceived assumptions and beliefs even in the face of disconfirming evidence.

Modifying My Classroom Instructions and Assignments: The Impact on Students

And yet, there is hope. Students in a course based on Paul's framework of critical

thinking are equipped not only to recognize and sometimes thwart their own egocentrism, but to employ specific strategies that foster Socratic analysis and fairminded thinking. Throughout the course, students apply the elements of reasoning and the standards for critical thinking to their own conclusions, to their peers' claims, and to arguments in non-fiction texts, articles, and TED Talks. They further examine their own tendency to engage in confirmation bias by completing an exercise in which they must thoroughly and fairly analyze the beliefs of someone with whom they profoundly disagree (Nosich, 2012, p. 70), after which they read Tavris and Aronson's (2012) *Mistakes Were Made (but not by me)*, an extended analysis of the ways in which our own brain can trick us into thinking that we are being fairminded and logical when we are decidedly not. Students gradually begin to understand that cognitive strategies such as analysis and evaluation are deeply rooted in and dependent on the affective traits of intellectual integrity and fairmindedness. The essential intellectual character traits, outlined in Elder and Paul's (2014) *The Miniature Guide to Critical Thinking Concepts & Tools*, are emphasized in the course, and students are asked to demonstrate their understanding of these traits by incorporating them into their research paper analysis and final-exam essay assignment. While both writing courses require students to construct and evaluate evidence and claims, engage in academic research, and construct coherent written arguments, only an integration of Paul's conception of critical thinking provides a framework for these skills that clearly places them in a meaningful ethical context. The Paulian critical-thinking framework reveals why we learn these skills and what it looks like when we embody them. More importantly, it reveals what is at stake when we employ these skills fairly and ethically, or, conversely, when we choose not to.

Perhaps most representative and indicative of the changes in emphasis between the Writing 102, the traditional argumentative-writing course and CRTW 201 the enhanced course aimed at critical writing and thinking, the research paper assignment reveals a stark contrast in purpose. Here is the culminating research-paper assignment in the Writing 102 course:

Writing 102 Research Paper Assignment

ASSIGNMENT DESCRIPTION: The research paper assignment will "ask you to pose a question worth exploring, to read widely in search of possible answers, to draw conclusions, and to support those conclusions with well-documented evidence" (Hacker 207). Your research paper will be persuasive and argumentative rather than merely informative. However, your argument, or thesis, will rest primarily on your evidence. Your thesis should reflect and be supported by your research findings. Your sources should be relevant and credible, and you should handle your sources with care and with integrity. This assignment will differ slightly from our previous assignments in that it will emphasize your careful assimilation of various sources into one cohesive and persuasive argument. Your paper should inform your readers of the intricacies of a topic you have carefully chosen and researched, but it should also have a persuasive point.

TOPIC: You may choose any topic of interest for your research paper as long as it is appropriate for a collegiate audience. I encourage you to choose a topic in which you feel invested or one that interests, concerns, or puzzles you. Once you have chosen a topic, you must narrow it down in scope (probably drastically). Remember that an eight-to-ten-page paper cannot fully and completely address a broad or generalized topic.

SOURCES: You must include **one primary source** and **at least five secondary sources**. I encourage you to use more secondary sources if your topic and thesis could benefit from wider research. You must cite in your paper at least six different sources, although you may create a much larger working bibliography. **You may not use more than two Internet sources. All other sources must be books, periodicals, hard-copy articles, etc.**

CRTW 201 Research Paper Assignment:

Part One: Part One will consist of a minimum seven-page researched position paper on the topic below**,** will be persuasive and argumentative rather than merely informative, and will be structured as a special type of argument called a *classical argument*. That is, your paper will contain an introduction with a clear, assertive, and narrow thesis; a narration section; a confirmation section, a concession and refutation section; and a conclusion. *You must include a discernible and persuasive concession and refutation section in the paper.* You should narrow your topic considerably, and present a clear stance, or position, on your topic. Your argument should be narrow, focused, and assertive, and you must include the best points of your opposing side and refute them in your concession/refutation section.

Paper Topic: George Orwell writes, "We are all capable of believing things which we know to be untrue, and then, when we are finally proved wrong, impudently twisting the facts so as to show that we were right." This research paper assignment will provide an opportunity for you to examine, research, and analyze an event or situation in your academic discipline in which critical thinking went badly awry. Our world is filled with such situations – in our communities, schools, families, and in geo-political conflicts, politics, businesses, public policy decisions, popular culture, etc.

This paper will enable you to engage in a process of "cognitive forensics" or "cognitive archeology": choose one such situation in your disciplinary area or future professional area and examine what went wrong. How, exactly, did mistakes in thinking happen? What **impediments** to critical thinking were operative? What **elements of reasoning** were dismissed or ignored? Were any **standards** missing or inoperative in the decision-making process? What **intellectual character traits** were absent in those making decisions? Where do you see evidence of cognitive dissonance, self-justification, the Pyramid of Choice, or other forms of dissonance-reducing measures?

Even a brief glance at this assignment reveals a number of violations of the "six forms of decision-making in designing instruction" advocated by Richard Paul (2012a) in his essay "The Art of Redesigning Instruction" (pp. 334 – 335). First, the assignment lacks precision in its articulation, and students are given no suggested topic, question at issue, or direction for inquiry. Paul encourages teachers to "get clear about what the students have to reason about" and "express, as specifically and clearly as you can, the precise question at issue" (2012a, p. 334). Second, the topic fails to provide students with a "bridge or crutch," something that "students are already familiar with" to "help them learn what they are not familiar with" (2012a, p. 334). Generally, the language of the topic lacks precision, clarity, and specificity ("any topic of interest"; "argumentative rather than merely informative," etc.). The assessment of the paper lacks any reference to how students are "expected to use critical thinking abilities" in their research (Paul, 2012a, p. 335), and nothing in the paper topic points students toward introspection, self-assessment, or metacognition about the process of researching a complex topic. Finally, though students are encouraged to "handle [their] sources with care and integrity" and though some classroom time was devoted to addressing the ethical and correct use of borrowed information in research papers, the class lacked an overall framework for making a case for the ethical use of information. Students were asked in this assignment to engage in a sophisticated and challenging intellectual task requiring the critical reasoning and analysis, as well as the assessment, interpretation, and synthesis of sources, and yet they were not provided with the powerful tools of the elements of reasoning, the standards for critical thinking, or the underlying framework of the intellectual character traits to propel their effort and equip them to produce a sound and well-supported argument.

After integrating Paul's approach to critical thinking into our redesigned CRTW

course, I found that my purposes and goals in designing classroom instruction and assignments were sharpened and my focus in my instruction shifted away from macro- and micro-skills and toward getting my students to "reason while learning, in order to learn well and deeply" (Paul, 2012a, p. 334). The elements of reasoning and the standards for critical thinking became foundational tools for my students to use in completing classroom tasks and activities, always with the larger goal of practicing and improving their critical-thinking skills. The research paper became yet another opportunity for students to practice these skills, but it also offered an ideal vehicle to teach ethical, fairminded thinking, resulting in an assignment designed to invite both self-analysis and authentic research on a complex topic:

> This CRTW paper topic, the culminating writing assignment in a series of lessons and assignments on Paulian critical thinking, research methods, logical fallacies, construction of arguments, and critical analysis, reflects a focus on self-analysis and metacognition and provides students with a more precise question at issue. It attempts to articulate clearly "what the students have to reason about" (Paul, 2012a, p. 335) and uses as a "bridge" the familiar text of *Mistakes Were Made* and the concept of the impediments to critical thinking. Conceptual categories are highlighted by asking students to analyze choices in terms of the impediments, elements, and standards, and students are encouraged to adopt the point of view of a researcher engaged in "cognitive forensics." It incorporates the language of the standards for critical thinking into the assessment criteria, and it requires students to engage in self-reflective analysis of their own thinking and research methods ("Part Three"). It requires "opportunities for students to gather information on their own" (Paul, 2012a, p. 336), while still focusing students on a familiar and relevant context (critical thinking mistakes within their own academic discipline). Though my students produce papers of varied degrees of strength and weakness in response to this topic, just as they did in response to the Writing 102 topic, the assignment itself requires the intellectual "moves" I want them to master in reasoning through a complex topic, incorporating and handling disconfirming evidence in an argument, and assessing and articulating the strengths and weaknesses of their own critical thinking and analysis. Often energized by the opportunity to research a critical-thinking mistake in their chosen discipline or future profession, students consistently submit research papers vastly more complex and thoughtful than those I used to receive in my Writing 102 courses.

Perhaps most important here is the context not explicitly stated in this CRTW research paper topic, but which supports this assignment and the tasks it requires: the cultivation of the intellectual character traits, the awareness of our own egocentrism, and the commitment to fairminded thinking and authentic research. Throughout the semester, students are taught how to draw conclusions in ethical, logical, and fairminded ways. They read examples of unethical and egocentric thinking in *Mistakes Were Made*, and they confront their own biases in classroom activities, paper topics, and written "thinking journal" assignments. Though they are not always entirely successful at completely eliminating confirmation bias in their research papers (who among us is?), they display a remarkable ability to identify and analyze such bias, and to see themselves as people who "struggle daily" against their innate egocentrism.

In the reflective self-analysis portion of his spring 2016 CRTW research paper, for instance, one student noted:

> I firmly believe that my research and writing process, in terms of the critical thinking ideas that Nosich

> discusses, has greatly improved this semester . . . my final research paper was characterized by a more objective view of the scholarly articles and evidence, rather than what I previously understood about the New Coke fiasco. While some confirmation bias may be present in my thinking without me realizing it, . . . my views on the marketing disaster have actually been changed from what I previously thought . . . [and] I think that my openness to seeing a different perspective regarding poor critical thinking allowed me to learn these new truths and not defend the consumers. (CRTW Student Self-Analysis, 2016)

Another student noted:

> Being cognizant of the impediments to critical thinking that Nosich lists, I was able to steer clear of many that I usually fall subject to . . . In the initial research stages of the paper I immediately began to search for quotes that could implicate Governor Pat McCrory in a web of cognitive dissonance. This method, however, was unfruitful, and I had to take a step back and realize [my] confirmation bias [in order to] analyze any and every piece of writing on McCrory's statements. (CRTW Student Self-Analysis, 2016)

Ultimately, this student integrated disconfirming evidence into a complex and nuanced argument "rather than finding sources that would confirm [his] belief" (CRTW Student Self-Analysis, 2016).

In almost every submitted self-analysis, students identified their own tendency to engage in confirmation bias, recorded their struggles against this bias, and analyzed their efforts to conduct research in authentic and fairminded ways. One student noted, for instance, that she "was about to fall into the same trap that many nutritionists have for years by ignoring contradictory evidence," and yet she persisted in researching in an open-minded way, noting that "the further [she] looked into the research the more certain [she] was that [she] could not be certain" about her initial hypothesis (CRTW Student Self-Analysis, 2016). Another student, who found herself "shocked" at the amount of disconfirming evidence she uncovered, ultimately admitted, "I could have been more intellectually empathetic and fairminded throughout the process. . . . I should have been looking for more counter-arguments earlier"; her analysis ended with her realization "While I like accumulating different viewpoints and interpretations, my confirmation bias can skew my findings and make me blind to important counter-arguments" (CRTW Student Self-Analysis, 2016).

VI. Concluding Thoughts

Those of us who teach the required CRTW course at my institution strive to construct, modify, and adapt our assignments and strategies to achieve our common purpose and goal: encouraging students to reason their way through difficult, complex material and equipping them to think things through in ways that are authentic, logical, ethical, and fairminded. When I began to incorporate the Paul/Elder framework of critical thinking into advanced research writing courses, I thought that I might find a few helpful nuggets of insight or perhaps stumble upon a couple of valuable techniques to pass on to my students. I had no idea how much the understanding and integration of this method would fundamentally change me as a teacher and thinker, how much it would transform my classroom and assignments, and how much it would radically shift my instructional approach from one based on a skill-and-task-centered, didactic instructional paradigm to one motivated by an ethically-grounded, purpose-driven, student-focused paradigm. My students' eventual awareness of their own

egocentrism and their tendency to display confirmation bias and sophistic thinking reflect, from my perspective, an immense cognitive leap forward. Even professional scholars study disciplinary subjects for decades without developing such self-awareness, trapped in intellectual prisons constructed of their preconceived paradigms and assumptions.

My students and I owe a great debt to Richard Paul for his clear articulation of a substantive, transferable method of critical thinking that cultivates strong-sense character traits such as fairmindedness, intellectual empathy, intellectual integrity, and intellectual humility. One student's anonymous course evaluation comment reflects the gratitude expressed by many CRTW students at the end of each semester: "This course has definitely helped me as critical thinker in terms of my metacognition, being aware of my thinking. It has put me in a position to challenge myself and my impediments in order to be a better student and a better person overall" (CRTW Student Course Evaluation, 2012). I, too, believe that I have become a "better person" by practicing and implementing Richard Paul's approach to critical thinking in my teaching, my scholarship, and my personal life. The application of Paul's framework for critical thinking has enabled me to design assignments that move beyond the acquisition of micro- and macro-skills in writing and research and that encourage the cultivation of Socratic, fairminded thinking and self-awareness in my students. Though Paul and Elder (2006) remind us that "any progress toward fair-mindedness is a constant inner struggle, a struggle to be faced each and every day" (p. 6), such efforts are often rewarded with "a mind that is self-disciplined, that cannot easily be manipulated, that is able to see the truth, and that strives at all times to think fairly" (p. 6); such a mind, eagerly receptive to new ideas and resistant to intellectual arrogance, is truly a reward of "rich and inestimable" value (Watts, 1741/1821, p. 3).

References

American Association of Colleges and Universities. (2007). The Principles of Excellence. Retrieved from https://www.aacu.org/sites/default/files/files/LEAP/Principles_of_Excellence.pdf

Bacon, F. (1620/2000). *Novum organum*. L. Jardine (Ed.). Cambridge: Cambridge University Press.

Elder, L. and Paul, R. (2012). *The thinker's guide to analytic thinking: how to take thinking apart and what to look for when you do*. Tomales, CA: The Foundation for Critical Thinking.

Kuhn, T. S. (1962/1970). *The structure of scientific revolutions* (2nd ed.). Chicago, IL: University of Chicago Press.

Nickerson, R. S. (1998). Confirmation bias: A ubiquitous phenomenon in many guises. *Review of General Psychology, 2 (2),* 175–220.

Nosich, G. (2012). *Learning to think things through: A guide to critical thinking across the curriculum* (4th ed.). Boston, MA: Pearson.

Paul, R. (2012a). The art of redesigning instruction. In A. J. A. Binker (Ed.), *Critical thinking: what every person needs to survive in a rapidly changing world* (pp. 319–345). Tomales, CA: Foundation for Critical Thinking.

Paul, R. (2012b). Critical thinking, moral integrity, and citizenship: teaching for the intellectual virtues. In A. J. A. Binker (Ed.), *Critical thinking: what every person needs to survive in a rapidly changing world* (pp. 255–267). Tomales, CA: Foundation for Critical Thinking.

Paul, R. (2012c). Strategies: thirty-five dimensions of critical thought. In A.

J. A. Binker (Ed.), *Critical thinking: what every person needs to survive in a rapidly changing world* (pp. 391–445). Tomales, CA: Foundation for Critical Thinking.

Paul, R. & Elder, L. (2006). *Critical thinking: Tools for taking charge of your learning and your life.* Upper Saddle River, NJ: Pearson.

Paul, R. & Elder, L. (2014). *The miniature guide to critical thinking concepts & tools* (7th ed.). Tomales, CA: Foundation for Critical Thinking.

Tavris, C., & Aronson, E. (2007). *Mistakes were made (but not by me): Why we justify foolish beliefs, bad decisions, and hurtful acts*. Orlando, FL: Harcourt.

Wallace, D. (2005). This is water. Retrieved from https://web.archive.org/web/20080213082423/http://www.marginalia.org/dfw_kenyon_commencement.html. The speech can be heard at https://www.youtube.com/watch?v=8CrOL-ydFMI.

Watts, I. (1821). *The improvement of the mind*. S. Johnson (Ed.). London: W. Wilson. (Original work published 1741)

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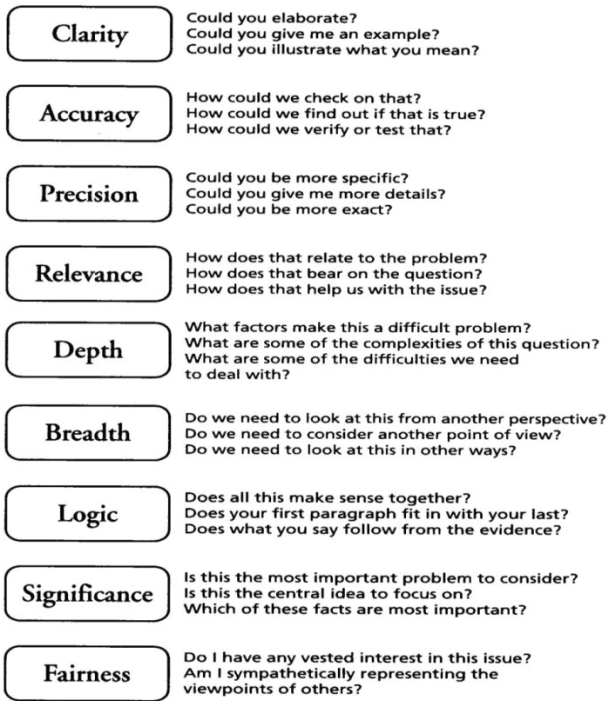
Appendix A: The Elements of Reasoning

1) **Purpose** – goals, objectives, missions
2) **Point of View** – frame of reference, perspective, orientation
3) **Question at Issue** – problem to be solved, issue in question
4) **Information** – data, facts, observations, experiences
5) **Conclusions** – interpretations, inferences, solutions
6) **Concepts** – theories, definitions, principles, models, axioms
7) **Assumptions** – presuppositions, beliefs taken for granted
8) **Implications and Consequences** -- likely or necessary outcomes

Also consider **Alternatives**: What is missing? What else should we consider? What other perspectives could we adopt? What other conclusions could we draw?

Taken from Elder and Paul, *The Thinker's Guide to Analytic Thinking*, p. 5.

Appendix B: The Standards of Critical Thinking



Taken from Elder and Paul, *The Thinker's Guide to Analytic Thinking*, p. 9.

Appendix C: The Intellectual Character Traits

- **Intellectual Humility**: Having a consciousness of the limits of one's knowledge, including sensitivity to circumstances in which one's native egocentrism is likely to function self-deceptively; sensitivity to bias, prejudice and limitations of one's viewpoint.

- **Intellectual Courage**: Having a consciousness of the need to face and fairly address ideas, beliefs or viewpoints toward which we have strong negative emotions and to which we have not given a serious hearing.

- **Intellectual Empathy**: Having a consciousness of the need to imaginatively put oneself in the place of others in order to genuinely understand them, which requires the consciousness of our egocentric tendency to identify truth with our immediate perceptions of long-standing thought or belief.

- **Intellectual Autonomy:** Having rational control of one's beliefs, values, and inferences. The ideal of critical thinking is to learn to think for oneself, to gain command over one's thought processes. It entails a commitment to analyzing and evaluating beliefs on the basis of reason and evidence, to question when it is rational to question, to believe when it is rational to believe, and to conform when it is rational to conform.

- **Intellectual Integrity**: Recognition of the need to be true to one's own thinking; to be consistent in the intellectual standards one applies; to hold one's self to the same rigorous standards of evidence and proof to which one holds one's antagonists; to practice what one advocates for others; and to honestly admit discrepancies and inconsistencies in one's own thought and action.

- **Intellectual Perseverance**: Having a consciousness of the need to use intellectual insights and truths in spite of difficulties, obstacles, and frustrations; firm adherence to rational principles despite the irrational opposition of others; a sense of the need to struggle with confusion and unsettled questions over an extended period of time to achieve deeper understanding or insight.

- **Confidence In Reason**: Confidence that, in the long run, one's own higher interests and those of humankind at large will be best served by giving the freest play to reason, [and] by encouraging people to come to their

own conclusions by developing their own rational faculties.

- **Fairmindedness:** Having a consciousness of the need to treat all viewpoints alike, without reference to one's own feelings or vested interests, or the feelings or vested interests of one's friends, community or nation; implies adherence to intellectual standards without reference to one's own advantage or the advantage of one's group.

Taken from "Valuable Intellectual Virtues" (September 2014). Foundation For Critical Thinking. Retrieved from http://www.criticalthinking.org/pages/valuable-intellectual-traits/528

Appendix D: The See-I Strategy

The SEE-I Strategy Includes the Following Steps for Clarification and Amplification of Ideas:

1) **State** – In one to three sentences, clearly and explicitly state your position or claim, or clearly define your term or concept. Be clear, precise, and brief.

2) **Elaborate** – In one to three paragraphs, elaborate on your claim or definition. Explain what the concept is, what it is not, where it occurs, how it developed, why it is important. Clarify when and where it operates and how it is limited in its application. Explain how it works, how it developed historically, what experts think about the concept, etc. You may begin this section by stating, "In other words . . . ."

3) **Exemplify** – Provide one or more concrete examples of your claim, definition, or concept from literature, history, your own life, society, etc. These examples should be concrete and specific, and you should provide sufficient explanation to make the reader certain of how the example represents the concept. You may begin this section by stating, "For example" or "for instance . . . ." You may include as many concrete examples as you wish to support your claims.

4) **Illustrate** – Provide a metaphor, simile, diagram, illustration, or image which represents your abstract concept, idea, definition, or claim. These metaphors should function as true representative images rather than concrete examples, and can be linguistic or visual. This section can be omitted from the SEE-I if necessary, but remember that in many contexts readers benefit from metaphors or illustrations of concepts. You may begin this section by stating, "It's like . . ." For example, you might state, "Civil disobedience is like a lighthouse in the midst of a storm, providing clarity and direction in the midst of social upheaval."

Taken from Gerald Nosich, *Learning to Think Things Through*, pp. 30 – 33