

24A THE PERRY MODEL –INSIGHTS AND DANGERS [1]

INTRODUCTION

In 1970 Harvard psychologist and director of Student Counseling William Perry published *Forms of Intellectual and Ethical Development during the College Years: A Scheme* [2], which has spawned raves and rumbles throughout the academic community ever since its appearance. Perry's insight was this: One of the hallmarks of successful college education is for a student to change from being taught by authorities to becoming an independent thinker. (Most everyone would agree that is a good thing.)

William G. Perry Jr. (1913-1998), an educational psychologist, postulated his model as a result of his extensive evaluation and testing of undergraduate students at Harvard and Radcliffe. In his studies he noted a trend in the moral and intellectual change of his students as they progressed through the college environment. In his attempt to quantify these stages he developed a nine-point scale that described the students' movement from immature to mature intellectual attitudes and skills. His grading scheme is well documented in the literature.

Application of the model has been shown to improve creativity, enhance ability to solve open-ended design problems, and develop self-managed learning [3]. Other articles in *Engineering Education* and papers presented at the annual ASEE conference have dealt with this educational tool [4]. Dr. Perry was, in fact, an invited speaker at the 1989 ASEE meeting, where he explained his method [5].

Due to the broad influence of the Perry Model in engineering education it is valuable to appraise its methods and philosophy and to discern whether there are any modifications to its use that may improve its applications.

Summary:

Students are expected to grow and change over the course of their time in college. Part of the discovery in advanced learning is that not all problems have a single/simple answer like they found in earlier classes. Instead of (passively) receiving all knowledge from an Authority (parent or teacher) the student now questions knowledge and discovers conclusions for himself or herself.

This process, delineated by Perry, usually involves an uncomfortable stage in which the student is uncomfortable about nearly everything, but intellectual maturity involves embracing this "dualism" and moving forward. According to Perry, one of the major accomplishments of college students is progress from a simple, dualistic, view of life to a more complex, mature view which is also relativistic [6].

Perry detailed the process of higher education in nine distinct stages. His nine point scale is explained here:

Position 1

Here “the student sees the world in polar terms of we – right- good vs. other- wrong-bad. Right answers for everything exist in the Absolute, known to Authority whose job is to mediate (teach). Knowledge and goodness are perceived as quantitative accretions of discrete rightness to be collected by hard work and obedience.” [6]

There is only one correct answer to any problem or question. The correct answers are known by Authorities, typically professors. Right answers exist for everything. (“Just tell me what to memorize.”)

This is also known as the “dualistic” position, and in the simplest dualist position right answers are equated with good and wrong with bad. No gray is possible. No alternative solutions are possible.

Position 2

An engineering student in position 2 can successfully solve problems, particularly closed-end problems, with a single right answer. These are the types of problems students in position 2 expect, and these students prefer engineering classes to humanities classes because the problems fit their dualistic mode of thought. In design classes, where problems have multiple answers, these students have difficulties, and they protest against open-ended problems. A student in position 2 wants the teacher to be the source of correct knowledge and to deliver that knowledge without confusing the issues. In this student’s view a good teacher presents a logical, structured lecture and gives students chances to practice their skills. The student can then demonstrate that he or she has the right knowledge. From the student’s viewpoint a fair test should be very similar to the homework. [7]

Positions 2 to 5 describe this transition from dualistic to relativistic thinking. Here the student perceives that authorities/ teachers do not always know the answer to every possible problem. In fact some answers may not be known and may never be known.

The student is informed that a range of perspectives exist in certain areas and multiple theories could exist.

Uncertainty creeps in, and the student judges Authority to be confused or to be refusing to state the Truth in order to force the student to find it on his own. In other words, absolute Truth still exists, but it is up to the student to discover it for himself or to find the Authority who will communicate it to him. Some students who find it difficult to tolerate this uncertainty choose a career path in mathematics and science over the humanities, because the sciences are seen as precise and fact-based, while the humanities are seen as vague and opinion-based. [8]

Position 5

“The student perceives all knowledge and values (including Authority’s) as contextual and relativistic and subordinates dualistic right-wrong functions to the status of a special case, in context.” [9]

Here the students begin to discover relativism. Students perceive all knowledge and value as contextual and relativistic. A good student in the Perry scheme now recognizes that there is no absolute truth. Knowledge depends on the context that it is viewed from. Here students are thinking in appropriate broader scale than they have before and probably questioning authorities and interjecting their own personal ideas. Students see themselves as “makers of meaning.”

Here the correction from “what they want” to “the way they want you to think” signals the discovery of the articulation of the “concrete” with the “complex” in “weighing” relationships—a mode of thought that is the structural foundation of Relativism. The weighing of “more than one factor,” or, as this student later explained, “more than one approach to a problem,” forces a comparison of patterns of thought—that is, thinking about thinking. The person, previously a holder of meaning, has become a maker of meaning. . . . In their rebirth they experience in themselves the origin of meanings, which they had previously expected to come to them from outside. [10]

From the student’s viewpoint in position 5 a good instructor acts as a source of expertise, but does not know all the answers since many answers are unknowable. This professor helps students become adept at forming rules to develop reasonable and likely solutions or solution paths. It is important for the professor to show that good opinions are supported by reasons. The student has become much more comfortable with being evaluated in a relativistic world and realizes that the evaluation is of her or his work and not of her or him. [11]

Positions 6 to 9

Positions 6 to 9 attempt to categorize steps to live in a relativistic world. The disturbing thought that everything is relative is dealt with by making some personal commitment to doing something, even if the outcome is unsure or speculative. Perry referred to these as “evolving commitments.” [12] The wording seems similar to the existential thought of Sartre or Camus. Key sources for Perry’s concepts included John Dewey (educational theory), Jean Piaget (cognitive development), Lawrence Kohlberg (moral development), Albert Camus (existential philosophy), and Michael Polanyi (personal knowledge).

More specifically, Perry’s Scheme of intellectual development proposes nine positions or levels with the transformative sequences that connect them. [These reduce to four levels]:

- 1. Dualism – knowledge is received, not questioned; students feel there is a correct answer to be learned.*
- 2. Multiplicity – there may be more than one solution to a problem, or there may be no solution; students recognize that their opinions matter.*
- 3. Relativism – knowledge is seen as contextual; students evaluate viewpoints based on source and evidence, and even experts are subject to scrutiny.*
- 4. Commitment within relativism – integration of knowledge from other sources with personal experience and reflection; students make commitment to values that matter to them and learn to*

take responsibility for committed beliefs. There is recognition that the acquisition of knowledge is ongoing activity.

An individual student at a single point in time may be at different stages in regards to different subject areas. [13]

Wankat notes that “Students cannot understand or answer questions which are in a developmental sense too far above them.” [14] He also note that many students in level five question if engineering is the right major for them, since many of the exercises have single-answer solutions. [15]

Not all students progress through the steps, according to Perry. Some fail to move forward in one of three ways: [16]

- Escape- bailing out of the curriculum, abandonment of responsibility and commitment, or rejecting the implications for growth
- Regress/retreat – returning to an earlier position of dualism
- Plateau/stagnation/Temporizing – a prolonged pause or postponement, with no movement, in one of the positions

Perry provided these observations on his scheme: [17]

- *This scheme provides a way of describing growth in cognition, care, and self-hood.*
- *The scheme traces the evolution of the structures through which a person sees meaning in the world.*
- *Every step involves not only the joy of realization but also a loss of certainty and an altered sense of self.*
- *The values embedded in the scheme...are fundamental to liberal education; a complex world requires complex thought.*
- *A one moves along the scheme the early sense that agency and responsibility lie out there” in “them” gives way to an increased sense of one’s self as origin of meaning, knowing, and responsibility.*
- *Students thinking dualistically cannot comprehend when addressed relativistically, and they scoff or panic. Students thinking relativistically comprehend very well when addressed dualistically, and get bored.*
- *In any one classroom individual differences along this scheme may be more influential than those of I.Q.*

Perry’s main contributions include the following:

- A recognition of the change that occurs in many college students as they move to higher-order thinking.
- The development of a quantitate progression of steps to produce an overall model.
- An explanation of the sense of anxiety as a student steps out on his own in learning or in an ethical situation.

- An encouragement to adopt a position, take a stand, and make a commitment on one's own.

Because engineering design includes aspects of synthesis, creativity, and open-ended problem solving, as opposed to single-answer problems, the ability to design is sometimes linked with higher-order thinking skills and advanced positions on the Perry scale.

Many students struggle with the concept of open-ended design. There simply is no single solution to a problem like “Develop a system to produce 20 watts of power while weighing less than 10 pounds” or “Develop a system to transport 30 people across a canyon in Colorado using hydraulics.”

Applications of the Perry model:

In the 1980's a series of papers were published which picked up on the Perry Model as something ideally suited to engineering education [18] [19]. The premise was this:

Real engineering design is “open-ended” problem solving, where there is no single “right” answer. Students often have difficulty making the transition from single-answer problems to open-ended problems. The Perry Model could be used to help students move from certainty to uncertainty, and, hopefully, to a new quasi-certainty.

The goal of the educational process is to develop independent critical thinkers, aware of their own reasoning processes. Richard Culver and his associates at Colorado School of Mines in the 1980s became initiators and leaders in utilizing the Perry model to improve the quality of their engineering undergraduates. [20]

The EPICS program (Engineering Practices Introductory Course Sequence) at CSM had these goals:

- Students would develop and refine both open ended problem solving skills and communication skills.
- Students would grow in their ability to deal with the uncertainties of open ended problems.
- Students would begin to take more responsibility for day to day managing of their teams and faculty members would take less. [21]

Throughout the EPICS program the Perry model was used in questionnaires and interviews to identify where students were in their progress on the Perry scale. Even sophomores seemed to be able to handle teamwork, self-education, decision making, and communication.

Culver et. al. have reported on a number of activities designed to promote quantum jumps in the intellectual development of their students. These involved creating critical events (“marker events”) which involve the students in significant learning activities, such as exploring moral

dilemmas, designing for a real client, involvement in professional experiences such as co-op education, and involving multiple faculty in developing intellectual skills and professional attitudes. [22] The goal is for the students to become a self-managed learner, having a responsible value system and willing to assume responsibility for decisions. [23]

In general it appears that students coming out of the EPICS program have more of the desirable traits that we would like to see in all engineering students: greater personal motivation and resourcefulness, more ability to handle real-life complicated engineering design problems, and enhanced communication ability.

Controversies involving Perry's model

1. The primary source of controversy involving the Perry model relates to the choice of wording in the original book and article. Perry chose, perhaps unfortunately, to use the terms "dualistic" and "relativistic" to describe positions one and five, a move from "absolute" to "relative." The implication, if one takes the terms literally (and many do) would be that a student moves towards a total relativism in thought patterns and ethics. It is important to consider that Perry's assertion that all knowledge is contextual is not the same as saying that all truth is relative, but his book might seem confusing at this point:

In even its farthest reaches, then, reason alone will leave the thinker with several legitimate contexts and no way of choosing among them. No way, at least, that he can justify through reason alone...if he is still to honor reason he must now also transcend it. He must affirm his own position from within himself in full awareness that reason can never completely justify him pressure him. In affirming his values, reason may help, but it will, not in itself convince him that these values are better than any others. [24]

One possible interpretation of this statement might be that it is impossible to make an absolute statement concerning what would be right or wrong.

Perry seemed ambiguous about the terminology:

Many people misunderstood Perry's use of the term "relativism," believing it to refer to the common connotation that all truth, morals, and opinions are relative to one's own opinion. However, Perry used the word "multiplicity" to refer to this common understanding of relativism. Knefelkamp asserts that Perry was "vexed" by this misunderstanding, and would explain that "relativism means relative to what—to something—it implies comparison, criteria, and judgment!" In later years, when this confusion persisted, Perry would refer to the later positions as "contextual relativism." He did this, according to Knefelkamp, "to make the point that contextual relativism, far from being anchorless, was in fact a position that required a great deal of cognitive complexity and intellectual moral courage to investigate and compare things and to make judgments about adequacy or inadequacy, appropriateness or inappropriateness." [25]

Perry did warn against the moral license of Absolute Relativism:

“Unfortunately, the unconsidered statement, ‘Anyone has a right to his own opinion,’ is popularly thought to be the heart of Relativism, and its implication of moral license has given Relativism a bad name.” [26]

The IEEE Code of Ethics and other codes of ethics for engineers stress honesty, impartiality, integrity, forsaking bribes, and promoting the safety and welfare of the public. These principles provide clear constraints while allowing freedom for individual conviction and expression within the scope of the specific case. As in design, the underlying principles are invariant, while the approaches may be individualized.

Pure relativism (absence of all absolute truth), according to Paul Copan, does not fit with the real world and is impossible to live with: [27]

- The statement “All truth is relative” is self-contradictory.
- The world itself is objective, with much of reality that we can’t change.
- Logic is not arbitrary.
- Making judgment calls is inevitable.
- People really do think it’s wrong to violate their rights.
- A religious pluralist believes his pluralistic view is correct.
- Some objective truth is unavoidable.

2. A second area of controversy regarding the Perry model relates to the line of questioning and types of responses used to score a student’s progress along the Perry scale.

“It is the purpose and intent of the questions posed during a Perry rating interview to assess how the subject defines the problem...and then how the subject approaches the problem in accordance with the subject’s underlying views of knowledge, authority, and values.” [28]

A student’s high position seems to correlate strongly with abandoned orthodox religious beliefs, according to Cooper’s paper [29]. The assumption appears to be that all traditional religious beliefs are immature. The typical Perry interview question was, “Have your beliefs changed since you entered college?” A large change here was viewed positively. Unfortunately, many students totally abandon the faith of their upbringing during college.

3. The original Perry model actually plots a student’s thinking as it evolves towards the type of existential philosophy proposed by philosophers Sartre and Camus. [30] This is likely because that system is what many universities were teaching at the time the study was produced.

Existentialism is that point of view which begins with man as the product of blind chance, a random collection of molecules that can think and realize that there is no purpose to their existence. Since that is intolerable, it goes on to try to find meaning in

spite of absurdity. Two of the main approaches, called “authentication of one’s existence,” were the schools of Sartre-Camus and Carl Jung. In the former, one basically validates his/her personhood by making a choice (even without a basis). In the latter, one simply waits for a realization to come that life has meaning (the existential experience).

If there were no personal Creator, then existentialism might be the best we could do to cope with realization of that fact. The downside is that there is no common base on which to build a moral system. There is strong evidence that this is not the philosophical system that best describes the real world. Existentialism seemed to function as the bridge between Western thought (Naturalism) and Eastern thought (pantheism).

Existentialism is a theory that humans must make vital choices, using their freedom, that are often not describable in rational terms but instead involve a non-communicable “leap of faith.” This is hardly the stuff design is made of and impossible to dissect in terms of ethics. In existentialism, how we choose among alternatives is less important than the fact that we have chosen (and lived with our choice.) We do students a disservice if we don’t require them to make choices (of models, components, or ethical steps), but then *to defend* their choices.

Perry was deeply influenced by Albert Camus, the French philosopher and author of the famous essay “The Myth of Sisyphus.” Modern man, suggests Camus, living in a world of absurdity and meaninglessness, is condemned to live in it like the mythical Sisyphus, whose punishment was to push a boulder up a mountain, only to have it fall back onto his time after time forever. To accept this and to act on it was, for Camus, heroic. Perry’s “commitment” has a similar existentialist thrust.

The problem with all of this is that Perry’s scheme seems to assume that existentialism is the proper solution to the “dilemma of man”: “We would argue, for example, that the final structures of our scheme express an optimally congruent and responsible address to the present state of man’s predicament.” [31]

I picture the student standing beside Sisyphus (Camus’ embodiment of the human predicament in The Myth of Sisyphus) and gazing in dismay at the rock of reason, which has turned on itself and rolled once again to the foot of the mountain. He sees, in wonder and terror, Sisyphus’ wry smile bespeaking his awareness that he must again resume the quest for certainty of meaning, a labor that forever ends in the same defeat. Is this vision tolerable? [32]

4. Educators who use the full Perry model attempt to emphasize a process, but invariably they will teach content. The Perry educator does not simply observe the students passively to record their progress but desires to move them along the scale, towards Relativism and Commitment. The model measures how well a student absorbs a particular process (becoming an independent thinker, aware of his/her thinking

processes). The model simultaneously measures how well a student absorbs a particular content (value of relativism). While claiming not to present any “right answers,” it lands upon relativism as the “right answer” for higher-level thought.

“According to Perry, one of the major accomplishments of college students is progress from a simple, dualistic view of life and knowledge to a more complex, mature view which is also relativistic.” [33]

“Many students, however, appear to leave college in positions 3 or 4, which probably is not what most educators would prefer.”[34] Therefore, when the Perry model is applied in the classroom, the instructors, often unconsciously, attempt to modify a student’s value system, in one way or another, such that they move to higher positions, preferably in the range of 6 through 9. While Perry dislikes authority in education, Perry and his followers actually *become* the Authority (the gurus) who claim to have the answers in the field intellectual development in higher education.

5. Perry suggests that *all* knowledge is relativistic. “When all knowledge is revealed to be relativistic, probabilistic, and contingent, Authority appears as limited authority, uncertain even in its specialties, and ignorant beyond them.” [35] Perry has overstated the case. Basic principles of mathematics, logic, and physics are universally accepted. Dates and persons in history have been nailed down. Design in the universe does suggest a Creator. It’s when we get into fuzzy problems and competing theories that we find uncertainty.
6. Perry’s model is not value-neutral. Perry states that, “our developmental scheme concerns precisely a person’s ‘moral’ development, in the sense of his assumptions about values and responsibility...” [36] He holds that “The values built into our scheme are those we assume to be commonly held in significant areas of our culture, finding their most concentrated expression in such institutions as colleges of liberal arts, mental health movements, and the like.” [37] Are integrity, compassion, and justice some of those values?
7. Gregory Brock Long, in his doctoral thesis [38], examined the use of the Perry Model in Christian higher education. While he agreed with the emphasis on higher-order thinking skills, he concluded that parts of the model were not consistent with the goals of a Bible school or seminary. Perry saw intellectual development as the key to life and did not address the spiritual dimension of life. Summarizing Long, we have these comparisons:

Area	Perry Model	Biblical teaching
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Growth	Thinking and self-awareness	“Progressive sanctification” -growth in Christlikeness
Commitment	To personal understanding of knowledge	To wisdom; to relationship with Christ
Truth	Possible denial of Absolute Truth	Objective, unchanging truth from God exists
Knowledge	Contextual and uncertain	Knowledge of what exists is possible
Relation to knowledge	Personal meaning-making	Discovery of truth; value of divine revelation
Goal	Self-identity, self-realization, self-actualization, self-fulfillment	Knowing God and His Creation; glorifying God
Path	“contextual relativism” based on consistency, context, and courage	All actions, including study and reasoning, built on God’s Word through His Spirit

Observations

1. Engineering students will encounter two categories of problems: single-answer (textbook) problems, which teach physical principles and problem-solving techniques, and open-ended (real-world, design) problems. Typically, a student needs exposure to a wide range of concepts in engineering science before he/she is prepared to tackle “capstone design,” considering a range of alternative solutions. In addition, real problems will involve a variety of constraints and practical impacts. Today most engineering programs introduce the idea of open-ended design in the freshman year.

Similarly, there are two types of ethical problems –those that involve legal/moral issues (a “right” answer exists) and those that are truly “open-ended.” The latter are more interesting and prevalent, but the former are more critical. Shall I steal from my company, falsify my results, rig my bid, bribe the inspectors? Many of the ethical problems that plague us have simple answers. Falsified documents, stolen property (including intellectual property), and failure to protect the public from harm can have disastrous consequences. We need to discuss both kinds of problems, if only to reinforce doing the right thing. It is also not a given that “everyone knows basic moral guidelines like the Ten Commandments.”

In our desire to develop higher-level thinking skills we must not neglect those basic concepts, definitions, formulas, and principles which all engineers are expected to know.

2. Perry suggests that growth occurs when a student is forced to reconsider basic assumptions. For the engineering student, the awareness that precedes growth would include the following:
 - The world is more complex than previously thought. Real systems include non-linear, stochastic, time-varying effects, and quantum effects at the sub-molecular level.
 - Our knowledge of all systems is incomplete.
 - Our models are all insufficient.
 - The number of possible variables is enormous.
 - Competing theories exist for higher-order phenomenon.
 - Professors (gasp!) may be in error.
 - Facts should not be taken out of context.

These discoveries should not be devastating. We simply broaden our thinking, revise our models, put facts into context, and try a first iteration.

For the engineer, the necessary realization is that there are a huge range of problems without a single, simple numerical solution (How can I amplify sound, transfer material, get across a river, store data, fasten parts, ...?) Similarly, there is no agreed-upon way to work out problems within a team. Meanwhile, the laws of physics hold, and the Code of Ethics applies to all.

3. For a humanities student, the Perry model follows a different track than for an engineer. In the humanities, advanced course can lead to confusion and despair, as the student encounters existential philosophers and naturalistic novelists discussing a world that is absurd and a life that is meaningless. The student may conclude that there are no answers at all to the basic questions of life (Who am I? What am I here for? Where am I going?) In fact, one existential teacher (Jung) is reported to have begun his class with an exhortation to his students not to commit suicide, because it might not be the existential answer they were seeking. [39]

The change in thinking for an engineering student encountering real world design is not the same as the change occurring in a humanities student who begins to be convinced that there are no real answers to the philosophical questions of life. The engineering student realizes that the universe is much more complex than he/she originally thought. The humanities student finds the basic assumptions on which all of life depended suddenly destroyed. The engineering student is humbled. The humanities student is devastated.

4. Engineering design is one of the few places where the Perry concept is valid: There are no fixed answers to open-ended design problems. At first, this may upset many

students. Part of maturing as an engineering student is to accept this reality and to be able to easily differentiate between a single-number problem and a wide-open problem.

Even so, there are many design solutions that will not work, will not clearly meet the spec's or may be too expensive to consider. There are a class of solutions that will optimize some design variable. "Open-ended" does not imply that any solution is as good as any other. While a multiplicity of solutions may arise, we will unquestionably reject any design that doesn't work, that fails to meet the specifications, is unsafe, or overly costly.

5. The Perry model encourages students to be critical thinkers, to examine alternate solutions to problems, and not to blindly accept information and conclusions without seriously analyzing them.

The climate in the postmodern university was ideally suited to the idea of "questioning authority," which resonated with students. One ironic observation is that many students moved from questioning parents and pastors to parroting (rather than questioning) professors.

6. At one level there are questions which certainly have right answers: What voltage drop exists across a 10 ohm resistor in which 5 amps of current flow? (Don't tell your boss, "It all depends.") There clearly exists a place for basic math and science concepts.

Perry states that the concept "anyone has a right to his opinion and no one is wrong" does not really characterize relativism, but is a type of "multiplicity." [40] True relativism is more like a weighted balance between two opinions. When applied to the practice of engineering, there are definitely some areas in which certain answers are right while others are wrong. The concept of "relativism" in this area means, therefore, that we need to apply common sense engineering judgment to determine which solutions are more reasonable. This requires complex thinking, taking more areas into consideration than the student was used to in analysis courses. This, therefore, does represent a higher order of reasoning.

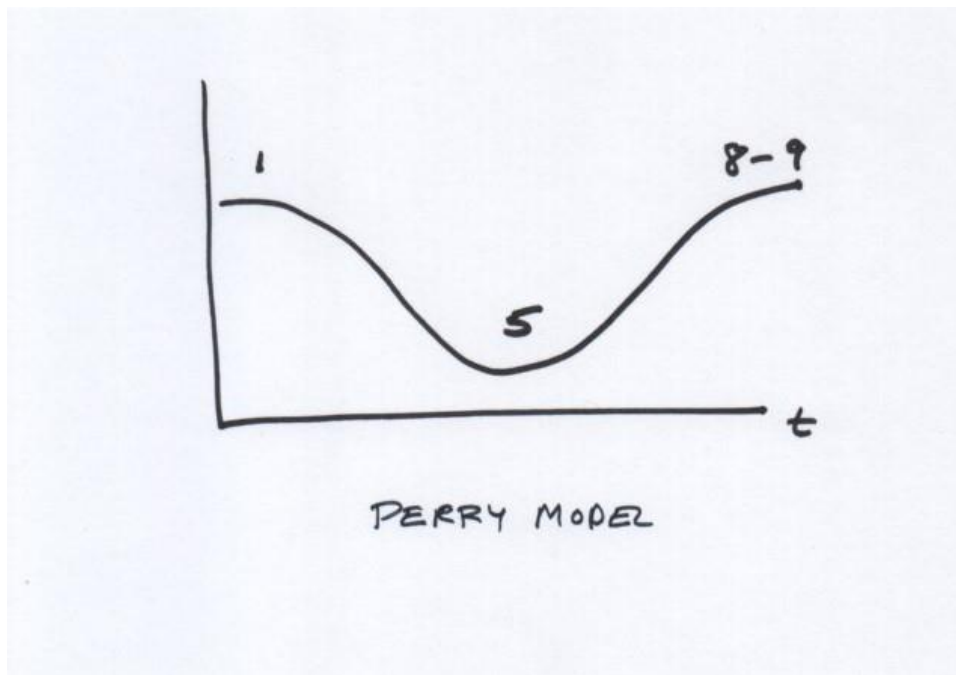
Several critiques are possible concerning Perry's work:

- He acknowledged using a limited and non-diverse sample group. [41]
- Identification of the stage at which a student was currently at involved extensive interviews and analysis that could be subjective in scoring.
- The observation was that many students seemed to finish college only at stages 3-4, unable to move on to the higher stages. [42]

A number of questions arise concerning the application of the Perry model in engineering which may advance our mutual goals:

- Where does creative stimulation end and manipulation of the student begin?
- How repeatable and statistically significant is the Perry position scoring?
- Can (and should) the Perry transitions occur at a lower education level?
- Do engineering students experience a different Perry transition from that of liberal arts students?
- Does the relativistic thinking learned in some humanities courses undercut the development of logical thinking required in engineering?
- Is there an alternative measure? Could we devise an efficient scoring method that any professor could use to evaluate student progress without requiring the expert interview with its time requirement, questionable religious basis, and accompanying expenses?
- Did Perry, in fact, envision a worldview transition in maturing students, or only an epistemological development?

The general time-line of the Perry model is sketched like this:



An interesting observation is that a similar curve (peak-valley –recovered peak) could be drawn for many experiences in life:

Experience	Position 1 (peak)	Position 5 (valley)	Position 8 (recovered peak)
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Parents' knowledge	Child: My parents know everything	15 year old boy: My parents don't know anything!	College graduate: My parents were pretty smart, after all.
Family Relationships	Infatuation/honeymoon: My spouse is perfect!	Disillusionment: My spouse isn't perfect	Loving commitment- We're both sinners
Problem solving	All problems have simple answers	Not enough information to solve the problem	Make approximations; Use rules of thumb; Use experience, principles, and common sense
Faith	Acceptance of parents' beliefs	Work through questions and challenges	Personal relationship with God
Growing faith	Expect to understand and be certain of everything	Can't know why God does things, why trials occur, when Jesus will return	Convinced that God is there, that the Bible is true, that Jesus is Savior; move forward in life, trusting Him
Dorm experience	Raised in sheltered environment	Encounter students of other races, other religions or atheists	Love-listen-learn- Try to share Christ
Theology- Lives of the Biblical patriarchs	"Birth of a vision" Moses- deliver Israel from slavery in Egypt	"Death of a vision" Moses -40 years a fugitive in the wilderness	"Recovery of vision" Moses- confront Pharaoh, lead the Exodus

Most learning and skill development have a down-point, where we think we'll never get it, but with help and lots of practice, we eventually succeed. One conclusion might be that the world isn't perfect.

Recommendations:

Use the good methods of Culver et. al. to promote advanced thinking in our students.

Apply the Perry model to growth in engineering design, not to ethical reasoning.

Use Perry's book with some caution. Ethical relativism and existential philosophy are not our goals for our students.

Apply the useful and universally accepted parts of the Perry model. Avoid his "relativism" terminology and his particular evaluation methods. Aim for thinking growth, including higher level skills in Bloom's taxonomy (analysis, evaluation, creativity).

Retain the basic concepts, definitions, and skills that all engineers are required to know.

Teach basic critical thinking in the very first semester. Encourage metacognition and independent learning from the start. Expose student to concepts of open-ended design in their first year, along with the presentation of basic concepts in a “just-in-time” manner. Leave the students with something to puzzle over.

Ask questions along the lines of “Why did this happen?”, “What would happen if...?”, and “How could we apply this?”

Distinguish between what we might call “cognitive relativism,” which is what we encounter in college education, and “absolute relativism,” which is philosophically/theologically unacceptable.

Cognitive relativism	Absolute relativism
Statements depend on context	All answers equally valid
Open-ended	One idea as good as another
Multiple courses of action	No fixed principles exist
We don't know everything	We can't know anything for sure
Answers are complex	There are no final answers
Life is complex	Life is absurd, meaningless

Cognitive relativism means that all of our models have limits. Practically, there is usually more than one way to skin a cat. The approach or model we choose depends on what we want to accomplish.

Conclusions

The Perry model explains the struggles and progress in thinking that occurs in many students over the course of their college education.

The Perry model has been used in engineering education to provide growth in communication skills, complex problem solving, and teamwork expertise.

Areas of controversy arise from the ambiguous terminology of “Relativism,” the mechanism of scoring the Perry positions, and links to the philosophy of existentialism.

We would agree with Perry on several points:

There is – or should be- a process underway in higher education whereby students become independent learners, where they take responsibility for their own learning and learning goals.

There is a place for questioning and verifying some of what we hear. Critical thinking is an important skill to develop. (“Test all things. Hold fast to what is good.” –1 Thess. 5:21)

Because we will never understand everything, there is a need to accept some level of uncertainty and to live with some small degree of ambiguity. (Not because the world is irrational, but because God understands all things, and we trust Him for our lives.)

We do desire that students become independent and critical thinkers, yet within the realm of acknowledging and respecting authority. No one is able to critically examine every idea that floats on a college campus. However, it is possible to develop a well-tuned “baloney detector” (to use Philip Johnson’s term) that picks up on falsehoods and unsubstantiated claims. Even when listening to sermons and Christian teaching it is commendable to be a “Berean,” weighing what one hears against the truth of Scripture.

(If the Perry system really worked on campuses, students would be sufficiently savvy that they wouldn’t be swayed by outright atheistic claims.)

Perry correctly reminds us that statements must be handled in context. Similarly, we must handle his Model in context: it is intended for tracking cognitive development of students in college and we caution against application beyond these bounds.

References

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