Perry's Stages of Cognitive Development

I could write about this in my own words, but I found several websites that explained it so well that I decided to present them in their entirety. What follows are their words, not mine, including any in-text citations.

William Perry claimed (and his claims have been substantiated by subsequent research) that college students (but others, too) "journey" through 9 "positions" with respect to intellectual (and moral) development. These stages can be characterized in terms of the student's attitude towards knowledge. The 9 positions, grouped into 4 categories, are:

A. **Dualism/Received Knowledge:**
   There are right/wrong answers, engraved on Golden Tablets in the sky, known to Authorities.

   1. **Basic Duality:**
      All problems are solvable;
      Therefore, the student's task is *to learn the Right Solutions*

   2. **Full Dualism:**
      Some Authorities (literature, philosophy) disagree;
      others (science, math) agree.
      Therefore, there are Right Solutions, but some teachers' views of the Tablets are obscured.
      Therefore, student's task is to learn the Right Solutions and *ignore the others*!

   o **Rapaport's speculation, part 1:** Perhaps we begin as Dualists because we begin by accepting information from the world and reacting to it.

B. **Multiplicity/Subjective Knowledge:**
   There are conflicting answers;
   therefore, students must trust their "inner voices", not external Authority.

   3. **Early Multiplicity:**
      There are 2 kinds of problems:
      - those whose solutions we know
      - those whose solutions we don't know yet

      (thus, a kind of dualism).
      Student's task is to learn *how to find* the Right Solutions.

   4. **Late Multiplicity:**
      Most problems are of the second kind;
      therefore, everyone has a right to their own opinion;

      or

some problems are unsolvable;
therefore, it doesn't matter which (if any) solution you choose.

Student's task is to shoot the bull.
(Most freshman are at this position, which is a kind of relativism)

At this point, some students become alienated, and either retreat to an earlier ("safer") position ("I think I'll study math, not literature, because there are clear answers and not as much uncertainty") or else escape (drop out) ("I can't stand college; all they want is right answers" or else "I can't stand college; no one gives you the right answers".)

- o **Rapaport's speculation, part 2:** Perhaps we evolve into Multiplists after we learn things tacitly and have internal or implicit "feelings" or intuitions about things, but not conscious or explicit beliefs that can be explained or justified.

C. **Relativism/Procedural Knowledge:**
There are disciplinary reasoning methods:
Connected knowledge: empathetic (why do you believe X?; what does this poem say to me?)
vs. Separated knowledge: "objective analysis" (what techniques can I use to analyze this poem?)

5. **Contextual Relativism:**
All proposed solutions are supported by reasons;
i.e., must be viewed *in context* & *relative to support*.
Some solutions are better than others, depending on context.
Student's task is to learn to *evaluate solutions*.

- ▪ **Rapaport's speculation, part 3:** Perhaps we then evolve into Contextual Relativists when we can express our intuitions in language and seek justifications for them and relationships among them.

6. **"Pre-Commitment":**
Student sees the necessity of:
   - ▪ making choices
   - ▪ committing to a solution

D. **Commitment/Constructed Knowledge:**
Integration of knowledge learned from others with personal experience and reflection.

7. **Commitment:**
Student makes a commitment.

8. **Challenges to Commitment:**
Student experiences implications of commitment.
Student explores issues of responsibility.

9. **"Post-Commitment":**
    Student realizes commitment is an ongoing, unfolding, evolving activity

The journey is sometimes repeated; and one can be at different stages at the same time with respect to different subjects.

(cse buffalo)

MEET YOUR STUDENTS
7. DAVE, MARTHA, AND ROBERTO

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Three engineering classmates are heading for lunch after a heat transfer test. Martha and Roberto are discussing the test and Dave is listening silently and looking grim.

Martha: "OK, so Problems 1 and 2 were pretty much out of the book, but Problem 3 was typical Brenner--he gives us a heat exchanger design and asks us to criticize it. I said the design might be too expensive, but we could say anything and he couldn't tell us we're wrong."

Roberto: "Sure he could--it was a lousy design. They were putting a viscous solution through the tube side so you'd have a big pressure drop to overcome, the flow was laminar so you'd have a low heat transfer rate, the salt would probably corrode those carbon steel tubes, the..."

M: "Maybe, but it's just a matter of opinion in questions like that--it's like my English teacher taking off points because of awkward expression or something when anyone with half a brain would know exactly what I was saying."

R: "Come on, Martha--most real problems don't have just one solution, and he's trying to..."

M: "Yeah, yeah--he's just trying to get us to think and I'm okay with that game as long as I don't lose points if my opinion isn't the same as his. What do you think, Dave?

Dave: "I think that problem sucks! Which formula are you supposed to use for it?"

M: "It's not that kind of question--not everything has a formula you can..."

D: "OK, so when did he tell us the answer? I memorized every lousy word he said after I bombed that last test and not one had anything to do with..."

R: "It's a thinking question--you have to try to come up with as many..."

D: "That's bull, man! I already know how to think--I'm here to learn how to be an engineer."

M: "Dave, not everything in the world is black and white--some things are fuzzy."

D: "Yeah, in those airhead humanities courses and those science courses where they spout all those theories but not in engineering-those questions have answers, and Brenner's job is to teach them to me, not to play guessing games or put us in those dumb groups and ask us to..."

M: "Yeah, I'm not too crazy about those groups either, but..."

D: "…and that's not all--Monday Roberto asked him that question about the best exchanger tube material and he starts out by saying 'it depends'...I'm paying tuition for the answers*, and if this bozo doesn't know them he shouldn't be up there."*

R: "Look, the teachers don't know everything...you have to get information wherever you can--like in those groups you two were trashing--and then evaluate it and decide for yourself, and then you can..."

D: "That's a crock of..."

M: "Um, what did you guys get for Problem 2? I used the Dittus-Boelter formula and got 4.3 square meters for the heat transfer area. How does that sound?"

R: "I don't think it's right. I did the same thing at first, but then I started to think about it some more and I remembered that you have to be in turbulent flow to use Dittus-Boelter and the Reynolds number was only 550, so I redid it with the laminar flow correlation and got..."

M: "Whoa-he never did anything like that in class."

D: "I say we go straight to the Dean!"

These three students illustrate three levels of the **Perry Model of Intellectual Development**. The model was developed in the 1960's by William Perry, an educational psychologist at Harvard, who observed that students varied considerably in their attitudes toward courses and instructors and their own roles in the learning process. The Perry model is a hierarchy of nine levels grouped into four categories:

Dualism (Levels 1 and 2). Knowledge is black and white, every problem has one and only one correct solution, the authority (in school, the teacher) has all the solutions, and the job of the student is to memorize and repeat them. Dualists want facts and formulas and don't like theories or abstract models, open-ended questions, or active or cooperative learning ("I'm paying tuition for *him* to teach me, not to teach myself.") At Level 2, students begin to see that some questions may seem to have multiple answers but they still believe that one of them must be right. Like many entering college students, Dave is at Level 2.

Multiplicity (Levels 3 and 4). Some questions may not have answers now but the answers will eventually be known (Level 3) or responses to some (or most) questions may always remain matters of opinion (Level 4). Open-ended questions and cooperative learning are tolerated, but not if they have too much of an effect on grades. Students start using supporting evidence to resolve issues rather than relying completely on what authorities say, but they count preconceptions and prejudices as acceptable

evidence and once they have reached a solution they have little inclination to examine alternatives. Many entering college students are at Level 3, and most college graduates are at Level 3 or 4. Martha is at Level 4.

Relativism (Levels 5 and 6). Students in relativism see that knowledge and values depend on context and individual perspective rather than being externally and objectively based, as Level 1-4 students believe them to be. Using real evidence to reach and support conclusions becomes habitual and not just something professors want them to do. At Level 6, they begin to see the need for commitment to a course of action even in the absence of certainty, basing the commitment on critical evaluation rather than on external authority. A few college graduates like Roberto attain Level 5.

Commitment within relativism (Levels 7-9). At the highest category of the Perry model, individuals start to make actual commitments in personal direction and values (Level 7), evaluate the consequences and implications of their commitments and attempt to resolve conflicts (Level 8), and finally acknowledge that the conflicts may never be fully resolved and come to terms with the continuing struggle (Level 9). These levels are rarely reached by college students.

The key to helping students move up this developmental scale is to provide an appropriate balance of challenge and support, occasionally posing problems one or two levels above the students' current position. (They are unlikely to comprehend wider gaps than that.) If teaching is confined to single-answer problems, students will never be impelled to move beyond dualist thinking; on the other hand, expecting most freshmen to think critically when solving problems and to appreciate multiple viewpoints is a sure recipe for frustration. Instructors should assign open-ended real-world problems throughout the curriculum but should not make course grades heavily dependent on the outcomes, especially in the freshman and sophomore years. They should have students work in small groups (automatically exposing them to multiplicity), model the type of thinking being sought, and provide supportive feedback on the students' initial attempts to achieve it. While doing those things won't guarantee that all of our students will reach Level 5 or higher by the time they graduate, the more we move them in that direction the better we will be doing our job.

(ncsu unity)

Women's Ways of Knowing: The Development of Self, Voice, and Mind

"All women grow up having to deal with historically and culturally engrained definitions of femininity and womanhood…" (Belenky, Clinchy, Goldberger, and Tarule, 1986). A woman does not think or reason like a man nor does she look at those in authority the same way due to her experiences and interactions with parents, culture, and her economic situation. The parental aspect is complex, leading into religious and moral issues along with physical, sexual, and mental abuse. Belenky et al. (1986) conducted a project in the late 1970's based on the study and analysis of topics and aspects unique to women revealing a model of intellectual development.

Overview of Belenky, Clinchy, Goldberger, and Tarule Model

The five year project conducted by Belenky et al. (1986) involved interviewing 90 women from educational institutions and 45 women from the "invisible colleges" or human services agencies. These women came from different ethnic backgrounds and social classes in order to analyze a broader range of voices. Interview questions revolved around the topics of self-image, decision making, relationships, education and learning, personal changes and growth and what encouraged them to initiate changes. The analysis of the interview responses revealed five levels or stages of a woman's development or growth that include silence, received knowledge, subjective knowledge, procedural knowledge, and constructed knowledge.

Stages of Intellectual Development

Silence: A woman of silence is totally dependent on those in authority, not questioning or voicing an opinion (Belenky et al., 1986). Expressing her personal thoughts is very difficult as she lives in the present and normally speaks of specific concrete behaviors. A woman of silence usually has experienced physical, mental, or sexual abuse and feels that she is to be seen and not heard. If she should voice her opinion or ask a question, punishment is the most likely result. A woman of silence views decisions as either right or wrong with no room for reasoning.

Received Knowledge: Belenky et al. (1986) places a woman at the receiving knowledge level if she is listening but does not have the confidence to voice her opinion. As the receiver she will listen and pass knowledge on to others, shaping her thoughts to match those in authority. When asked about herself, the receiver of knowledge will reply with what other individuals have stated, unable to voice her feelings. Abuse is still prevalent in the life of a woman receiving knowledge.

Subjective Knowledge: About half of those participating in the project were at the subjective knowledge level (Belenky et al., 1986). Something usually happens in a woman's life to encourage her to go from a receiver of knowledge to progress to the level of subjectivity. The woman begins to accept that she has a voice, "an inner source of strength" lying within herself, and an opinion that is due to past experiences. She recognizes that she does not have to agree with the authority but is still cautious about voicing opinions. Truth is experienced within oneself but not acted upon for fear of jeopardizing the associations one has with others at the same level.

Procedural Knowledge: Belenky et al. (1986) describes procedural knowledge as divided into two areas, separate and connected knowing. A woman in either area realizes that she has voice, is still cautious of others and their actions, however now she is not threatened and is more willing to listen to what is being said. A separatist will not project her feelings into a situation and is able to speak taking on the requested view. A connected knower empathizes with others and feels it is her responsibility to help them understand their situation so they might make the best decision.

Constructed Knowledge: A constructivist realizes that one must speak, listen, share ideas, explore, and question, analyzing who, why, and how (Belenky et al., 1986). Speaking and listening does not remain within oneself but includes speaking and listening to others at the same time. She wants a better quality of life for herself and for others.

Analysis

Growth Stages of a Woman Compared to a Man

William Perry's project of male students from Harvard University established four main levels of intellectual development: dualism, multiplicity, relativism, and commitment (Rapaport, 2006). Dualism is similar to a receiver of knowledge with the man identifying with those in authority whereas a woman is unable to do so (Belenky et al., 1986). William Rapaport (2006) placed multiplicity and subjectivism at similar levels. He states that a man has his opinion but has difficulty expressing it to authorities; a woman feels powerless to express her opinion (Belenky et al., 1986). Rapaport (2006) relates commitment and constructivism as similar with a man viewing knowledge as an ongoing unfolding activity whereas a woman brings her personal experiences and reflection into the integration of knowledge.

Progression Between Stages

Belenky et al. (1986) does not state that the flow from one level to another is linear, spiraling, or overlapping. Rapaport (2006) however alludes to the progression as a journey that can be repeated where one might be at different levels at the same time with respect to different subjects. William Peirce's (2007) comparison of the Belenky et al. and Perry models reveals that both begin by accepting, without questioning, the knowledge of authorities. He goes on to state that both have a final position where a mature thinker seeks to fully understand an issue and is able to make up his or her mind. Both models agree that the progression to another level takes time and is not always easy but how one goes between the steps is also not always clear cut.

Critique

The progression from one level to another for a woman is like the bloom of a Morning Glory. A woman will become more confident with her feelings and voice but under certain conditions might step back, reassess, and then go forward once more like the blooming of the flower. It is not that she will retreat permanently but will use her reasoning skills and her concern for others to determine the best route to obtain the goal. A woman is not always as delicate as the flower but can persevere through many situations to become a pressed flower, firm in her thoughts and expectations.

Discussion of families and education at the end of the book evokes controversy (Belenky et al., 1986). It states that children are told to listen but not be heard. In some matters children are unable to make decisions and need to listen; this may also be called showing respect. Education is also referred to as the road to life changes. Is it the educational experience or is it a time that the woman is growing emotionally and learning more about herself? This leads to the non-inclusion of the working woman in the study. Women that get decent jobs and go on to have productive lives were ignored; why did they decide not to go on to school, if they were abused in some way, or their perspectives with those in authority were not studied.

The Belenky et al. (1986) project encourages one to think about how and why one may reason or voice an opinion. Looking back on the lives of family and friends one begins to also question and analyze actions and moral or religious issues. Why do I do what I do?

(mason gmu)

[On teaching, using Perry's model]

For dualistic students…

- Instructor: Seen as the only legitimate source of knowledge
- Themselves: Seen as receivers & demonstrators of knowledge
- Other students: Not seen as legitimate sources of knowledge
- On evaluation: Wrong answer = bad person; Evaluations should be clear-cut
- Support: Need high degree of structure. Dualistic students like lectures, hate seminars

Voices of Dualism:

"In a lecture, you get taught by an expert, which means the information is credible."

"I'm lost [in this class]; the professor lacks a clue." I.e., it's the prof's fault; he's the Authority

For early multiplists…

- Instructor: Seen as source of right way to get knowledge
- Themselves: Seen as learning how to learn; Seen as working hard
- Other students: Seen as in the same boat, therefore OK
- On evaluation: Of central concern; Fairness is important; Quantity of work counts
- Support: From peers, some structure

Late multiplists…

- Instructor: Seen as source of the thinking process; Or else (cynical form) seen as irrelevant – everyone's entitled to their own opinion
- Themselves: Seen as learning to think for themselves; Seen as expressing opinions (whether believed/supported or not)
- Other students: Seen as legitimate
- On evaluation: Independent thought deserves good grades; Or (cynical form): "I'll do what they want."
- Get support from: diversity; lack of structure. Late multiplists hate lectures, like seminars

Voice of Dualism Confronted with Multiplism

"I really enjoyed this course. I had lots of trouble till about 2/3 into the course, because I was looking for answers [dualism]. Once I realized there were no answers [multiplism] & you had to figure things out for yourself, it became easier."

Voices of Multiplism

"You know, it seems to me that there are 2 different kinds of things we study—things where there are answers & things where there aren't any!"

"There are many of us students who spend from 3-9 hours working on one lab assignment. When we get our grades back, they don't meet our satisfaction. I spend a lot of time thinking and trying out my program. When I get a D, I get upset. Maybe the grade should include more for effort than just if the program runs properly."

"I attend recitation to hopefully gain some information I did not catch or understand in class. Regretfully I learn more on my own time than in recitation…"

Contextual relativists…

- Instructors: Seen as source of expertise… as long as they follow contextual rules for good thinking
- Themselves: Seen as studying different contexts; Seeing different perspectives
- Other students: Legitimate if they follow contextual rules for good thinking
- On evaluation: Evaluation of work does not equal evaluation of self; Evaluation is part of learning
- Get support from: Instructor, Diversity

Voice of Multiplism Confronted with Contextual Relativism

"Since the material tends to be subjective [multiplism], it helps to see the reasoning of another person [CR] sometimes."

Voices of Contextual Relativism

"The answer is Markus Hess; now go home. If you're only interested in the solution, leave. If you're interested in good science & want to know how I solved the puzzle, stay."

"It is not knowledge, but the act of learning, not possession but the act of getting there, which grants the greatest enjoyment." (Gauss)

Students Make Their Own Meanings

What Teachers Say vs. What Students Hear

- Teacher: Today we'll discuss 3 algorithms for computer GCD.

- Dualist: 3! Which is the correct one? Why bother with the wrong ones?
- Multiplist: Only 3? Heck, I can think of a dozen!
- Contextual relativist: What principles underlie the 3 algorithms? Which is the most efficient? Which should I use on my project?

Your Goals as Teacher

- To **challenge** students, so that they will move from dualism to multiplism to contextual relativism (& beyond)
- To **support** students, as they move from the "comfort" of one approach to the strangeness of another

(cse buffalo teaching)