

and structured their statement as a “professional theory” to undermine the strictly defined concept of a “scientific theory.”

Various scientists and commentators have criticized the Alabama Message on strictly scientific grounds. There is a lot wrong with the “science” of the Message, but here I simply analyzed it as an example of the “Rule of Threes.”

SCIENCE, SOCIETY & RELIGION

The Rule of Threes

Yves Barbero

The common man sees the world as nature sees it, yes and no, good and evil, on and off -- the artificer, the scholar, the intellectual sees the world in threes, and makes a full time occupation of explaining the unnatural.
-Attrib. to Kilroy

The classic example of the threefold division rule is Sigmund Freud's id, ego, and superego. He may have warned that this division was a shorthand convenience for psychoanalysts, and not distinct elements in defining personality, but generations of practitioners have made a priesthood of guarding these intellectual icons.

LANGUAGE DIVIDED

Anyone can indulge in this sport. I've been doing it for years. You can, as many scholars (notably, Jürgen Habermas of the Frankfurt School of Sociology) have, divide language into three categories...
Private: The language you speak to yourself. Only you can truly understand it.

Colloquial: The language of communications. Understanding is general within a cultural group, but colloquial language is not precise.
Formal: Precise. A strict scientific language, such as mathematics, fits this definition. Other disciplines claim to have access to formal language. Is there any point to such a structure? You bet! The psychoanalyst claims to use his "formal" scientific language to translate your "private" language into a "colloquial" form, so you and he can discuss your problems and arrive at a resolution. It should be pointed out that a number of studies have shown that cultural bias can creep into these "translations." Psychologists from various European countries and the U.S., given the same profiles, will arrive at different diagnoses.

A lawyer can take your "private" desires, expressed by you in "colloquial" terms to write a "formal" document so your no-good nephew won't see a dime after you kick the bucket.

The legal system also indulges in this scheme of threes in its judgments. It can deprive a person of his freedom. It can take personal property and redistribute it against the will of one of the parties. And it can label a person, group, or business with some criminal status without permission. A clever attorney will often advise a client to allow the law to label him "guilty" to avoid, or minimize, one of the other two sanctions. A corporation may let go of some of its property as the "cost of doing business" to avoid a label (fraud or criminal negligence) that interferes with its marketing strategy. A taxpayer might cough up what the Internal Revenue Service demands "without admission of guilt" to avoid prison.

THE SOCIAL SCHEME

Explaining societies lends itself to the rule of threes. While these categories

Factual evidence is excluded or allowed by judicial rules, and a prosecutor could easily develop a professional theory that observation could not support. For instance: If a confession is suppressed for legal reasons, the prosecutor, knowing of the confessed motive, and even believing it to be true, might actually introduce a completely different motive to fit the allowable evidence. I'm told it happens from time to time. His goal is to put the accused in prison, not to establish some natural "truth."
In science, what is here called a "professional" theory, might be called a "hypothesis." But that is probably stretching the point.

Scientific Theories: With a scientific theory, a good many related facts are woven together and explained. Unlike the "professional" theory, it does not come first. It comes after a lot of research and accumulated evidence is present. It is a fact that much can still be discovered after a theory is accepted, but a good deal must be discovered before there is a scientific consensus that the theory is sound. Prior to that, it is a hypothesis. It also differs from a "professional theory" in that it cannot be limited to the parameters of a profession such as the legal system. It has to make sense as an explanation of some natural phenomenon.

The "standard definition" offered in the next paragraph emphasizes that most things in science cannot be directly observed. Most absolutists, relying on people's usually poor memory of the high school-level description of a scientific experiment, offer the absurd notion that since much of evolution cannot be directly observed, it is somehow less valid.

A scientific theory is an explanation of a set of phenomena and/or the scientific laws describing them. It invariably postulates a mechanism, all or part of which cannot be directly observed, such as the submicroscopic particles and fields of physics and chemistry, and can only be tested indirectly. A classic case is, of course, evolution. Evolution was suspected for a long time prior to Charles Darwin's *Origin of Species* (1859), and many speculated that evolution was a fact. Before Darwin set pen to paper, he had a great many "facts" at hand, both from his own observations during the long voyage of the *Beagle*, and from others. He was able to marshal those facts to convince many people that evolution was a real phenomenon and proposed the mechanism of natural selection as its main cause. Evolutionary theory postulates unobservable past events (descent from common ancestors by natural selection) to explain the present existence of the many groups of existing organisms.

The operation of natural selection can be studied both in the lab and in nature at the present time. Our understanding of this mechanism has been greatly refined since Darwin's time and the theory of evolution has become a full-blown scientific theory. There are arguments about the details, but not about the grand scheme.

The Alabama Board of Education relied on the public predisposition to think of the first type of theory, what I call "everyday conspiracy theories,"

commit a crime that some shrink planted in your child's subconscious. Often, the proponents of these theories, whether educated or not, actually believe them to be true.

They may be laughable, but they should not be taken lightly. When the term "theory" is used, most people think first of this sort of theory. Professional Theories: This is simply a structure designed by tradition or formal training on which to hang facts as they come up. It is a convenience designed to accomplish a goal. Thus, an homicide detective might approach the murder of a housewife by checking the husband's whereabouts at the time of the crime since most murders in the home are domestic, and by people the victim knew. He might check who gets named in a will. He'll check for extra-marital affairs. Police academy training will give him a basic construct, and it will be enhanced by experience and apprenticeship to more experienced officers.

The key word is "professional." A combination of experience and training is the key to a successful investigation. The theory doesn't come out of thin air, as did our "everyday conspiracy theory." It is designed to establish something, not merely to bolster a political, religious or social view. The detective may be way off-base, but he starts with a rational premise and proceeds from there. In the end, the facts may change his initial theory. Another key is that the professional, much the same as a scientist, must put aside his own bias. A detective deciding that an African-American suspect is the likely guilty party simply because of his race might find himself frustrated by physical evidence, a good defense lawyer or public outrage. He better come up with the evidence.

The prosecutor who then takes up the case may use an entirely different theory to present the evidence to a jury. Presumably, the prosecutor has better information by the time the case comes to court than the homicide detective had initially. This is not to say that a professional theory is morally better than even the crudest conspiracy theory. In one notorious Los Angeles, California case, (later appealed as *Thompson vs. Calderon*, 120 F.3d 1045 (9th Cir. 1997)) a prosecutor used two contradictory theories to convict two men of a rape and murder they allegedly committed together. The men were tried separately. One received the death penalty. At least one of the theories had to be false, even in the context of the artificial structure of the legal system. For the clearest analysis of this convoluted and complex case and its subsequent appeal, see Barry Tarlow's *RICO Report: Limitations on the Prosecution's Ability To Make Inconsistent Arguments in Successive Cases*, published in *The Champion* of December, 1997, a publication of The National Association of Criminal Defense Lawyers. Nevertheless, professional theories are useful because they allow us to make some sense of information. Unlike a scientific theory, a professional theory usually comes before enough facts are found to make it viable. Experience serves as a temporary surrogate for missing facts. Ideally, a prosecutor's theory should be equivalent to a scientific theory by the time he gets it ready for a trial, except that he is only trying to prove a legal "truth," not a natural relationship.

are obviously my intellectual invention and others might easily be substituted (although I hope these categories reflect reality), it can be said that societies emphasize three things...

Tradition: Religion, cultural habits, and family relationships.

Market: Goods (moveable), property (fixed or real), and trade (money system).

Power: Internal controls (police), group protection (military), and government structure (legal).

Societies must have all three of these components in some form or other, or they are doomed. As in Freud's scheme, there are no strict boundaries. In repressive societies, police and military are often combined in the same structure. Haiti was notorious for this practice. Still, one of the three elements is usually emphasized.

The Soviet Union tried to enforce its central planning scheme (market) through police repression (power), and it tried to substitute Marxism, mis-labeled a science, for religion (tradition). Because the Soviet Union made itself a police state, was forced to defend itself against powerful outside enemies by forming an expensive military establishment, and subordinated its central economy to the whims of a few "experts" (Scientific Marxists), it ultimately collapsed.

The United States (and, to a lesser extent, the rest of the Western world) is emphasizing the market, that strange "invisible hand" of Adam Smith's genius. Power is being restructured to accommodate it, and tradition - in the form of a fundamentalist Christianity - has been recruited to wean the often unwilling American from such civic notions as tolerance of ideas, choice of values, and open mindedness about life styles. In fact, some "market" ideologists are not averse to making their notions a religious doctrine. The notorious pamphlet Michael Novak's *Towards a Theology of the Corporation*, published by the American Enterprise Institute, was actually distributed free by the major pharmaceutical corporation SmithKline in 1981.

Some pundits hold that the movement toward a market ideology is bound to bump heads with another expanding movement that emphasizes tradition: The Islamic theocracy movement. Whether this potential conflict occurs will largely depend on how, and if, theocracies such as Iran consolidate the region. If the market price of oil holds up, and modern communications technology doesn't swamp the region with Western vices, it could happen. Still, no culture is monolithic in its outlook. To judge a major cultural tradition by a small, if significant, part is lunacy.

"TRUTH"

For our contemplative amusement, let me suggest that there are three types of truth.

Absolute Truth: This is the truth of religion. Unfortunately, to paraphrase Jean-Paul Sartre, God does not telephone you and tell you of its nature.

As a result, there are thousands of opinions as to what constitutes God's absolute truth.

Relative Truth: Science. This discipline can only measure relationships.

Legal Truth: The notion that "truth" is discovered within a framework of legislated rules and precedence. Judgements are then made to imprison, confiscate, and label.

THE ABSOLUTISTS

Curiously, those who believe in absolute truth usually want verification from those who search for natural relationships. There are a multitude of reasons for this.

1. Because science wields great power and influence in modern society, validation would make the absolutists more influential, and help increase their numbers.

2.

3. Science has achieved the status of an idol for much of the general population (scientism). The popular perception is that findings by scientists are "true" in the absolute sense. This is due to the fact that technology, based on science, and often mistaken for science, "works" in ways that everyone can see. And many people simply make no distinction between the practice of science, or the practice of religion (or even magic). Absolutists perceive a need to subjugate the scientific idol to their notion of the prime mover of the universe.

4.

5. There is the fear that scientific thinking, if it doesn't validate absolute truth, will invalidate it, and doom mankind to some cosmic punishment, while throwing Western civilization into the trash heap of history. Some militant atheists share the idea that science can invalidate absolute truth. The Soviets certainly did. This is not so surprising since some forms of atheism are absolute.

6.

7. Absolutists also fear that science, especially in the study of evolution, will deny mankind a special place in the universe, and that man will become no more important than a beast. (The notion of an absolute implies the existence of a hierarchy of worth. Since religion is a human activity, mankind is naturally at the top of the heap.)

8.

9. Absolutists are fearful that scientific thinking will play havoc with our morals. They cannot conceive of a morality outside of the context of God. An even greater fear is that a civic morality, in the form of secular humanism, will become generally accepted and will replace the notion of God. If science doesn't belong to religion, then it must belong to the atheistic secular humanists. The more thoughtful among the secular humanists know that science cannot validate any social theory of morality, including their own, but they don't object if science plays a role in dismantling religion by showing alternative and intellectually satisfying explanations of universal order.

10.

11. Despite their great power in contemporary America,

may "evolve" into gray moths.) This process is microevolution, which can be observed and described as fact. Evolution may also refer to the change of one living thing to another, such as reptiles into birds. This process, called macroevolution, has never been observed and should be considered a theory. Evolution also refers to the unproven belief that random, undirected forces produced a world of living things.

There are many unanswered questions about the origin of life which are not mentioned in your textbook, including:

- Why did the major groups of animals suddenly appear in the fossil record (known as the "Cambrian Explosion")?

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- Why have no new major groups of living things appeared in the fossil record for a long time?

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- Why do major groups of plants and animals have no transitional forms in the fossil record?

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- How did you and all living things come to possess such a complete and complex set of "instructions" for building a living body? Study hard and keep an open mind. Someday you may contribute to the theories of how living things appeared on earth.

Quoted from "Alabama Will Use Textbooks to Spread Lies and Foster Creationism," by William J. Bennetta in *The Textbook Letter* (November-December, 1995).

This disingenuous insert was designed to undermine the concept of a scientific theory by mixing and blurring three different meanings of the word "theory" as it is used in contemporary American English:

Everyday Conspiracy Theories: Black helicopters sent by the United Nations are descending in our national parks, carrying UN troops comprising of a despised minority, or country, or ideology. Aliens in flying saucers routinely pick up women and rape them (or dissect them). There are right-wing (or left-wing) conspiracies to do this or that, usually molded to fit a particular political agenda. And so on.

What marks these conspiracy theories is that however elaborate they become (and volumes have been written about some), there is little or no effort to verify them. In many ways, such theories resemble theology in that a belief system substitutes for verifiable facts, and a complex, and internally logical structure is built on the theory - in short, they make sense and sound good if you hold the belief. They usually support some pet political, religious or social notion. Of course, some conspiracy theories can be dangerous and can be used to murder, stain reputations or grab property, sometimes under the cloak of law. Examples are: The Salem witch trials, the McCarthy hearings of the Fifties, or today's "recovered memory" movement and its attendant legal nightmares. Imagine trying to prove you didn't

mine absolute or, for that matter, relative truth. That's not really what it is designed to do. It can only, in its best moments, determine what is lawful activity. Recognizing this, absolutists with a strong political and financial base continuously change the wording of their political agenda and keep trying. The focus never changes. They want to use the police powers of the state to enforce their view.

Would those who promote science accept defeat if the courts ruled against them? Obviously not. Courts can only determine access to public facilities, not scientific facts. Similarly, absolutists will take their licks and continue to fight. Courts can't determine absolute truth.

IT'S ONLY A MODEL, FOLKS

I find the "rule of threes" a useful way to understand the world. Here, I've attempted to show how it relates to issues that interest a supporter of science education. It can be applied to many other social interactions. If one is careful not to make it a rigid ideology, it offers, for the individual who is not a fanatic, some tactical insights for social activism. After all, one can have views and take up a cause without being a screwball.

My model cannot, however, explain everything. It does not explain how an intelligent person can be an absolutist, whether a religious fundamentalist, a militant atheist, or an economic ideologue. Nor does it explain the desire for power, and the willingness to lie, cheat and steal to obtain it. Perhaps the desire for power is a function of biology or bad toilet training. Maybe it's aliens manipulating our brain waves.

I recognize that the absolutist will always be with us, although he will take on different colorations at different times in history.

The scientist, on the other hand, is atypical. He must be trained, so he will always be in the minority. A scientific outlook is a rare and valued commodity. Those who fight to use the public schools as a catch filter in the process of finding such talent have the noblest of goals. Those who would cut the mesh with dogma are the intellectual enemy.

A Classic Example of the Rule of Threes: Redefining "Theory."

Serendipity plays a role in human activity. Since I wrote the first draft of this essay a couple of years ago, it came to my attention that the Alabama State Board of Education, in 1995, had an insert made to be pasted into every high school biology textbook in the state. Here we are supplied with the classic example of how the "Rule of Threes" can be applied to analyzing a social/political/religious process in the "real world."

First, I offer the Alabama text of the insert:

A Message from the Alabama State Board of Education

This textbook discusses evolution, a controversial theory some scientists present as a scientific explanation for the origin of living things, such as plants, animals and humans.

No one was present when life first appeared on earth. Therefore, any statement about life's origins should be considered as theory, not fact.

The word "evolution" may refer to many types of change. Evolution describes changes that occur within a species. (White moths, for example,

religious absolutists have a genuine fear of being ignored by their practical-minded countrymen. Atheism is a welcome enemy since it acknowledges their existence. Science, on the other hand, has the potential of making religion irrelevant. Science ignores the questions fundamentalists consider important.

12.

13. On a more mundane level, the validation of religious "truth" by science would allow absolutists to bypass restrictions imposed by the separation of church and state that exists in the United States. (They would be able to teach their doctrines, re-labeled as science, in public classrooms.)

THE DILEMMA

Of course, science has no mechanism to validate absolute truth, or, for that matter, to invalidate it. There is nothing to measure. To measure anything, at least two points are necessary. An absolute has only one point. Any modern scientist claiming a proof of the absolute would be considered as odd. Even defenders of absolute truth, who claim science as their discipline (and many have impressive credentials), mostly confine themselves to nitpicking this or that "inconsistency" in a particular hypothesis. Such a tactic, if absolutists confined themselves to it, would prove useful to science. Honest critics are always useful.

However, they also take advantage of the fact that their supporters do not, for the most part, have scientific training, and are likely to confuse scientific debate (hard questions and challenges) with internal contradiction. They use this popular ignorance of the scientific method to question the process of science, rather than the accuracy of any particular finding. Furthermore, by taking the debate out of the academy (usually to church gatherings), and not offering the opportunity of rebuttal, they are being dishonest and make a mockery of the formal process of scientific debate.

ARRIVING AT THE "TRUTH"

Frankly, it is difficult to imagine how there can be more than one "truth." A person has to think hard about it. It does not come naturally. If we think in terms of how people gather information, this difficulty may succumb to some explanation.

All human beings use the following three methods to gather information. Experience: The most common way to get information. Few people have tried to formalize this method, although many claim they can understand the largely emotional process. Experience is primarily an uncritical conglomeration of all the memories an individual has accumulated over a lifetime. Experience makes it possible to make decisions. These decisions can be sound, delusional, or simply meaningless. I consider writing this essay a sound decision. The reader might agree, or think it delusional or meaningless. Experience is what gives value to decision. The reader's experience is different from mine. Every person's experience is different from every other person's. Psychology attempts to catalog experience and has had some success in the statistics of marketing, but has never been shown to be able to

predict a specific individual's future behavior.

Observation: Science has formalized this method of information gathering. Experience clearly has a critical role in determining what will be studied through the process of decision, but once this has been determined, everything possible is done to prevent experience, now called bias, from clouding observation and the interpretation of that observation. Unlike experience, which is unique to the individual, the formalized observation of the scientific method has, ideally, a set of protocols that can be shared among observers.

Authority: This is simply accepting the experiences and observations of others. Science has a formal way of deciding whose authority to accept. It largely avoids the authority of experience, since it is nearly impossible to pinpoint and measure. Absolutists, on the other hand, accept, and welcome the authority of experience. Religious knowledge can, ultimately, only come through this method. Authority should not be dismissed out-of-hand as a useful tool. Obviously, we don't want to repeat all the learning of previous generations, nor do we want to lose the moral teachings of a Gandhi. But it is important to be wary of everyone who claims to speak for God.

THE COMMON MAN

The public education system, unfortunately, rarely teaches critical thinking. It has the civic function of introducing children to the society at large. It teaches the basic intellectual tools of operating in the society. In addition, it prepares some for a higher education.

Nevertheless, the individual graduating from high school, and in the majority of cases, from college, tends to divide the world in twos: good and evil, yes and no, male and female, etc. One need only look at popular dramas, or the sound bites of politicians (much the same thing). Yes, the world is much more complicated, but the great mass of people are occupied in useful and necessary work that takes as much intelligence and skill as most professions (and often pays better), but does not require a model of how the world works. Unless you are making a living or hobby of it, there seems little point in constructing such a model. It's easier to unconsciously accept some traditional model.

It's clear that intelligence takes on many forms. There are construction workers with a spatial sense equal to any possessed by the best theoretical physicists. And there are doctors of philosophy who are idiots. This is not to say that there aren't morons in construction, and brilliant PhDs. Nor am I trying to make a "noble savage" of the working stiff, or suggesting that credentials should not be strived for.

I am pointing out that to be less educated is not necessarily to be less worthy, or that dividing the world in twos instead of threes is any less meritorious. Each approach has some functionality. Ultimately, in any analysis, usefulness is what is important, not cosmological truth, however one describes it. In any case, it would take a huge police force to enforce any specific model as the "truth" we must all accept. I suspect

that most readers of this essay would find such an arrangement uncomfortable. The "unexamined" life may not be worth living in the eyes of some, but it must be tolerated in a heterogeneous society such as ours.

THE SOCIAL CON

Absolutists have intuitively grasped the fact that most people, whether religious or not, think in twos, and that it is difficult for scientists to get their point across since it involves relative concepts, uncommon definitions of "truth," and worlds not clearly seen by the naked eye.

Absolutists work through "experience," the primary element in most people's world view. They can reach the general population through an infrastructure (churches) not available to scholars. Coming from the traditional heart of the culture, rather than a construct designed to take "cultural bias" out of information gathering, they have the clear advantage.

The political power of absolutists has grown in recent decades through clever political alliances, and it has taken advantage of our modern urban fragmentation to call people to traditional, mostly religious, ways. Absolutists want to access the public education apparatus to impose a social code that they believe reflects God's demands.

Since absolutists have a traditional explanation of "origins" that, in their terms, is in contradiction to the scientific theory of evolution, science must be made not only to give way, but also to support the traditional view with "scientific evidence," however arrived at. In other words, absolutists want to seize the only major infrastructure available to science for interacting with the public in general and young people in particular - the public school system.

Science teachers, long-time foes of this traditionalist movement, have mostly refused to support the teaching of creationism as science.

THE LEGAL SOLUTION

"Absolute Truth" can find no support from "Relative Truth," so it turns to "Legal Truth."

In more than one locale, absolutists have managed to get legislation requiring that their views be taught in the public school system. Their views require control over the teaching of morality (sex education), science (biology), literature (sneaking in the secular humanist "religion"), history (patriotic fervor, under divine guidance), and social skills (no teenage introspection, but absolute parental authority - the author knows of at least one teacher who was fired for showing videos demonstrating how decisions can be made by teenagers).

These views have met with a lot of opposition from teachers and other education professionals, and they have divided communities. So the fight wound up in court, where absolutists have largely been on the losing side. But the legal system, however fair and elegant, is a poor forum to deter-