

Fuzzy Logic and General-Semantics in Everyday Life

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Good morning! We want to start with some vital questions: Are you awake? How awake are you? Are you awake enough? How do you decide? How good is the morning? Do you feel well? How well do you feel? Well enough? How do you decide that?

Welcome to a day of “fuzziness” – an opportunity to sharpen your use of general-semantics and your ability to function better in your life by recognizing some practical, implications and applications of fuzzy logic and fuzzy aspects of day-to-day existence.

We’ll be presenting an overview of some areas of life which can be seen better when viewed through a fuzzy lens. We want to give you a feel for this, and want to emphasize that we can in no way speak about ‘all’ we might include. And of course neither we nor anyone else knows what ‘all’ *might* be included. With a fuzzy, or multi-valued, orientation we can feel comfortable with this, because we know we have a whole range of possibilities in between all-or-nothing choices.

Recognizing this in-between range is a central feature of general-semantics, or a non-aristotelian orientation. We go beyond two-valued, either/or approaches to focus on both-and; in addition to black and white, we consider what can be found in the shades of gray as black shades into white, white into black. We give up false expectations for precision and certainty and gain greater relevance, accuracy and reliability. We recognize that we can have degrees of knowledge, of information, of success.

In regard to fuzzy logic per se, for our purposes at the moment we only want to note that it also fundamentally involves a non-aristotelian degree orientation; a move beyond absolute categories or classes such as true-false, old-young, hot-cold, etc.; a consideration of degrees of true and false, oldness and youngness, hot and cold, depending on particular conditions and purposes, etc. Dr. Zadeh spoke last night and will be speaking again later specifically about fuzzy logic applications.

We will view our presentation as successful enough if most of you get *some degree* of understanding of fuzziness in everyday life and how you might use *some* of what we’re talking about. And you can feel satisfied if you get *some* feel for the topic. You can help yourself in just about any learning situation by recognizing the value of degrees of knowledge and degrees of understanding. You don’t need to know all, in order to know enough for your purposes at a particular time, and as a foundation for further learning as it suits your needs at another time. Unfortunately our schools sometimes seem to forget that life is not a true/false test.

Perhaps this seems familiar to you. Some of you may even be tempted to say, “Oh, I know that.” How do you determine what “that” is? Our nervous systems lead us to label and categorize our experiences, very useful and fundamental to our functioning. However, we can get locked into our

categories, into “this” and “that,” forgetting that we have created them. We can view them as absolutes reflecting so-called ‘reality’, rather than more and less useful ways of dividing ever-changing fuzzy processes of life. We do better in everyday life by making the edges of our categories fuzzy, to allow for such processes.

Thus, fuzziness in everyday life involves quantifying and qualifying our terms, or hedging, as Dr. Zadeh said last night. We’ve been doing this here as we use more, less, some, enough, seems, so-called, etc. We like to use English Minus Absolutisms, or EMA, as developed and recommended by Allen Walker Read, for example, better rather than best.

What kinds of categories and sharply defined experiences may we take for granted in daily life that we might do better by questioning?

A man and woman sit in my office. They are married to each other. Let’s consider this question: Are they a couple? They are approaching a visit to her parent’s home. They would like to avoid tensions they’ve experienced before in this situation. So I ask them to describe what has happened in the past. As they talk, I notice that she seems pulled toward her family, so that he is left out of decisions, he seems on the periphery of events. I check out my perception and they agree that, actually and metaphorically, he is left sitting on the sofa alone while events go on around him. In this situation they are not functioning as a couple, even though by virtue of being married they have assumed this status. I help them to develop strategies which involve them working together in this situation. After the visit, they report great improvement. They were sitting on the sofa together; they now seemed a couple in her parent’s home.

In relationships, you may find it useful to recognize when you’ve put yourself or others into a certain category, like couple or friend, assumed some definite non-variable definition and meaning for this category and then bumped into some problems. These problems may be partly created by your assumptions about the meaning and definition. By recognizing degrees of coupleness, of friendness, etc., you can avoid some difficulties.

What race are you? What ethnic category do you put yourself in? These questions have been in the news recently, as hearings were held on the question of racial/ethnic categories on federal forms, and in relation to the controversy about the book, *The Bell Curve*. Currently these forms include 5 categories: American Indian or Alaskan native, Asian or Pacific Islander, *black*, Hispanic or *white*. Then there’s an “other” category. How people categorize themselves and others has personal and societal import.

We can empathize with the man whose features show traces of his African, Danish, German, American Indian and Filipino-Chinese ancestry. He would like a “multiracial” category. (*The Sun* A-14)

But such a category creates problems for others concerned with government statistical and census uses of the information derived from such forms. For example, such information is used for monitoring and enforcing civil rights laws. It is used in affirmative action plans. It can be used in drawing up legislative districts. So “multiracial” may be accurate but not “precise” enough to suit some people or some goals.

Details about the history and current issues involved with such categorization can be found in an article in *The New Yorker*, called "One Drop of Blood." Lawrence Wright, the author, says that "Whatever the word 'race' may mean elsewhere in the world, or to the world of science, it is clear that in America the categories are arbitrary, confused, and hopelessly intermingled." (53) He quotes Representative Thomas C. Sawyer, at the time of writing chair of the House Subcommittee on Census, Statistics, and Postal Personnel:

We recognize the importance of racial categories in correcting clear injustices under the law. The dilemma we face is trying to assure the fundamental guarantees of equality of opportunity while at the same time recognizing that the populations themselves are changing as we seek to categorize them. It reaches the point where it becomes an absurd counting game. Part of the difficulty is that we are dealing with the illusion of precision. We wind up with precise counts of everybody in the country, and they are precisely wrong." (55)

Stuart Mayper has addressed some of these issues in two editorials in the *General Semantics Bulletin*. Like Wright, he discusses questions of how race and ethnicity are decided, but using a general-semantics perspective. You can get a flavor of Stuart's approach, as well as the complexity involved, in the following quote: "When I am confronted with a form which requires me to state my ethnicity, I like to choose "Native American"; I was, after all, born on West End Avenue in Manhattan. If that choice is not available, I write in "Human". (57: 12)

Well, perhaps we can't determine our race or ethnicity so precisely, but surely we can decide if we or someone else is alive or dead, can't we? Sherwin B. Nuland, in *How We Die: Reflections on Life's Final Chapter*, challenges this precision. He describes death as a process.

The experience of dying does not belong to the heart alone. It is a process in which every tissue of the body partakes, each by its own means and at its own pace. The operative word here is *process*, not *act*, *moment*, or any other term connoting a flyspeck of time when the spirit departs. In previous generations, the end of the faltering heartbeat was taken to indicate the end of life, as though the abrupt silence beyond it intoned a soundless signal of finality. It was a specified instant, recordable in the chronicle of life and marking a full stop after its concluding word.

Today the law defines death, with appropriate blurriness, as the cessation of brain function. Though the heart may still throb and the unknowing bone marrow create new cells, no man's history can outlive his brain. The brain dies gradually... Gradually, too, every other cell in the body dies, including those newly alive in the marrow. The sequence of events by which tissues and organs gradually yield up their vital forces in the hours before and after the officially pronounced death are the true biological mechanisms of dying. (42)

What Nuland talks about has personal and societal ramifications, evident in decisions made at bedsides, and in courts and medical ethics committees. These decisions can be aided by acceptance of the fuzziness involved.

What about the other end of life? The so-called abortion controversy in part revolves around the question, "When does life begin?" Some would say with conception, yet the sperm and egg are just as alive as a fertilized egg. So perhaps we can ask, "When does the life of an individual organism start?"

This is not sharp. The process of fertilization takes place over a period of time. Perhaps we can call the initial cell or mass of cells combined from sperm and egg an individual in some sense.

Perhaps it's better to ask, "When does this developing organism become a "person?" While some would claim that even the initial mass of cells is a person, it seems a distortion to make no distinction between embryos and fetuses and people after birth. A single fertilized cell does not contain the totality of what we 'are' as developed organisms. It contains a genetic map, which interacts with other factors during the developmental process to produce the individual.

Brains develop over time in the embryo and fetus. In the early months organized brain wave activity does not occur. The brain structures and connections necessary for awareness begin to emerge around the 21st to 23rd weeks of gestation. Our brains continue to develop in important ways even after birth. Work in neurobiology indicates that the synthesizing function of the cerebral cortex only begins in a recognizably human way in the middle of the last trimester of pregnancy.

This complex process mirrors that of death, and like death, legal and practical decisions are made based on definitions, beliefs and preferences. In taking a fuzzy, or multi-valued approach, we can say that something (someone?) can be considered a person to some degree. We can consider such standards as these, referring to the full life-span, listed by Joseph Fletcher, a medical ethicist, in *Humanhood: Essays in Biomedical Ethics* (12-16): Minimum intelligence, self-awareness, self-control, sense of time, sense of futurity, sense of the past, capability to relate to others, communication, curiosity, and, perhaps most importantly in relation to abortion questions, neocortical function, etc.

These standards allow for degrees, rather than either/or, "it is or it isn't" positions. Fuzzy process situations call for an ability to allow for fuzzy process answers rather than an insistence on a definitive "I have the truth" and that's that.

We share this room with a group of aware, active, intelligent people; we think we can agree that we are all sufficiently 'alive.' But are any of us disabled? This question can lead us into a 2-valued approach to an issue better viewed as multi-valued.

As an example, we can discuss those who have less than optimal hearing. Some would call them "deaf," written with a lower-case "d." So identified, many would consider such people disabled, with a pathology that limits them and requires remedial treatment. Others would call them "Deaf," written with a capital "D." Some people with hearing loss identify themselves this way and consider themselves not disabled, but part of a vibrant alternative culture which society should allow to grow and flourish. Some people in this group resist such treatments as cochlear implants, since, in addition to their often not being effective, these treatments seek to "cure" something which Deaf culturists do not see as needing cure.

As with definitions of race/ethnicity, issues of who's disabled have societal as well as personal implications. Deaf as a culture can lead to those with hearing loss not being eligible for protection under the Americans With Disabilities Act.

These issues are discussed by Andrew Solomon in an article called "Defiantly Deaf." He deals with some of the problems of definition and the fuzziness involved in the following quote.

It is tempting, in the end, to say there is no such thing as a disability. Equally, one might admit that almost everything is a disability. There are as many arguments for correcting everything as there are for correcting nothing. Perhaps it would be most accurate to say that “disability” and “culture” are really matters of degree. Being Deaf is a disability and a culture in modern America; so is being gay; so is being Black; so is being female; so even, increasingly, is being a straight White male. So is being paraplegic, or having Down syndrome. What is at issue is which things are so “cultural” that you wouldn’t think of curing them, and which things are so “disabling” that you must “cure” them – and the reality is that for some people each of these experiences is primarily a disability experience while for others it is primarily a cultural one. (67)

What *about* gay and straight? Are these categories of sexual attraction so definitive as to allow for no gradations? And how is this decided? Some people do identify themselves as bisexual; others may say that those people are ‘really’ gay or ‘really’ straight. To what degree is each of us gay or straight?

What about masculine and feminine? Most of us think of ourselves as one or the other. But these categories of sexual identity are also better understood as extremes of a continuum of attitudes and behaviors. Some researchers have noted a large middle ground between these extremes and labeled it androgynous. In this view, many individuals, in varying degrees, integrate what have been called feminine and masculine. Thus males *and* females may be both assertive and yielding, forceful and compassionate, ambitious and sensitive to the needs of others. Such androgynous people can be more flexible in responding in a particular situation, in contrast to the highly gender-typed person who responds consistently in a definitional “female” or “male” way. (Williams 342)

In his book, *Venuses Penuses: Sexology, Sexosophy and Exigency Theory*, John Money, a leading sexologist, identifies 7 variables of sex and gender (152-153). They are:

1. Assigned sex and sex of rearing;
2. External genital morphology;
3. Internal accessory reproductive structures;
4. Hormonal sex and secondary sexual characteristics;
5. Gonadal sex;
6. Chromosomal sex; and
7. Gender role and orientation as male and female, established while growing up.

Since variations can occur in each of these aspects of sexuality, in varying degrees in different individuals, we can recognize the futility of trying to fit people into neat either/or categories.

A note on the title of Money’s book: He originally wanted to title it *Venus’s Penises*, from a poem he had written. Because the publisher had misgivings about marketing the book under this title, they used an artifice of medieval Latin orthography and derived *Venuses Penuses*. Can we find fuzzy logic here?

Some of the complexities that can occur are detailed by Amy Bloom in a *New Yorker* article called “The Body Lies.” This article is primarily about women who choose to become men, a less talked about transsexuality than man to woman. For example, she talks about Louis Sullivan, a female-to-male

transsexual who is also a gay man with AIDS. This man knew that despite his female anatomy he was male; he also knew he was a gay male.

Bloom says, "The notion that gender has a continuum, a fluid range of possibilities, seems to produce such anxious rigidity in many of us that we ignore everything we've learned through our own lives about the complexities of men and women and seek refuge in explanations and expectations which are more magical, romantic, and unrealistic than any attitude I encountered among the transsexuals I met." (42) Perhaps those of us who accept the fuzziness of life can be less anxiously rigid than others.

Perhaps you are aware of a trend today toward what we call "victimism" and some have called a "cult of the victim." While some people with even severe hearing loss are refusing to identify themselves as disabled, and at least some transsexuals are accepting and dealing with their situations, many other people are proclaiming themselves 'victims.' They are 'victimized' not only by incest and other sexual abuse and physical and severe emotional abuse, but by a variety of addictions. These addictions go well beyond alcohol and other drugs; they include addictions to love, sex, excitement and drama, good looks, worry, anger (e.g., there are groups for "rageholics"), food, gambling, and codependency (defined as "being affected by someone else's behavior and wanting to control it"). People view themselves as 'victims' of cigarette companies and plastic surgery.

'Recovery' groups have sprung up, based on the 12-step model of Alcoholics Anonymous. The first two steps of this model have people admitting their powerlessness and surrendering their will to a higher power. Addiction is viewed as a disease of "the will"; believing in self-control is viewed as a symptom of codependency.

Confessional talk shows, such as Oprah and Donahue, parade "victims" and serve as reinforcement as well as trend-setter. Wendy Kaminer, in *I'm Dysfunctional, You're Dysfunctional: The Recovery Movement and Other Self-Help Fashions*, reports on self-identified sex addicts on such shows complaining that they use sex to help themselves feel better. As she asks, "Who doesn't'?"

While AA has helped people, and some people reasonably can be viewed as victims of tragic circumstances, as a widespread movement 'recovery' from "victimization" presents problems. What can we make of the admission of powerlessness and the abdication of will promoted by 12-step programs? Kaminer suggests considering these as political slogans in order to get a sense of what's implied for our society. (21-22) Both individual autonomy and social responsibility are abdicated in these programs and in a "victimism" orientation.

An opposite extreme involves blaming "victims," as exemplified by blaming people for their illnesses. This is taken up in an article called "Hating the Sick: Health Chauvinism and Its Cure," in *The Humanist*. The author, Fred Pelka, cites numerous examples, including someone who said that "by forgiving the roots of our disease, we regain perfect health." (17)

We think much of this can be understood in the context of either/or evaluating. Either you're in total control or you're not responsible; either you're a victim or a predator (we saw a license plate - predtr; we let the driver pass); either all behavior is determined or we can determine nothing in our lives. Many people have difficulty considering degrees of responsibility and problems, the effects of context or situation; dealing with the complex, fuzzy middle ground.

Then there are political slogans, and the politics of our governments and of international relations. How well do liberal-conservative (or even radical-liberal-conservative), right-left, Democrat-Republican, east-west, first-world-third world, etc. describe the complexities of public life? How do such terms and ways of formulating constrict our ability to deal with fuzzy complex issues?

Here is a challenge we think is presented to us by general-semantics and fuzzy logic. Can we allow ourselves to give up a need for unattainable certainty and the apparent precise clarity of black and white? In exchange, in grappling with the grays of our lives we may gain greater power and relevant precision adequate to deal with our complex problems and situations.

We are now prepared to take responsibility for the complex problem of how and when to stop, when so much more could be said. We hope that we've given you a clear enough feel for some everyday applications of a fuzzy, multi-valued orientation. We thank you for at least looking awake enough and welcome questions and comments.

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