

The Cargo-Cult Science of Subliminal Persuasion

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Imagine that it is the late 1950s—a time just after the Korean War, when terms like *brainwashing* and *mind control* were on the public's mind and films like the *Manchurian Candidate* depicted the irresistible influence of hypnotic trances. You and your friend are off to see *Picnic*, one of the more popular films of the day. However, the movie theater, located in Fort Lee, New Jersey, is unlike any you have been in before. Unbeknownst to you, the projectors have been equipped with a special device capable of flashing short phrases onto the movie screen at such a rapid speed that you are unaware that any messages have been presented. During the film, you lean over to your companion and whisper, "Gee, I'd love a tub of buttered popcorn and a Coke right now." To which he replies, "You're always hungry and thirsty at movies, shhhhh." But after a few moments he says, "You know, some Coke and popcorn might not be a bad idea."

A short time later you hear that you and your friend weren't the only ones desiring popcorn and Coke at the theater that day. According to reports in newspapers and magazines, James Vicary, an advertising expert, had secretly flashed, at a third of a millisecond, the words "Eat Popcorn" and "Drink Coke" onto the movie screen. His studies, lasting six weeks, involved thousands of moviegoing subjects who received a subliminal message every five seconds during the film. Vicary claimed an increase in Coke sales of 18 percent and a rise in popcorn sales of almost 58 percent. Upon reading their newspapers, most people were outraged and frightened by a technique so devilish that it

Despite the continued enthrallment of the American public, more than a century of research has failed to find evidence that subliminal commands influence behavior.

could bypass their conscious intellect and beam *subliminal* commands directly to their subconscious. (See Moore, this issue, for a definition of "subliminal.")

In an article titled "Smudging the Subconscious," Norman Cousins (1957) captured similar feelings as he pondered the true meaning of such a device. As he put it, "If the device is successful for putting over popcorn, why not politicians or anything else?" He wondered about the character of people who would dream up a machine to "break into the deepest and most private parts of the human mind and leave all sorts of scratchmarks." Cousins concluded that the best course of action would be "to take this invention and everything connected to it and attach it to the center of the next nuclear explosive scheduled for testing."

Cousins's warnings were taken to heart. The Federal Communications Commission immediately investigated the Vicary study and ruled that the use of subliminal messages could result in the loss of a broadcast license. The National Association of Broadcasters prohibited the use of subliminal advertising by its members. Australia and Britain banned subliminal advertising. A Nevada judge ruled that subliminal communications are not protected as free speech.

The Vicary study also left an enduring smudge on Americans' consciousness—if not their *subconscious*. As a teacher of social psychology and a persuasion researcher, one of the questions I am most frequently asked is, "Do you know about the 'Eat Popcorn/Drink Coke' study that *they* did?" At cocktail parties, I am often pulled aside and, in hushed tones, told about the "Eat Popcorn/Drink Coke" study. Indeed, my original interest in subliminal persuasion was motivated by an attempt to know how to respond

"In a 1962 interview, James Vicary announced that the 'Eat Popcorn/Drink Coke' study was a fabrication intended to increase customers."

to such questions.

Three public-opinion polls indicate that the American public shares my students' fascination with subliminal influence (Haber 1959; Synodinos 1988; Zanot, Pincus, and Lamp 1983). By 1958, just nine months after the Vicary subliminal story first broke, 41 percent of survey respondents had heard of subliminal advertising. This figure climbed to 81 percent in the early 1980s, with more than 68 percent of those aware of the term believing that it was effective in selling products. Most striking, the surveys also revealed that many people learn about subliminal influence through the mass media and through courses in high school and college.

But there is a seamier side to the "Eat Popcorn/Drink Coke" study—one that is rarely brought to public attention. In a 1962 interview with *Advertising Age*, James Vicary announced that the original study was a fabrication intended to increase customers for his failing marketing business. The circumstantial evidence suggests that this time Vicary was telling the truth. Let me explain by recounting the story of the "Eat Popcorn/Drink Coke" study as best I can, based on various accounts published in academic journals and trade magazines (see Advertising Research Foundation 1958; "ARF Checks" 1958; Danzig 1962; McConnell, Cutler, and McNeil 1958; "Subliminal Ad" 1958; "Subliminal Has" 1958; Weir 1984).

Advertisers, the FCC, and research

psychologists doubted Vicary's claims from the beginning and demanded proof. To meet these demands, Vicary set up demonstrations of his machine. Sometimes there were technical difficulties in getting the machine to work. When the machine did work, the audience felt little compulsion to comply with subliminal commands, prompting an FCC commissioner to state, "I refuse to get excited about it—I don't think it works" ("Subliminal Has" 1958).

In 1958, the Advertising Research Foundation pressed Vicary to release his data and a detailed description of his procedures. They argued that it had been more than a year since the results were made public and yet there had been no formal write-up of the experiment, which was necessary to evaluate the claims. To this day, there has been no primary published account of the study, and scientists interested in replicating the results must rely on accounts published in such magazines as the *Senior Scholastic* ("Invisible Advertising" 1957), which, although intended for junior-high students, presents one of the most detailed accounts of the original study.

Pressures for a replication accumulated. Henry Link, president of Psychological Corporation, challenged Vicary to a test under controlled conditions and supervised by an independent research firm. No change occurred in the purchase of either Coke or popcorn (Weir 1984). In one of the more interesting attempted replications, the Canadian Broadcast Corporation, in 1958, subliminally flashed the message "Phone Now" 352 times during a popular Sunday-night television show called *Close-up* ("Phone Now" 1958). Telephone usage did not go up during that period. Nobody called the station. When asked to guess the message, viewers sent close to five hundred letters, but not

one contained the correct answer. However, almost half of the respondents claimed to be hungry or thirsty during the show. Apparently, they guessed (incorrectly) that the message was aimed at getting them to eat or drink.

Finally, in 1962 James Vicary lamented that he had handled the subliminal affair poorly. As he stated, "Worse than the timing, though, was the fact that we hadn't done any research, except what was needed for filing for a patent. I had only a minor interest in the company and a small amount of data—too small to be meaningful. And what we had shouldn't have been used promotionally" (Danzig 1962). This is not exactly an affirmation of a study that supposedly ran for six weeks and involved thousands of subjects.

My point in presenting the details of the Vicary study is twofold. First, the "Eat Popcorn/Drink Coke" affair is not an isolated incident. The topic of subliminal persuasion has attracted the interest of Americans on at least four separate occasions: at the turn of the century, in the 1950s, in the 1970s, and now in the late 1980s and early 1990s. Each of these four flourishes of subliminal persuasion show a similar course of events. First, someone claims to find an effect; next, others attempt to replicate that effect and fail; the original finding is then criticized on methodological grounds; nevertheless the original claim is publicized and gains acceptance in lay audiences and the popular imagination. Today we have reached a point where one false effect from a previous era is used to validate a false claim from another. For example, I recently had the occasion to ask a manufacturer of subliminal self-help audiotapes for evidence of his claim that his tapes had therapeutic value. His reply: "You are a psychologist. Don't

you know about the study they did where they flashed 'Eat Popcorn and Drink Coke' on the movie screen?"

During the past few years, I have been collecting published articles on subliminal processes—research that goes back over a hundred years (Suslowa 1863) and includes more than a hundred articles from the mass media and more than two hundred academic papers on the topic (Pratkanis and Greenwald 1988). In none of these papers is there clear evidence in support of the proposition that subliminal messages influence behavior. Many of the studies fail to find an effect, and those that do either cannot be reproduced or are fatally flawed on one or more methodological grounds, including: the failure to control for

subject expectancy and experimenter bias effects, selective reporting of positive over negative findings, lack of appropriate control treatments, internally inconsistent results, unreliable dependent measures, presentation of stimuli in a manner that is not truly subliminal, and multiple experimental confounds specific to each study. As Moore (*SI*, this issue) points out, there is considerable evidence for subliminal perception or the detection of information outside of self-reports of awareness. However, subliminal perception should *not* be confused with subliminal persuasion or influence—motivating or changing behavior—for which there is little good evidence (see McConnell, Cutler, and McNeil 1958; Moore 1982 and 1988).



"YOU KNOW A COKE AND A POPCORN MIGHT NOT BE A BAD IDEA RIGHT NOW."

My second reason for describing the Vicary study in detail is that it seems to me that our fascination with subliminal persuasion is yet another example of what Richard Feynman (1985) called "cargo-cult science." For Feynman, a cargo-cult science is one that has all the trappings of science—the illusion of objectivity, the appearance of careful study, and the motions of an experiment—but lacks one important ingredient: skepticism, or a leaning over backward to see if one might be mistaken. The essence of science is to doubt your own interpretations and theories so that you may improve upon them. This skepticism is often missing in the interpretation of studies claiming to find subliminal influence. Our theories and wishes for what we would like to think the human mind is capable of doing interferes with our ability to see what it actually does.

The cargo-cult nature of subliminal research can be seen in some of the first studies on the topic done at the turn of the century. In 1900, Dunlap reported a subliminal Müller-Lyer illusion—a well-known illusion in which a line is made to appear shorter or longer depending on the direction of angles placed at its ends. Dunlap flashed an "imperceptible shadow" or line to subliminally create this illusion. He claimed that his subjects' judgment of length was influenced by the imperceptible shadows. However, Dunlap's results could not be immediately replicated by either Titchener and Pyle (1907) or by Manro and Washburn (1908). Nevertheless, this inconsistency of findings did not stop Hollingworth (1913) from discussing the subliminal Müller-Lyer illusion in his advertising textbook or from drawing the conclusion that subliminal influence is a powerful tool available to the advertiser.

I contend that it was no accident

that subliminal influence was first investigated in America at the turn of the century. The goal of demonstrating the power of the subliminal mind became an important one for many people at that time. It was a time of great religious interest, as illustrated by academic books on the topic, religious fervor among the populace, and the further development of a uniquely American phenomenon—the spiritual self-help group. One such movement, popular in intellectual circles, was called "New Thought," which counted William James among its followers. The doctrine of New Thought stated that the mind possesses an unlimited but hidden power that could be tapped—if one knew how—to bring about a wonderful, happy life and to exact physical cures. Given the rise of industrialization and the anonymity of newly formed city life, one can see how a doctrine of the hidden power of the individual in the face of realistic powerlessness would be well received in some circles.

The historian Robert Fuller (1982; 1986) traces the origins of New Thought and similar movements to early American interest in the teachings of Franz Anton Mesmer. Fuller's point is that the powerful unconscious became a replacement for religion's "soul." Mesmer's doctrines contended that each person possessed a hidden, though strong, physical force, which he termed *animal magnetism*. This force could be controlled by the careful alignment of magnets to effect personality changes and physical cures. On one level, mesmerism can be viewed as a secularization of the metaphor of spiritual humans that underlies witchcraft. Animal magnetism replaced the soul, and good and bad magnets replaced angels and devils that could invade the body and affect their will. Mesmerism was introduced to America at the beginning of the

nineteenth century and, characteristic of Yankee ingenuity, self-help movements soon sprang up with the goal of improving on Mesmer's original magnet therapy; they did so by developing the techniques of hypnotism, séances, the healing practices of Christian Science, positive thinking, and the speaking cure.

With the distance of a century, we overlook the fact that many journals of the nineteenth century were devoted to archiving the progress of mesmerism and with documenting the influence of the unconscious on the conscious. As Dunlap (1900) said in the introduction to his article on the subliminal Müller-Lyer illusion, "If such an effect is produced, then we have evidence for the belief that under certain conditions things of which we are not and can not become conscious have their immediate effects upon consciousness." In other words, we would have one of the first scientific demonstrations that the unconscious can powerfully influence the conscious. A simple step perhaps, but who knows what wonderful powers of the human mind wait to be unleashed.

As a postscript to the subliminal Müller-Lyer affair, I should point out that 30 years later Joseph Bressler—a student of Hollingworth—was able to reconcile the empirical differences between Dunlap and his opponents. Bressler (1931) found that as the subliminal angles increased in intensity—that is, as they approached the threshold of awareness—the illusion was more likely to be seen. This finding, along with many others, served as the basis for concluding that there is no absolute threshold of awareness—it can vary as a function of individual and situational factors—and led to the hypothesis that, on some trials, subjects could see enough of the stimulus to improve their

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guessing at what might be there. (See also Holender 1986 and Cheesman and Merikle's 1985 distinction between objective and subjective thresholds.)

Other manifestations of "subliminal-mania" illustrate additional aspects of a cargo-cult science. In the early 1970s, during the third wave of popular interest in subliminal persuasion, the best-selling author Wilson Bryan Key (1973; 1976; 1980; 1989) advanced the cargo-cult science of subliminal seduction in two ways. (See also Creed 1987.) First, Key argued that subliminal techniques were not just limited to television and movies. Cleverly hidden messages aimed at inducing sexual arousal are claimed to be embedded in the photographs of print advertisements. Key found the word *sex* printed on everything from Ritz crackers to the ice cubes in a Gilbey Gin ad. Second, Key was successful in linking the concept of subliminal persuasion to the issues of his day. The 1970s were a period of distrust by Americans of their government, businesses, and institutions. Key claimed that big advertisers and big government are in a conspiracy to control our minds using subliminal implants.

The legacy of Key's cargo-cult science is yet with us. I often ask my students at the University of California, Santa Cruz, if they have heard of the term *subliminal persuasion* and, if so, where. Almost all have heard

of the term and about half report finding out about it in high school. Many received an assignment from their teachers to go to the library and look through magazine ads for subliminal implants.

These teachers miss an opportunity to teach science instead of cargo-cult science. Key (1973) reports a study where more than a thousand subjects were shown the Gilbey Gin ad that supposedly contained the word *sex* embedded in ice cubes. Sixty-two percent of the subjects reported feeling "aroused," "romantic," "sensual." Instead of assuming that Key was right and sending students out to find subliminals, a science educator would encourage a student to ask, "But where is the control group in the Gilbey Gin ad study? Perhaps an even higher percentage would report feeling sexy if the subliminal "sex" was removed—perhaps the same, perhaps less. One just doesn't know.

Now in the late 1980s and early 1990s, we see a fourth wave of interest in subliminal influence. Entrepreneurs have created a \$50-million-plus industry offering subliminal self-help audio- and video-tapes designed to improve everything from self-esteem to memory, to employee and customer relations, to sexual responsiveness, and—perhaps most controversial—to overcoming the effects of family and sexual abuse (Natale 1988). The tapes work, according to one manufacturer, because "subliminal messages bypass the conscious mind, and imprint directly on the subconscious mind, where they create the basis for the kind of life you want." Part of the popularity of such tapes no doubt springs from the tenets of New Age. Like its predecessor New Thought, New Age also postulates a powerful hidden force in the human personality that can be controlled for the good, not by magnets, but by

crystals, and can be redirected with subliminal commands.

Accusations concerning the sinister use of subliminal persuasion continue as well. In the summer of 1990, the rock band Judas Priest was placed on trial for allegedly recording, in one of their songs, the subliminal implant "Do it." This message supposedly caused the suicide deaths of Ray Belknap and James Vance.

What is the evidence that subliminal influence, despite not working in the 1900s, 1950s, and 1970s, is now effective in the 1990s? Tape company representatives are likely to provide you with a rather lengthy list of "studies" demonstrating their claims. Don't be fooled. The studies on these lists fall into two camps—those done by the tape companies and for which full write-ups are often not available, and those that have titles that sound as if they apply to subliminal influence, but really don't. For example, one company lists many subliminal-perception studies to support its claims. It is a leap of faith to see how a lexical priming study provides evidence that a subliminal self-help tape will cure insomnia or help overcome the trauma of being raped. Sadly, the trick of claiming that something that has nothing to do with subliminal influence really does prove the effectiveness of subliminal influence goes back to the turn of the century. In the first footnote to their article describing a failure to replicate Dunlap's subliminal Müller-Lyer effect, Titchener and Pyle (1907) state: "Dunlap finds a parallel to his own results in the experiments of Pierce and Jastrow on small difference of sensations. There is, however, no resemblance whatever between the two investigations." In a cargo-cult science, any evidence—even irrelevant facts—is of use and considered valuable.



Recently, there have been a number of studies that directly tested the effectiveness of subliminal self-help tapes. I conducted one such study in Santa Cruz with my colleagues Jay Eskenazi and Anthony Greenwald (Pratkanis, Eskenazi, and Greenwald 1990). We used mass-marketed audiotapes with subliminal messages designed to improve either self-esteem or memory abilities. Both types of tapes contained the same

supraliminal content—various pieces of classical music. However, they differed in their subliminal content. According to the manufacturer, the self-esteem tapes contained subliminal messages like “I have high self-worth and high self-esteem.” The memory tape contained subliminal messages like “My ability to remember and recall is increasing daily.”

Using public posters and ads placed in local newspapers, we recruited

volunteers who appeared most interested in the value and potential of subliminal self-help therapies (and who were probably similar to those likely to buy such tapes). On the first day of the study, we asked our volunteers to complete three different self-esteem and three different memory measures. Next they randomly received their subliminal tape, but with an interesting twist. Half of the tapes were mislabeled so that some of the subjects received a memory tape, but thought it was intended to improve self-esteem, whereas others received a self-esteem tape that had been mislabeled as memory improvement. (Of course half the subjects received correctly labeled tapes.)

The volunteers took their tapes home and listened to them every day for five weeks (the period suggested by the manufacturer for maximum effectiveness). During the listening phase, we attempted to contact each subject about once a week to encourage their daily listening. Only a handful of subjects were unable to complete the study, suggesting a high level of motivation and interest in subliminal therapy. After five weeks of daily listening, they returned to the laboratory and once again completed self-esteem and memory tests and were also asked to indicate if they believed the tapes to be effective.

The results: the subliminal tapes produced *no* effect (improvement or decrement) on either self-esteem or memory. But our volunteers did not believe this to be the case. Subjects who thought they had listened to a self-esteem tape (regardless of whether they actually did or not) were more likely to be convinced that their self-esteem had improved, and those who thought they had listened to a memory tape were more likely to believe that their memory had improved as a result of listening to

the tape. We called this an illusory placebo effect—placebo, because it was based on expectations; illusory, because it wasn't real. In sum, the subliminal tapes did nothing to improve self-esteem or memory abilities but, to some of our subjects, they appeared to have an effect. As we put it in the title of our report of this study, "What you expect is what you believe, but not necessarily what you get."

Our results are not a fluke. We have since repeated our original study twice using different tapes and have yet to find an effect of subliminal messages upon behavior as claimed by the manufacturer (Greenwald, Spangenberg, Pratkanis, and Eskenazi 1991). By combining our data from all three studies, we gain the statistical power to detect quite small effects. Still, there is no evidence of a subliminal effect consistent with the manufacturers' claims.

Other researchers are also finding that subliminal self-help tapes are of no benefit to the user. In a series of three experiments, Auday, Mellett, and Williams (1991) tested the effectiveness of bogus and real subliminal tapes designed either to improve memory, reduce stress and anxiety, or increase self-confidence. The subliminal tapes proved ineffective on all three fronts. Russell, Rowe, and Smouse (1991) tested subliminal tapes designed to improve academic achievement and found the tapes improved neither grade point average nor final examination scores. Lenz (1989) had 270 Los Angeles police recruits listen for 24 weeks to music with and without subliminal implants designed to improve either knowledge of the law or marksmanship. The tapes did not improve either. In a recent test, Merikle and Skanes (1991) found that overweight subjects who listened to subliminal weight-loss

tapes for five weeks showed no more weight loss than did control subjects. In sum, independent researchers have conducted 9 studies to evaluate the effectiveness of subliminal self-help tapes. All 9 studies failed to find an effect consistent with the manufacturers' claims. (See also Eich and Hyman 1991.)

It appears that, despite the claims in books and newspapers and on the backs of subliminal self-help tapes, subliminal-influence tactics have not been demonstrated to be effective. Of course, as with anything scientific, it may be that someday, somehow, someone will develop a subliminal technique that may work, just as someday a chemist may find a way to transmute lead to gold. I am personally not purchasing lead futures on this hope however.

The history of the subliminal controversy teaches us much about persuasion—but not the subliminal kind. If there is so little scientific evidence of the effectiveness of subliminal influence, why then do so many Americans believe it works? In a nutshell, I must conclude, with Feynman, that despite enjoying the fruits of science, we are not a scientific culture, but one of ill-directed faith as defined in Hebrews 11:1 (KJV): "Now faith is the substance of things hoped for, the evidence of things not seen."

We can see the workings of this faulty faith, not science, in the more than a hundred popular press articles on the topic of subliminal persuasion. Many of the articles (36 percent) deal with ethical and regulatory concerns of subliminal practices—assuming them to be effective. Only 18 percent of the articles declare flatly that subliminal influence is ineffective, with the remaining either claiming that it works or suggesting a big "maybe" to prompt readers' concern.

In general, popular press articles fail to rely on scientific evidence and method to critically evaluate subliminal findings. Positive findings are emphasized and null results rarely reported. Problems with positive subliminal findings, such as lack of control groups, expectancy effects, setting subliminal thresholds, and so on, are rarely mentioned. If negative information is given, it is often presented at the end of the article, giving the reader the impression that, at best, the claims for subliminal effectiveness are somewhat controversial. Recent coverage of subliminal self-help tapes, however, have been less supportive of subliminal claims—but this may reflect more of an attack on big business than an embrace of science.

Instead of the scientific method, those accused of subliminal persuasion (mostly advertisers) are subjected to what can be termed the "witch test." During the Middle Ages, one common test of witchcraft was to tie and bind the accused and throw her into a pond. If she floats, she is a witch. If she drowns, then her innocence is affirmed. Protestations by the accused were taken as further signs of guilt.

How do we know that subliminals work and that advertisers use them? As Key notes, advertisers spend a considerable amount of money on communications that contain subliminal messages. Why would they spend such vast sums if subliminal persuasion is ineffective? The fact that these subliminal messages cannot be readily identified or seen and that the advertisers deny their use further demonstrates the craftiness of the advertiser. After all, witches are a wiley lot, carefully covering their tracks. It appears that the only way that advertisers can prove their innocence, by the logic of the witch test, is to go out of business at the bottom of the

pond, thereby showing that they do not possess the arts of subliminal sorcery. In contrast, just as the motives of the Inquisition for power and fortune went unquestioned, so too the motives of the proponents of subliminal seduction, who frequently profit by the sale of more newspapers, books, or audiotapes, are rarely (or have only recently been) questioned.

The proponents of subliminal persuasion make use of our most sacred expectations, hopes, and fears. Each manifestation of interest in subliminal influence has been linked to the important philosophies and thinking of the day—New Thought in the 1900s, brainwashing in the 1950s, the corruption of big governments in the 1970s, and New Age philosophy today.

But the belief in subliminal persuasion provides much more for the individual. We live in an age of propaganda; the average American will see approximately seven million advertisements in a lifetime. We provide our citizens with very little education concerning the nature of these persuasive processes. The result is that many may feel confused and bewildered by basic social processes (see Pratkanis and Aronson 1992). The negative side of subliminal persuasion is presented as an irrational force outside the control of the message recipient. As such, it takes on a supernatural “devil made me do it” quality capable of justifying and explaining why Americans are often persuaded and can seemingly engage in irrational behavior. Why then did I buy this worthless product at such a high price? Subliminal sorcery. On the positive side, a belief in subliminal persuasion imbues the human spirit at least with the possibility of overcoming the limitations of being human and of living a mundane existence. We can be like the gods—healing our-

selves, finding enjoyment in everything we do, working for the benefit of humankind by tapping our own self potentials. Perhaps our theories of what should be or what we would like to be have caused us to be a little less critical of the claims for the power of subliminal influence.

But belief in subliminal persuasion is not without its cost. Perhaps the saddest aspect of the subliminal affair is that it distracts our attention from more substantive issues. By looking for subliminal influences, we may ignore more powerful, blatant influence tactics employed by advertisers and sales agents. We may ignore other, more successful ways—such as science—for reaching our human potentials.

Consider the tragic suicide deaths of teenagers Ray Belknap and James Vance that were brought to light in the recent trial of Judas Priest. They lived troubled lives—lives of drug and alcohol abuse, run-ins with the law, learning disabilities, family violence, and chronic unemployment. What issues did the trial and the subsequent mass-media coverage emphasize? Certainly not the need for drug treatment centers; there was no evaluation of the pros and cons of America’s juvenile justice system, no investigation of the schools, no inquiry into how to prevent family violence, no discussion of the effects of unemployment on a family. Instead, our attention was mesmerized by an attempt to count the number of subliminal demons that can dance on the end of a record needle.

In this trial, Judge Jerry Carr Whitehead (*Vance & Belknap v. Judas Priest & CBS Records* 1990) ruled in favor of Judas Priest, stating: “The scientific research presented does not establish that subliminal stimuli, even if perceived, may precipitate conduct of this magnitude. There exist other

factors which explain the conduct of the deceased independent of the subliminal stimuli." Perhaps now is the time to lay the myth of subliminal sorcery to rest and direct our attention to other, more scientifically documented ways of understanding the causes of human behavior and improving our condition.

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