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Attorneys for Plaintiffs

IN THE UNITED STATES DISTRICT COURT  
DISTRICT OF OREGON  
(Medford Division)

**THE CHURCH OF THE HOLY LIGHT OF  
THE QUEEN**, a/k/a The Santo Daime Church,  
an Oregon religious corporation, on its own  
behalf and on behalf of all of its members,  
**JONATHAN GOLDMAN**, individually and as

Civil No. 08-cv-03095-PA

**STATEMENT OF MICHAEL T.  
GHISELIN, Ph.D.**

Spiritual Leader of the "Santo Daime Church,"  
**JACQUELYN PRESTIDGE, MARY ROW,  
M.D., MIRIAM RAMSEY, ALEXANDRA  
BLISS YEAGER and SCOTT FERGUSON,**  
members of the Santo Daime Church,

Plaintiffs,

v.

**MICHAEL B. MUKASEY**, Attorney General  
of the United States; **KARIN J. IMMERGUT**,  
United States Attorney, District of Oregon;  
**HENRY M. PAULSON**, Secretary of the U.S.  
Department of the Treasury,

Defendants.

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STATEMENT  
of  
Michael T. Ghiselin, Ph.D.

I, Michael T. Ghiselin, am Chair of the Center for the History and Philosophy of Science at the California Academy of Sciences in San Francisco. I have published on a wide variety of topics, mainly in biology and the history and philosophy thereof. My expertise relevant to this case has mostly to do with epistemology. In 1970 I was awarded the Pfizer Prize of the History of Science Society for my first book, *The Triumph of the Darwinian Method*. I am also an expert on the philosophy of classification and the ontological issues that relate to it. Of some relevance is my knowledge of bioeconomics, of which I have held a visiting chair at the University of Siena for three weeks in 2008, and other interdisciplinary areas. Of course I have had a great deal of experience as author, referee, reviewer, and editor of scientific publications. I have not testified in a court proceeding in the last 5 years. I am being compensated at the rate of \$200 per hour.

This commentary focuses upon the scientific legitimacy and consequent admissibility of arguments presented on behalf of both the plaintiffs and the defendants in *The Church of the Holy Light of the Queen, et al.*, and *Michael B. Mukasey et al.* In preparation for providing my opinions I have read the reports of the plaintiffs' experts mentioned below, the reports of the defendants' experts mentioned below, *Daubert v. Merrill Dow Pharms., Inc.*, 509 U.S. 579 (1993), *Gonzales v. O Centro Espirita Benevicente União Do Vegetal*, 546 U.S. 418 (2006), the Plaintiffs' Memorandum in Support of Preliminary Injunction, and the Brazilian government's CONFEN Report. I have familiarized myself with relevant passages in the Reference Manual of Scientific Evidence.

Epistemology is important in cases where testimony of scientists is involved because of the standards that have been adopted since *Daubert vs. Merrill-Dow*. Rather than adopt an arbitrary and narrow standard based upon general acceptance, decisions are to be based upon whether the scientific method has been properly followed. Putting that into action is somewhat difficult, because philosophers and scientists alike are not in full agreement as to what the scientific method is, or how to implement it. Indeed, standards differ from discipline to discipline and different standards may be adopted by competing schools. Nonetheless it is generally agreed that the premises of arguments are supposed to be true, and that the conclusions are justified by the arguments. It should be emphasized that we are not here concerned with the merits of the case as such, but rather with the admissibility of evidence provided by the plaintiffs and the defendants.

The government witnesses have sometimes been unclear, in the documents here discussed, what the litigation is about, and that sometimes that has led to logical errors such as the fallacy of irrelevant conclusion. A few important points that need to be emphasized should therefore be mentioned at the outset. The right of the plaintiffs to consume the substance in question has already been established by the Supreme Court. It

is a situation in which benefits (religious freedom) have been given priority over possible harm might be done. According to the law, the Church has a right to use the material in question in the context of its rituals. The defendants are being sued on the grounds that they are unlawfully depriving the plaintiffs of their established legal rights. Whether and to what extent the use of such substances should be discouraged is not an issue in the present litigation.

The logic of the situation is that the plaintiffs want to use the substance for a very limited purpose, i.e., as sacramental tea. The defense witnesses maintain that all sorts of imagined harm will occur if it is used for recreational or therapeutic purposes, if it is taken in higher doses than the plaintiffs employ, if it becomes a source of pure DMT, if there are as yet unforeseen consequences to developing organisms, and on and on. Blocking the importation of the tea for any use whatsoever, as the defendants have been doing, would of course be one way of preventing undesirable effects. But such arguments, which implicitly presuppose that the ends justify the means, are irrelevant. I am advised that in order for the defendants to ban the tea they must give sound scientific reasons for concluding that there will be significant harm to a significant number of church members who imbibe the tea as the Santo Daime's sacrament at their ceremonies, and that the tea poses a significant risk to public health. However, *Gonzales v. O Centro* makes it clear that these necessary conditions having to do with health are not in and of themselves sufficient, and contains guidelines as to what might be considered "significant" in such contexts.

The witness statement of Nicholas V. Cozzi reports on a quantitative analysis of a sample of ayahuasca tea seized from one of the plaintiffs. By simple arithmetic he arrived at the conclusion that an aqueous infusion of the substance would yield a brew containing an amount of dimethyltryptamine sufficient to induce psychoactive effects if somewhere between 100 and 150 ml. were consumed. This measurement, which suggests that the amount of tea that is consumed does not provide a strong dose is quite straight forward and should be admissible as evidence. In a witness statement on behalf of the plaintiffs Dr. Cozzi responds to the suggestion by a witness for the defense that one might obtain more of the active ingredients or a more potent preparation by extracting the material using different methods and otherwise manipulating it. Be this as it may, such possibilities have no bearing on the question of whether the Church should be allowed to obtain and use the material in question.

Another document submitted on behalf of the plaintiffs is a clinical study by John H. Halpern, Andrea R. Sherwood, Torsten Passie, K.C. Blackwell and James Rutenber. The Church asked that a study be made of their congregation to assess the effects of the tea on their health. The volunteer subjects were given various tests and psychiatric interviews. It was concluded that the members' mental health compared favorably with the general population. The study is admissible as evidence provided that its fully acknowledged limitations are recognized, and what conclusions are supposed to bear upon the case.

The Supreme Court has ruled that use of such substances is legal on the grounds that the possible or potential harm is not sufficient to outweigh the considerations of freedom of religion. A study of this sort documents the claim of the Church that its current members, at least, are using the substance in a way that justifies treating it as sufficiently innocuous that its use in rituals is justified. In other words, the material is not being abused as the defendants have suggested that it might be. This research extends and substantiates earlier studies that have been done in Brazil where the tea has been extensively used and over a long period of time. These include the CONFEN report, which found that the church members were law abiding citizens and that the ritualistic use of the tea did not harm its users but rather seemed to benefit them. This is not lack of evidence for harm being done, but evidence that the tea can be used without adverse effects. The defense experts have not given adequate reason to reject these findings, which give a picture very much like that for peyote, a substance that is permitted under existing law.

In his Witness Statement, Alexander Walker, M.D. attempts to discredit Halpern's study and statement. His approach is to invoke epistemological criteria that are routinely used by practitioners of his particular discipline in efforts to show that a new drug is safe to use. These include various ways of avoiding subjective bias and other measures that increase the reliability of a study but are not a necessary condition for admissibility as scientific evidence. For example, Dr. Walker suggests that the use of informed interviewers does not meet the standards of scientific evidence. But such observational work is routine practice among anthropologists and psychiatrists. He couples this criticism with the *ad hominem* argument claim that Halpern's work is biased by virtue of the fact that he is an advocate for the rights of the plaintiffs. But the effects of such potential bias on the study under consideration are not substantiated.

Dr. Walker's methodological strictures have to do with maximizing the probability that the dangers inherent in the use of a substance are detected and he argues that because of methodological "defects" along such lines the evidence is insufficient to establish that the substance is safe. The purpose of Halpern's study, however, was not to establish that the substance is safe, but rather that in this particular case there is no evidence of harm having been done. Because the study was limited to the persons who volunteered as subjects, a brief discussion of Dr. Walker's interpretation is useful.

Dr. Walker proposes that the sample of church members differs in social and psychological respects from the general population. On that basis he asserts that the conclusions are "speculative at best." The suggestion that it would make a difference is itself speculative guesswork, an *ipse dixit*. The exclusion of former members from the study is another problem. Dr. Walker suggests that suffering harm would be a reason for leaving the Church and that, therefore the persons who have suffered the most harm are less represented. One could just as well speculate that whenever anyone suffers any adverse effect they leave the Church and therefore suffer less harm rather than more of it. His complaints about leaving certain persons out of the study highlight limitations that had freely been acknowledged but are irrelevant with respect to the arguments before the court.

Walker treats the small sample size as if it were a serious methodological flaw without clearly explaining what the problem is. The larger the number of observations the greater the probability of detecting infrequent events. Were the goal of the study to establish that there are no such rare events, which it is not, that would be a legitimate criticism. But even then, that would not be grounds for rejecting the evidence as inadmissible; instead the limitations in the study protocol might reduce the weight that the court might attach to the conclusions drawn from the data. The argument is simply that whatever the risks may be, the group under study appears not to be suffering any harm from this religious practice. Such negative results to be sure do not rule out the possibility of undesirable consequences. They do, however, provide evidence, as have earlier studies, that the putative harm is a matter of conjecture, not fact. The burden of proof with respect to the proposition that it is harmful rests with the defendants. Irrespective of Walker's ability to evaluate whether or not a study is methodologically pure from his own perspective, his methodological animadversions are beside the point. His entire argument is logically flawed and therefore inadmissible as evidence.

In his Witness Statement Donald R. Jasinski likewise treats the substance in question as if it were being evaluated for medicinal use. Such research is obviously an important goal of the medical research community, which aims to reduce the amount of risk that might occur from the use or abuse of a substance. At the outset it should be noted that the litigation does not concern whether the substance in question should be approved for therapeutic use. Rather it is whether the plaintiffs should be allowed to continue to consume a substance that has already been approved for use in religious rituals. Nobody is contesting the desirability of exercising prudence in the use of natural products, or for that matter in the conduct of life in general.

Dr. Jasinski provides a brief overview of some of the topics of interest. He categorizes dimethyltryptamine, one of the active ingredients in the ayahuasca tea, as an LSD-like hallucinogen. Because it falls under a class having some properties in common, he claims that one may extrapolate from the properties of one substance to those of another. But since minor differences in the structure of a molecule can have important consequences on its physiological and other effects, such extrapolation is itself of only limited validity. He admits that dimethyltryptamine has not been adequately studied. The legal classification that he presents reflects the position that is taken by regulatory agencies on the basis of no therapeutic use for it having been approved, but it is again irrelevant to the question of whether the Church has the right to use it for some other purpose.

Dr. Jasinski goes on to argue that dimethyltryptamine can be, and indeed has been, abused. He characterizes DMT and other members of the class as having "pharmacological characteristics seen with drugs such as alcohol and opiates that lead to abuse, regardless of the lack of evidence of physiological dependence." But it is common knowledge that alcohol and opiates, and for that matter other alkaloids such as caffeine, are not necessarily abused by their users. And indeed he goes on to discuss all sorts of ways in which those who abuse the class of substances to which the active

ingredients in the tea belong suffer ill effects. But describing the effects of abuse is irrelevant to the case, for there is no evidence that the substance in question is in fact abused by the Church.

The Witness Statement of Jerry Frankenheim again presents the testimony of a medical professional. Dr. Frankenheim remarks that both Dr. Halpern and Dr. Cozzi have received funds from the plaintiffs. Such an *ad hominem* argument might be applied *a fortiori* to him, for he remarks: "It is in this teaching capacity that I am presently serving the U.S. Department of Justice. Since this is part of my official job responsibilities, I am receiving no extra pay for it." He is, nonetheless, getting remunerated for his services to the defendants. Furthermore, he makes the following remarkable statement "However, drug abuse, in the context of drug scheduling, is not defined solely by scientific criteria; it is defined primarily by society and its laws. Thus, ayahuasca use is 'abuse' because society in the U.S. has decided it is, and tobacco use by adults is not drug abuse if society says it is not. The latter situation appears to be changing as U.S. society disfavors tobacco use. As to whether ayahuasca use will continue to be considered abuse is the matter currently before the court, at least in the context of ayahuasca churches." Dr. Frankenheim does not specify what is meant by "society" and his statement has nothing to do with scientific evidence. Furthermore, a segment of society, including the defendants in this case, have noted that when mescaline is taken in the form of peyote by Native Americans in their sacrament, they refer to it as a "non drug use." There is an implicit value judgment to the word "abuse," but the harm that a substance causes is unaffected by whether anybody approves or disapproves of it. It is not a question of whether the use of ayahuasca is abuse, but rather of whether the advantages to allowing it to be used for a particular purpose outweigh the disadvantages.

The claim that ayahuasca use is considered abuse by "society" reflects the value judgment of a faction within society, of which Dr. Frankenheim is a representative by virtue of his employment. The court is not being asked to redefine a word. He advocates what he calls a medical model, according to which, he says, "the onus is on the appropriate scientific and medical institutions to demonstrate positive reasons to introduce a drug into society." On the face of it this looks like just an admission that the burden of proof lies with the defendants. There is a subtle distinction that might be overlooked in this context however. The medical institutions are responsible for evaluating the medical consequences of such actions on a strictly scientific basis, not to make such value judgments as to whether the risks outweigh the benefits. This is particularly important where broader issues are concerned than the purely medical ones. He states that no benefits to the use of ayahuasca have been shown scientifically. The obvious counter-example is that it allows the users to have mystical and religious experiences. According to his system of values, that may not seem like a benefit, but the case is not being tried in the light of his personal opinion. Such a value judgment is not legitimate scientific evidence.

Dr. Frankenheim tells us that the use of peyote by the Native American Church is not a "valid precedent" for the practices of The Church of the Holy Light, because the substance in question contains more than one principle drug, rendering "any comparison between the two substances useless." Ironically other witnesses for the defense argue that there is indeed a strong analogy between the different LSD-like hallucinogens and

that we can and should extrapolate from one to another. The question, however, is whether there is a legal precedent, and on the basis of the effects of the substances in question the issue has already been decided by the Supreme Court. Dr. Frankenheim's argument strategy is to take his medical model as the basis for establishing what is permissible. He then attempts to show that there are various kinds of harm that might result from the use of the substance in question and on that basis to argue that the Church should be denied its legal rights. These are often purely speculative. They may result from practices in which the plaintiffs do not engage. And sometimes they are beside the point. Accidents, he says, have occurred during LSD use. Accidents occur while people are drinking water. People sometimes choke on food. An overdose of caffeine may be fatal. Dr. Frankenheim presents no grounds for concluding that the risks are sufficient to outweigh the advantages with respect to freedom of religion as guaranteed by the constitution and upheld by the courts. And finally, no consideration is made of alternatives to the actions of the defendants, who are denying access to the substance in question by this particular group of people.

Symptomatic of all the defense expert reports that I have reviewed is a failure to address the quantitative issue of what constitutes "significant" harm within the context of the legal and socioeconomic rationale of the relevant legislation (the Religious Freedom Restoration Act of 1993) and the decision of the Supreme Court. In that conceptual framework it is recognized that various costs, benefits, and tradeoffs are involved. The mere fact that risks can be enumerated does not tell us how great the risks are, and even that does not tell us what level of risk should be tolerated. It is for that reason that certain standards, or criteria, that strike a balance among various needs, including health, but not limited to it, have been established. Here the relevant, quantitative, standard that has been accepted is peyote. More than just scientific judgment has been involved in setting that standard. But it is obviously the one that is called for in the present case. Scientific evidence can establish whether the standard has been met, but the defendants' expert witnesses fail to address that very issue.

Thus the defendants show a consistent pattern of applying arguments which, in other contexts, might well be considered legitimate. They fail to address the substantive issues. The defendants' expert testimony is speculative and irrelevant, and therefore inadmissible under the guidelines provided by *Daubert versus Merrill-Dow* and its progeny.

Respectfully Submitted,

/S/ Michael t. Ghiselin  
Michael T. Ghiselin, Ph.D.  
January 7, 2009

Dated this 7<sup>th</sup> day of January, 2009.

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Education

Public schools, mainly in Salt Lake City, Utah.  
B. A. with honors, June, 1960, University of Utah(Zoology).  
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Post-doctoral Fellowships and Positions

Research Fellow in Malacology, Museum of Comparative Zoology,  
Harvard University, September, 1964 through August, 1965.  
Postdoctoral Fellow in Systematics, Systematics-Ecology Program,  
Marine Biological Laboratory, Woods Hole, 1965-1967.  
Assistant Professor of Zoology in the University of California,  
Berkeley, July, 1967, Associate Professor, 1974-1978.  
Guggenheim Fellow, 1978-1979.  
Research Professor of Biology, University of Utah, 1980-1983.  
MacArthur Prize Fellow, May, 1981-1986.  
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Miscellaneous Activities, Awards, Etc.

Early Admissions Program and Senior Library Prize, University of  
Utah.  
Graduate Teaching Assistant in elementary botany, invertebrate  
zoology, parasitology, and natural history of marine animals.  
N.I.H. Pre-doctoral Trainee, Hopkins Marine Station, Stanford.  
Student Participant, International Indian Ocean Expedition,  
1963.  
Visiting Investigator: Seto Marine Biological Laboratory of  
Kyoto University, 1963; University of Puerto Rico at Mayaguez,  
1965, 1984; Stazione Zoologica di Napoli, 1968, 1992, 1993,  
1994, 1995, 1996, 1997, 1998, 1999; Cambridge University, 1971,

1973, 1981; Plymouth Laboratory, Marine Biological Association, 1971; School of Epistemics, University of Edinburgh, 1978-79; Indiana University, 1984, 1985, 1986; Christensen Research Institute, Madang, 1986, 1987, 1992; Istituto per la Chimica di Molecole di Interesse Biologico, Arco Felice, Naples, Italy (subsequently Istituto di Chimica Biomolecolare, Pozzuoli, Naples, Italy 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008; Institut für Geschichte der Medizin, Naturwissenschaft und Technik, Jena, Germany, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007

Visiting Professor: Istituto di Genetica Biochimica ed Evoluzionistica, Pavia, May, June & July, 1985; University of California, Irvine, January - June 1990, 1991; Institute André Koyré, Paris, November 1997; Santa Chiara Chair in Bioeconomics, University of Siena, April, 2008.

Fellow: Wissenschaftskolleg zu Berlin, 1987-88 academic year. Teaching experience in marine biology, invertebrate zoology, general biology, and history and philosophy of science.

Pfizer Award of the History of Science Society, 1970.

Former member of the editorial boards of Systematic Zoology, Journal of Evolutionary Biology, American Naturalist. Currently of Evolutionary Theory, Molecular Phylogenetics and Evolution, History and Philosophy of Life Sciences, The Behavioral and Brain Sciences, and Behavior and Philosophy. Co-Editor, Journal of Bioeconomics.

Principal Investigator, N.S.F. Grant GS-33491 "The Impact of Darwinism on Comparative Anatomy" 1972-1976. Co-P.I., N.S.F. Grant BSR 86-16582 "Metazoan Phylogeny by rRNA Sequencing" 1986-1988. Principal Investigator, N.S.F. Grant BSR 8614593 "Parallel Evolution and RNA Sequencing."

Member American Society of Naturalists, American Society of Zoologists, History of Science Society, Paleontological Society, Society for the Study of Evolution, Society of Systematic Biology, Philosophy of Science Association and other professional organizations.

Fellow, American Association for the Advancement of Science

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Reading knowledge of French, German, Russian, Italian, Spanish  
Limited ability to converse in French

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**CERTIFICATE OF SERVICE**

I hereby certify that I served the foregoing STATEMENT OF MICHAEL T.

GHISELIN, Ph.D. on:

Eric Joseph Beane / Brigham J. Bowen / Julie Straus / Lily Farel  
Civil Division, Federal Programs Branch  
U.S. Department of Justice  
P.O. Box 883, Room 7124  
Washington, DC 20044  
Attorneys for Defendants

by mailing a copy thereof in a sealed, first-class postage prepaid envelope, addressed to each attorney's last-known address and depositing in the U.S. mail at Portland, Oregon on the date set forth below;

by causing a copy thereof to be hand-delivered to said attorneys at each attorney's last-known office address on the date set forth below;


by sending a copy thereof via overnight courier in a sealed, prepaid envelope, addressed to each attorney's last-known address on the date set forth below;

by faxing a copy thereof to each attorney's last-known facsimile number on the date set forth below; or

by filing electronically via the court's CM/ECF system.

DATED this 7<sup>th</sup> day of January, 2009.

TONKON TORP LLP

By   
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