Iridology: Diagnosis or Delusion?

Does the iris really record the health of each organ? An examination of a medical pseudoscience of rising appeal.

Russell S. Worrall

For centuries the eye has been said to be the mirror of the body and the soul. Terror and love are expressed through the eyes; and the general state of health can be reflected in the eyes, as in the vacant, glassy stare of the gravely ill. Today, a more precise analogy would be to describe the eye as a window rather than a mirror. The eye is an optically clear porthole that allows one to view body tissues, such as blood vessels and nerves, in their undisturbed state. The subject of this paper, iridology, proposes a more elaborate analogy—specifically, that the iris of the eye is a gauge registering the condition of the body's various organs; or, as Jessica Maxwell describes it in her book *The Eye/Body Connection*, the iris is "an organic Etch-a-Sketch" (Maxwell 1980, p. 12).

Iridology, pronounced "eyeridology," is the "science" of reading the markings or signs in the iris (the colored part of the eye) to determine the functional state of the various components of the body. It is not unique; other, equally sophisticated systems of belief exist utilizing the soles of the feet, the ear, the palm [see *SI*, Winter 1982-83], and the spine. A common theme unites these varied techniques. They are noninvasive (you do not have to be punctured or sliced into!) and they each involve a specific area of the body's surface, which when read by a "well-trained" practitioner reveals your innermost health problems. Elaborate charts (suitable for framing) that guide the practitioner and impress the patient are the centerpiece of each method.

Iridology may have its origins in antiquity, or more recently in Russia, as suggested by the *National Enquirer* (1978), but Dr. Ignatz von Peczely, of Hungary, is generally held responsible for developing and promoting

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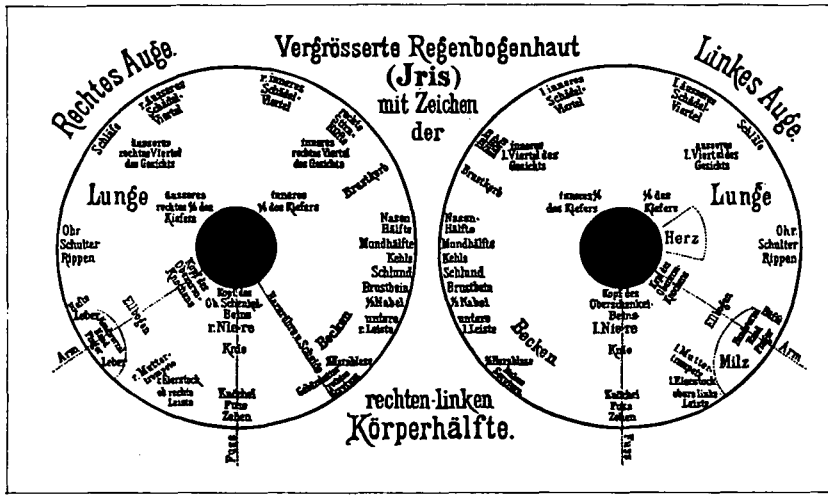

FIGURE 1. An iris chart developed by von Peczely.

the modern "science" of iris diagnosis. According to the story, the miraculous discovery of the iris-body connection came when, as a boy of ten, Ignatz accidently broke the leg of an owl and a black stripe spontaneously appeared on the owl's iris. He went on to develop charts based on his clinical observations (see Figure 1) and published a book on the subject (Von Peczely 1866).

In the United States, Bernard Jensen has been the most influential proponent of iridology. His book, *The Science and Practice of Iridology* (Jensen [1952] 1974), has been the authority on the subject since its publication in 1952. His new book, *Iridology: The Science and Practice in*

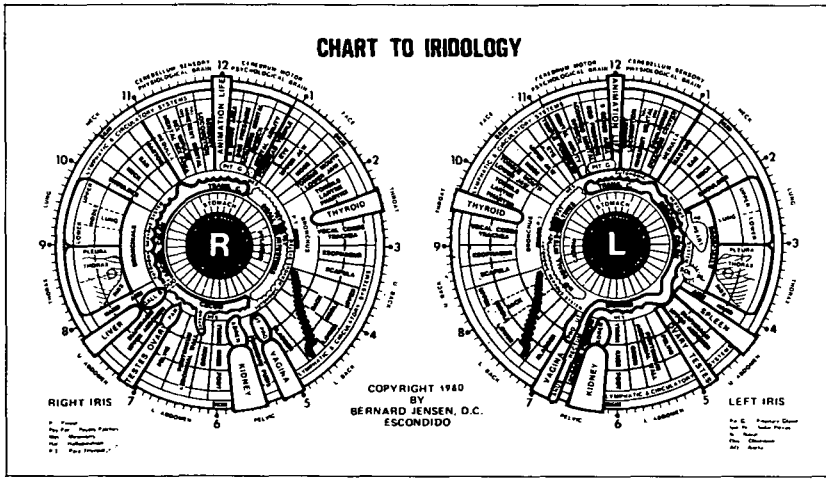

FIGURE 2. Iridology chart by Jensen (Jensen, *Iridology Simplified*, Iridologists International, 1980).

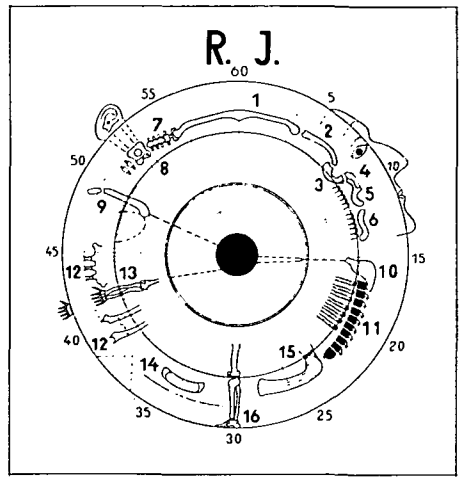

FIGURE 3. Schematic representation of the Bone Zone of the right eye by Kriege: (1) Cranial bone. (2) Frontal bone. (3) Orbit. (4) Nasal bone. (5) Upper jaw and teeth. (6) Lower jaw and teeth. (7) Cervical vertebrae. (8) Ear. (9) Shoulder and clavicle. (10) Scapula. (11) Spine and ribs. (12) Sternum and ribs. (13) Hand and arm bones. (14) True pelvis. (15) Pelvic crests. (16) Foot and leg bones. (*Fundamental Basis of Irisdiagnosis*, trans. Priest, Fowler Co., London, 1975, p. 102).

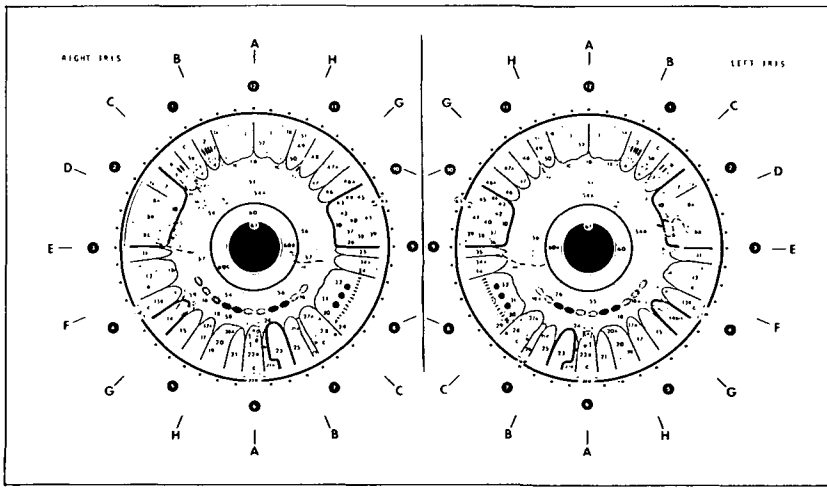

FIGURE 4. Basic European Iridology chart by Korvin-Swiecki. Some examples from the chart: (1) Cerebrum. (2) Cerebellum. (5) Ear. (6) Neck, throat. (8) Lungs. (9) Heart. (B) Aorta. (14) Liver. (16) Pancreas. (23) Kidneys. (27A) Uterus. (42) Larynx. (53) Autonomic nervous system. (54) Ascending colon. (58) Appendix. (59) Gallbladder. (60) Stomach. (61) Central nervous system. (62) Circulatory and lymphatic system. (Jessica Maxwell, *The Eye/Body Connection*, Warner Books, New York, 1980, pp. 60-63)

the Healing Arts, vol. 2 (Jensen 1982), is a 580-page epic detailing the history, "science," and application of iridology. Dr. Jensen's updated charts (see Figure 2) are the standard in the United States. European charts, though more detailed and exacting, follow the same general format

as illustrated by Kriege's (1975) Bone Zone Chart (Figure 3) and Korvin-Swiecki's charts (Figure 4) shown in *The Eye-Body Connection* (Maxwell 1980). This pseudoscience has been popularized by many recent books and articles, including a story in the *National Enquirer* (1978) with a typically dramatic headline: "Do-It-Yourself Eye Test That Can Save Your Life." All these reports are blandly neutral or, more commonly, outright enthusiastic about this purportedly marvelous diagnostic procedure. Only two papers present a critical view based on controlled scientific studies, the results of which are not astonishing to the skeptical inquirer.

The philosophical, scientific, and clinical ramifications of iridology are succinctly stated by Harri Wolf (1979, pp. 7-8), founder of the National Iridology Research Foundation, in the introductory remarks of his *Applied Iridology:*

> Now wouldn't it seem *logical* [emphasis added] that through some creative design, or evolutionary process (whatever the reader's preference), the human body would be equipped with a metering device functioning as a gauge in regard to the health of the individual?
>
> Each of us is, *in fact* [emphasis added], equipped with just such a miniature recording screen—the iris. Via the direct neural connection of the surface layers of the iris with the cervical ganglion of the sympathetic nervous system, impressions from all over the body are conveyed to the iris. Thus is established the neuro-optic reflex.
>
> Iridology, as the study of the neuro-optic reflex is known, is the art/science of *revealing* [emphasis added] pathological, structural and functional disturbances in the body.

The Philosophy and Logic

The claim that iridology is a logical, natural system is central to iridology philosophy. As Jensen (1981a, p. 2) writes, "We must realize that iridology represents a law of nature that cannot be changed. I believe that it is just as immutable and unchangeable as any of the laws that govern the universe." When viewed from a critical perspective, the logic in iridology begins to fade. First, a gauge or metering system has to be read and understood to be useful. The iris of the eye is certainly inaccessible to all of earth's creatures, including man (unless he happens to have a mirror handy). Further, the iris signs are so complex as to be unintelligible to all but those who have been enlightened by von Peczely's theories. In short, there is no logical evidence to support a claim of functional utility for this complex biological system purported to exist in many diverse organisms, including man.

This apparent lack of utility to the organism exposes a more fundamental flaw in the logic of iridology when it is considered in the context of the evolutionary process. A physiological subsystem such as the suggested iris-body connection would be developed and refined under the gradual pressures exerted by natural selection. For such a system (more

properly the gene pool that codes for the system) to have evolved in many diverse species, a distinct survival advantage had to be present for the organisms with this system. This is an assumption for which I can offer no logical arguments. Certainly the saber-toothed tiger derived little benefit from this amazing metering system, nor does today's modern owl.

The Science

A second theme in iridology is that, as Wolf states, the neuro-optic reflex exists "in fact." The facts supporting the existence of the neuro-optic reflex are tenuous at best. It is postulated by Wolf (1979, p. 7) that the sympathetic division of the automatic nervous system mediates the iris response. D. Bamer (1982, p. 22) includes the parasympathetic division in his theory and offers an anatomical diagram to support his claim (see Figure 5). In a gross anatomical sense the autonomic system does interconnect and enervate almost every segment of the body, including the eye. However, anatomical interconnection does not imply functional connection any more than having a telephone in your home is proof of the proposition that you receive all of the calls intended for the president of the United States. Further, the autonomic nerves supplying the eye are of small caliber and would not seem to have adequate numbers of nerve fibers to handle the volume of information presumed to reach the iris. Anatomical, physiological, and clinical studies have eloquently

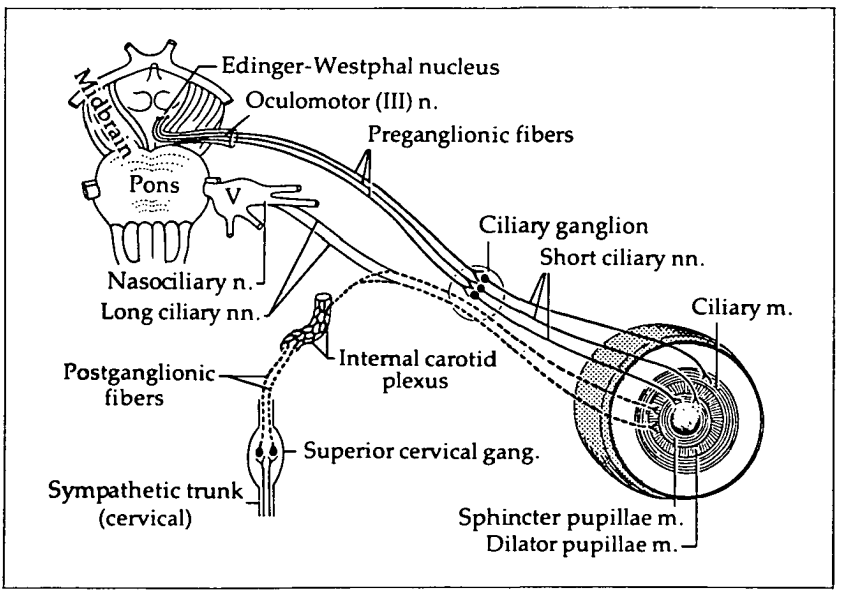

FIGURE 5. Anatomical diagram by Bamer (*Applied Iridology and Herbology*, BiWord Publishers, Orem, Utah, 1982, p. 22)

demonstrated the functional neural pathways involved in many of the eye's control and response mechanisms, but published studies report no evidence in support of a functional iris-body connection (Moses 1975; Last 1973). Though these investigations were not specifically looking for a neuro-optic reflex, given the quality and quantity of information postulated to appear in the iris it is curious that even accidental detection of this elaborate system has eluded researchers.

One aspect of the functional theory, as expressed by Jensen, is especially interesting in light of well-established neurological evidence. Anatomists and physiologists have long known that as a general rule the central nervous system is functionally split, with each side controlling and monitoring the opposite side of the body. In iridology it has also been "established" that each eye "sees" its own side of the body. Thus a conflict is created for iridologists in explaining the flow of information over the autonomic pathways that cross to the opposite side as they travel through the central nervous system. To explain this apparent difficulty, Jensen proposes that the optic nerve serves as the final link between the autonomic system and the iris (see Figures 6 and 7). Since the optic nerve crosses between the eye and the brain, information from an organ would make a second crossing on its way to the iris and register on the same side that it originated from. Jensen (1980, p. 3) also infers that the large size of the optic nerve would provide the needed transmission capacity to account for the flow of information to the iris. Thus, with Jensen's assumptions, iridology theory seems to agree with anatomical evidence!

The assumption that the optic nerve mediates the final leg of the

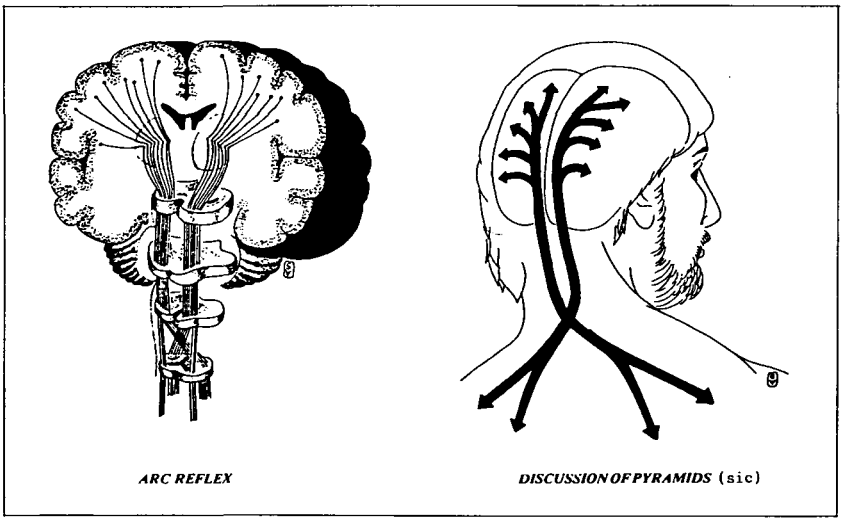

FIGURE 6. The first crossing in the autonomic system according to Jensen. (*Iridologists International Manual for Research and Development*, Iridologists International, Escondido, Calif., 1981, p. 25)

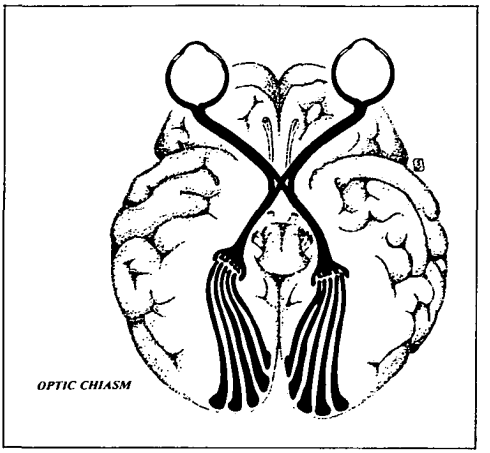

FIGURE 7. The second crossing in the optic nerve according to Jensen (*Iridologists International Manual for Research and Development*, Iridologists International, Escondido, Calif., 1981, p. 27)

neuro-optic response solves the iridologists' theoretical dilemma by creating a double cross, but at the same time the assumption raises serious questions by anyone familiar with the tremendous body of literature published on the visual pathways. The visual system (including the optic nerve) is probably the most intensively studied and best understood neural system in the body. The Nobel Prize recently awarded to Hubel and Wiesel was the result of many years of work on this intriguing system. All of the accumulated research unequivocally demonstrates that the mammalian optic nerve is primarily an afferent pathway, that is, one in which the signals travel from the eye to the brain. There is no evidence suggesting that any fibers from the optic nerve make connections with the iris. This, combined with the fact that only half of the fibers in the optic nerve cross, makes the proposition that the optic nerve is the final link to the iris untenable (Moses 1975, pp. 367-405).

This double-cross hypothesis is characteristic of the "scientific" evidence presented in Jensen's new text. This volume contains countless misinterpretations of established anatomical and physiological knowledge and includes references to many pseudosciences, such as Kirlian photography and personology (Jensen 1982, pp. 88, 491).

This pseudoscience rises to the level of the ridiculous with the proposition that the iris can communicate information back to remote organs. D. Hall (1981, pp. 210-11) describes the "removal of function" following the surgical removal of a piece of iris tissue in glaucoma or cataract surgery. She says, "As sure as eggs, the iris zones affected will be down in function and maybe in structure too." As D. Stark (1981, p. 677) points out, "This can only be the case if the iris not only reflects but also controls bodily function, which is patently absurd."

Clinical Considerations

Though the gossamer theoretical structure that underlies iridology is apparent to the critical inquirer, proponents and practitioners continue to sell iridology as a "valid" clinical procedure. As Wolf (1979, pp. 7-8) states, iridology as a clinical tool reveals "pathological, structural and functional disturbances in the body." Jensen (1981a, p. 2) adds that "iridology is unique in its ability to make a subclinical evaluation, whereas the medical point of view only recognized lab test verification of dysfunction." Although Jensen mentions "diagnosis" in many of his writings, he qualifies this by stating (1981b, p. 16) that "iridology does not diagnose disease in the sense that Western medicine does, nor does it label combinations of symptoms with disease names." A paper by Fernandiz appearing in the same journal (published by Jensen) is titled "Hemicrania (Migraine) and Its Diagnosis by Means of the Iris"! Such double talk does not cover the reality of the fact that iridology is a clinical technique purported to determine functional states within the body for the purpose of recommending a course of corrective treatment.

Confusion is the first order of business in the clinical application of iridology; for, as Stark (1981, p. 677) notes, there are many iris charts (more than 19) and this "presents the first diagnostic dilemma—which chart to choose." Although most charts are in general agreement on major landmarks, such as the leg area being represented at the six-o'clock position, there are also many differences in both location and interpretation of iris signs (compare Figures 2-5).

Acknowledging the lack of objective clinical evidence, in a recent article Jensen (1981a, p. 1) says, "At the present time, we have no exact way of proving anything other than in a phenomenological manner that what we know and see is true." Thus, in support of the efficacy of iridology, proponents have published endless numbers of anecdotal case reports.

Medicine has long used clinical observation to support claims of observed phenomena even when detailed knowledge of the underlying functional processes are not fully understood. To ensure reliable reproducible results, clinical investigators have adopted strict rules in the form of controlled clinical studies. The controls are chosen to remove, to the extent possible, the inevitable bias of both the patient and the practitioner, to isolate the procedure or medication, and to provide subject groups of adequate size to make statistical comparisons. The controlled clinical study is not, as promoters of iridology suggest, a tool developed by Western medicine to attack unorthodox procedures (Jensen 1981b, p. 20), but in fact it is universally accepted and applied in all areas of scientific inquiry.

The design of a controlled clinical study of iridology would at first appear relatively simple, especially in light of Jensen's (1974, p. 2) comment that "iridology can diagnose a patient for the doctor if he has a perfect colored photograph showing three-dimensional depth of the

patient's eye. The patient need not be present." Utilizing photographs in a study effectively isolates the iridologist from the patient, thus limiting the data available to only that obtained from the iris appearance. This eliminates the possibility that direct observation might provide information from general physical appearance and also prevents items of pertinent history from being inadvertently divulged, as is commonly observed in "cold readings" by psychics. The difficulty develops when a standard criterion for the diagnosis of the condition in question is established, as illustrated in the following discussion.

Establishing a standard diagnosis with which to compare the validity of iridology may well be impossible. First, as was quoted above, iridology claims to be able to make a subclinical diagnosis, that is, before symptoms or measurable signs develop. In addition, Jensen (1974, p. 12) adds: "Many times the conditions revealed in the iris today will not be apparent in the body for years to come, but time will inevitably show the analysis to be correct." Thus the proponents of iridology have an excellent but inherently unprovable explanation for the high rate of overdiagnosis (false positives) in controlled studies.

There is also little common diagnostic ground, because many of the conditions detected by practitioners of iridology are "diseases" whose existence has been disputed or discredited by scientific investigation. A common finding is a toxic bowel settlement (which is treated with procedures of questionable value, such as colonic irrigation!); however, the toxic settlement theory of disease was soundly discredited in the early part of this century (Ratclift 1962, p. 52). Thus from a critical perspective it would be difficult to agree on a standard diagnosis where the existence of the disease itself is in dispute.

Though the clinical application of iridology is widespread, the results of only two controlled clinical studies have been published. At the University of Melbourne (Australia), D. Cockburn compared iridology evaluations with known medical histories. The most interesting phase of his study had iridologists evaluate before-and-after iris photographs of subjects who developed an acute disease. He asked the iridologists to determine if a change in the iris had occurred and, if possible, to tell which organ was affected. The only set of photographs determined to have changes was a set taken as a control on the same subject two minutes apart! Cockburn (1981, p. 157) states, "It must be concluded that, at least for the subjects of the prospective trial and for the acute stage of the disease states represented, there were no detectable iris changes of the type depicted in the commonly used iris diagnosis charts."

At the University of California, San Diego, A. Simon, D. Worthen, and J. Mitas (1979) compared the accuracy of iridology based on the reading of color slides for the detection of kidney dysfunction. A blood chemistry test (creatinine level) was used as the standard for assessment of kidney function. Photographs of 143 subjects (48 with kidney disease) were read by three iridologists and three ophthalmologists. The overall record

for hitting a correct determination was no better than chance when the number of incorrect and correct determinations were compared. In conclusion the authors state, "Clearly, none of the six observers in this study derived data of clinical importance or significance" (p. 1389).

Jensen, one of the iridologists participating in the San Diego study, has written several critical commentaries on the results. His first criticism was the poor quality of the photographs; however, at the time of the study he did not decline to read them. He also disputes the validity of the creatinine test as an indication of kidney function, though it is widely accepted and routinely used by orthodox practitioners. He asserts that the creatinine test has been around for 10 to 12 years, whereas iridology has been in use for more than 125 years (Jensen 1981c, p. vi). Jensen seems oblivious to the fact that the amount of time a test has been in existence has no relevance to its validity.

As further evidence of the clinical value of iridology, Jensen cites the work of Romashov and Velkelvor of the USSR (*National Enquirer* 1978), who reported a 95-percent accuracy in 1,273 subjects with diagnosed disease. He also states that Deck in Germany has reported a 92-percent efficiency in the detection of kidney disease through iris diagnosis (Jensen 1981c, p. 19). Jensen does not describe the details of these investigations, the nature of the controls, or the standards used for diagnosis. These are important, because one iridologist in the San Diego study also could boast of having correctly identified 88 percent of those with kidney disease. Unfortunately, he reported that 88 percent of the normal subjects included in the study as a control were also suffering from kidney disease (Simon, Worthen, and Mitas 1979, pp. 1387-88). Therefore, without specific details of the design, the use of these studies is of no value when offered in support of iridology.

To enhance the image of iridology by association with an accepted clinical technique, Jensen (1981c, p. i) writes: "The fundus examination, which has been accepted by ophthalmologists, reads the arterial circulation. Similarly, iridology reads the iris stroma . . ." The word "similarly" is loosely applied in this analogy. The fundus examination is a routine medical procedure using a special optical instrument (ophthalmoscope) that provides a view of the interior lining of the eye through the pupil. Body tissues, including blood vessels, can be studied undisturbed, an opportunity not afforded elsewhere on the body. The changes in arterial appearance in the eye represent a local manifestation of a more generalized vascular disease. No specific reflexive communication with remote body organs needs to be postulated to explain this or any of the many other observed phenomena in a traditional fundus examination.

Science or Rhetoric

In his rhetorical war with "Western" medicine Jensen (1980, p. 2) writes: "Iridology is based on scientific observation. It is the kind of science that

cannot be related through scientific tests, for it does not provide clinical information." If this non sequitur does not deter all of those inclined to subject iridology to controlled clinical studies, Jensen (1981c, p. vi) adds the ultimate argument used by practitioners of all unorthodox procedures. He writes: "Iridology can only be judged by those who use it properly. Iridology has not been properly used by those who have criticized and say it fails the test." In other words, you have to be "sensitive" to the technique to ensure favorable results!

Even though proponents may have used iridology "properly" since Von Peczely published his theories in 1866, they have failed to publish even one well-documented study to support the validity of any of the information presented on their iris charts. Since efficacy has not been established, the ultimate question faced by practitioners of iridology is one of ethics in their relationship with patients.

Harmless Fad or Health Hazard?

It is clear from a logical, theoretical, and clinical perspective that iridology is a pseudoscience of no clinical value. Unfortunately, the use of iridology by unorthodox practitioners is all too common today, and the unsuspecting and often vulnerable patient in the clinical application of the "science" is the recipient of its presumed benefits. In my private practice and as a member of the faculty of the School of Optometry at the University of California, Berkeley, I have been increasingly alarmed by the growing popularity and acceptance of iridology as a diagnostic tool. This is an area of great concern to everyone in the health professions, because acceptance of this pseudoscience can lead an individual to delay needed treatment when a false-negative diagnosis is made (i.e., when a disease is present but not detected). This would appear inevitable given Jensen's recent advice on the differential diagnosis of appendicitis. He writes: "When trying to distinguish between appendicitis and cecal inflammation, we must carefully examine the area at five o'clock in the right iris. Many cases of cecal inflammation have been incorrectly diagnosed as appendicitis, but the iris reveals the location of the inflammation" (Jensen 1982, p. 235). (Remember Jensen claims not to diagnose!) A delay created while treating "cecal inflammation" could prove fatal if appendicitis is the correct diagnosis. On the other hand, when a false-positive finding is reported (i.e., when a disease is "detected" but not present) to a naive patient, extreme mental anguish can result. In addition, the patient may expend large sums of money on unneeded treatments or (if they are skeptical) on traditional diagnostic tests to confirm the reported nondisease.

The Formula for Success?

It would seem that the false-positive diagnosis of subclinical disease is the

underlying key to the popularity and success of iridology. The bulk of diseases reported are vaguely stated conditions in organs, such as an "underactive" pancreas or "chronic weakness" in the lungs. Such vagueness permits clinicians to capitalize on any improvement in the way a patient "feels" as proof that the treatments are doing some good. Under those conditions the cure rate and patient satisfaction in a clinical practice can be very high.

Though the validity of the diagnosis and treatment may rest on false premises, many patients appear to experience a positive change in their health. This is understandable since these programs often include a good diet and moderate exercise, a formula that would do us all some good! However, as the following two cases will illustrate, the false-positive diagnosis can also have a negative impact on the patient.

A well-educated accountant, whom I have seen routinely for eye care, was experiencing lower back pain. He consulted a local chiropractor, and during the course of treatment an iridology workup was recommended. The results indicated, among many other health problems, the presence of cancer. Overwhelmed, the patient spent the day in torment. Unable to consult his family physician, who was out of the office, or his wife, who was at work, he finally sought my advice late in the afternoon. After a lengthy discussion I was able to allay his fears and he began to understand, in a more critical way, the complexities of a medical diagnosis. He wondered how an intelligent person like himself could be caught up in such a deep emotional web over such a diagnosis. This story fortunately had a pleasant ending. However, the outcome could have been much more serious since this patient is also suffering from a heart condition, which was not noted on the iridology evaluation!

Another patient in my office related her recent experience with an herbalist and iridology. Based on her iris photographs, she was given a list of herbs and advice supposedly needed to correct a long list of low-grade chronic conditions. The prescription for this long list was a total of over $200 worth of herbs. Considering herself to be healthy, she was skeptical and decided to save her money. This case also had a happy ending, but it leads me to wonder how many naive patients are investing in questionable treatments based on the results of questionable diagnostics?

A more humorous episode occurred recently when an investigative reporter had an iridology workup. She was told that "a whitish color emanating from the iris shows a lot of acidity and mucus throughout the body and could be from eating a lot of meat, bread and milk products. When told the reporter is a vegetarian, [the iridologist] said the acidity could be a reverse effect from eating too much fruit and vegetables." A classic example of clinical nonsense (Meyer 1982, p. 81).

Delusion or Diagnosis?

It seems that the pseudoscience of iridology has deluded both patient and

practitioner alike. The surge in popularity that iridology and its fellow pseudodiagnostic sciences are enjoying is not surprising. Iridology is "amazing," relatively simple to learn, and painless and, most important, it has that mystical attraction on which unorthodox theories and practices have thrived over the centuries.

References

Bamer, D. 1982. *Applied Iridology and Herbology*. Orem, Utah: BiWorld Publishers.

Cockburn, D. 1982. "A Study of Validity of Iris Diagnosis." *Australian Journal of Optometry* (July).

Hall, D. 1981. *Iridology: How the Eyes Reveal Your Health and Personality*. New Canaan: Keats Publishing.

Jensen, B. 1974. *The Science and Practice of Iridology* (1952). Escondido, Calif.: Jensen.

_____. 1980. *Iridology Simplified*. Escondido, Calif.: Iridologists International.

_____. 1981a. "An Eye for the Future." *Iridologists International Manual for Research and Development* 2-11/12.

_____. 1981b. "Reply to Western Medicine's Study of Iridology." *Iridologists International Manual for Research and Development* 2-11/12.

_____. 1981c. "Answer to an Article Appearing in the Journal of the American Medical Association Evaluating Iridology." Insert to *Iridologists International Manual for Research and Development* 2-11/12.

_____. 1982. *Iridology: The Science and Practice in the Healing Arts*, vol. 2. Escondido, Calif.: Jensen.

Kriege, T. 1975. *Fundamentals of Iris Diagnosis*. Trans. A. Priest. London: Fowler Co.

Last, R. J. 1973. *Wolf's Anatomy of the Eye and Orbit*, 6th ed. Philadelphia: W. B. Saunders.

Maxwell, J. 1980. *The Eye/Body Connection*. New York: Warner Books.

Meyer, Norma. 1982. "Do Your Eyes Really Speak?" *Daily Breeze* (Torrence, Calif.), September 5.

Moses, R. A. 1975. *Adler's Physiology of the Eye*. New York: C. V. Mosby.

National Enquirer. 1978. "Do-It-Yourself Eye Test That Can Save Your Life" (May 23).

Ratclift. 1962. "America's Laxative Addiction." *Today's Health* (November).

Simon, A., Worthen, D., and Mitas, J. 1979. "An Evaluation of Iridology." *Journal of the American Medical Association* (September 28).

Stark, D. 1981. "Look into My Eyes." *Medical Journal of Australia* (December 12).

Von Peczely, I. 1866. *Discovery in the Realm of Nature and Art of Healing*. Budapest: Druckeree der Kgl.

Wolf, H. 1979. *Applied Iridology*. San Diego: National Iridology Foundation.●

The Nazca Drawings Revisited: Creation of a Full-Sized Duplicate

Re-creation of a 440-foot Nazca figure on a Kentucky field shows how the Peruvian drawings were most likely made.

Joe Nickell

Called "Riddles in the Sand" (*Discover* 1982) they are the famous Nazca lines and giant ground drawings etched across 30 miles of gravel-covered desert near Peru's southern coast.

The huge sketch-pad came to public prominence in Erich von Däniken's *Chariots of the Gods?*—a book that consistently underestimates the abilities of ancient "primitive" peoples and assigns many of their works to visiting extraterrestrials. Von Däniken (1970) argues that the Nazca lines and figures could have been "built according to instructions from an aircraft." He adds: "Classical archaeology does not admit that the pre-Inca peoples could have had a perfect surveying technique. And the theory that aircraft could have existed in antiquity is sheer humbug to them."

Von Däniken does not consider it humbug, and he obviously envisions flying saucers hovering above and beaming down instructions for the markings to awed primitives in their native tongue. He views the large drawings as "signals" (von Däniken 1970) and the longer and wider of the lines as "landing strips" (von Däniken 1972). But would extraterrestrials create signals for themselves in the shape of spiders and monkeys? And would such "signals" be less than 80 feet long (like some of the smaller Nazca figures)?

As to the "landing strip" notion, Maria Reiche, the German-born mathematician who for years has mapped and attempted to preserve the markings, has a ready rejoinder. Noting that the imagined runways are clear of stones and that the underlying ground is quite soft, she says, "I'm

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