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# GEOPHYSICAL VARIABLES AND HUMAN BEHAVIOR: XVIII. EXPECTED PERCEPTUAL CHARACTERISTICS AND LOCAL DISTRIBUTIONS OF CLOSE UFO REPORTS[1]

M. A. PERSINGER[2]

*Laurentian University*

*Summary.*—Although the frequent occurrences of UFORs (unidentified flying object reports) within regions of compressional deformation and the systematic variation over time between UFORs and seismic activity have been supported by empirical analyses, the mechanisms that could generate observable local phenomena have been less clear. A tectonogenic condition that includes *electromagnetic* (EM) *characteristics* is one hypothesis. Specific predictions require the delineation of local fault systems and the visualization of adjacent topography, geology and man-made structures as distributions of charge collectors, conductors, dielectrics and other EM equivalents. Extrapolations from recent laboratory experiments indicate that the major visual, kinetic and EM features of close UFORs can be explained. Since clusters of UFORs or "flap periods" are often accompanied by social concern, these extrapolations, applied cautiously, may be useful for field scientists who must predict when and where the phenomena could occur.

From a behavioral perspective, the report of UFOs (unidentified flying objects) can be considered contemporary responses to persistent environmental stimuli. Although many of these reports may involve routine objects (such as the planet Venus) that are perceived in anistropic contexts during unusual motivational periods of the observer, a substantial number of UFO reports (UFORs) may reflect as yet unspecified stimuli. Indeed, some of them may be correlated as well with the unusual perception of routine objects. One hypothesis (Persinger, 1976, 1983a, 1983b) suggests that more than 50% of the variance in these stimuli are associated with tectonic strain within the earth's crust. However, the actual characteristics of these stimuli may be masked or modified by the verbal labels used to describe and to remember them (Haines, 1980; Persinger, 1979a).

If the hypothesis is correct, then most UFORs should occur near areas of strain and strain release; the most typical loci include fault lines and sites of focused compressional deformations (Persinger, 1979b). UFORs within countries containing large matrices of fault lines are conspicuous. Localizations of UFORs near particular strain points are also obvious (Devereux, McCartney, & Robins, 1983) and have been called "windows" or related

[1]Laurentian University, Environmental Psychophysiology Lab, Department of Psychology, Laurentian University, Sudbury, Ontario, Canada P3E 2C6.
[2]Thanks to Dr. Brian T. Brady, U.S. Department of the Interior, Denver Federal Center, Building 20, Lakewood, Colorado, USA, 80225, for our many stimulating, technical discussions.

popular metaphors (Keel, 1970). There are innumerable examples; only a few are referenced here. The latest UFOR flap in Sweden occurred around the largest fault system in the country (Mattsson & Mattsson, 1983), while a long history of less concentrated UFORs has been documented for the Gold Hill fault system in central North Carolina.[3] Although population parameters contribute by necessity to UFORs, they are not simple artifacts of population density (Persinger & Lafreniere, 1977; Persinger, 1979c).

The population problem can be attenuated by observing UFORs over time within a smaller but active seismic locality. One particularly prevalent series of nocturnal lights and related UFORs (including "daylight disc" observations) have been reported for many years along the Toppenish Ridge in central Washington. The events (some of which have been photographed) are systematically related to the distance and magnitude of monthly seismic activity (Derr & Persinger, 1984). This region is still undergoing compressional deformation. Of the approximately 50 other segments in the Yakima fold belt, the Toppenish Ridge structure is the only one to have continued to deform by thrusting, folding, and vertical surface rupture (Campbell & Bentley, 1981).

Since river systems are frequently associated with old or active fault matrices, the concentration of UFORs around the former is not unexpected. Once population density is accomodated, the UFORs are conspicuous within the New Madrid region of the Mississippi River interface with the Illinois System, the Delaware River System and the Ohio Valley (Persinger & Lafreniere, 1977; Persinger, 1981). UFORs, even by popular association, tend to occur near rivers and creeks. The extraordinary work of Wagner, Hulse, and McGrath (1978) and Wiedemann (1977) indicates that a recurrent luminous phenomenon moves along a railroad track that is adjacent to a small creek that is in turn juxtaposed with a local fault line.

Any prediction of the perceptual characteristics of *individual* UFORs must first acknowledge the multivariate nature of the problem. UFORs may be emitted to or evoked by a variety of different stimuli that may not be clearly related to geophysical conditions. The tectonic strain hypothesis assumes and predicts that many UFORs are associated with *actual* verifiable events. They would primarily involve phenomena that have been labelled as close encounters of the first and second kind by Hynek (1972) and Type IV to VI UFOs by D. R. Saunders for CUFOs (Center for UFO Studies). However the hypothesis does not explicitly indicate the physical mechanism or mechanisms by which the strain is manifested locally. Their specification requires the technology and methodology of experimental physics.

[3]P. W. LaPorte, Chronolog of UFO sightings along the Gold Hill Fault Line. (Unpublished manuscript, 1982, 315 Cedarwood Lane, Matthews, NC 28185)

According to laboratory experiments (Brady, Rowell, & Stroud, 1984), strain-induced luminosities can be generated in a predictable manner. They occur a few tenths of a microsecond before cylindrical rock samples are fractured along their major axes by a hydraulic press. The emissions are *not* arc or spark discharges; the emission mechanism produces a phenomenon that emits highly energetic particles (electrons) that in turn excite the atoms within the surrounding fluid (water) or gas. Visually, when measured with fast frame photography, the luminosities are spherical in shape, and have a life of about 1 sec. While spectrum peaks between 400 and 550 nm, lower radio frequency (a few kHz) and microwave generation also occur. Inference from other measurements indicate that the total energy density of the rock (primarily from the applied stress) is equivalent to the energy of the luminous objects (about $10^9$ joules/cc).[2] Magnetic field strengths are estimated to be substantial.

The present theoretical framework indicates that the laboratory phenomena are unusual electromagnetic conditions. Although the mechanisms by which each phenomenon is contained must still be determined, one interpretation indicates that a potential difference exists between the poles and the equator of each "ball." Small packages of energy ("microplasmoids"), lasting about one-thousandths the duration of the total ball, move up to the polar regions and are expelled as narrow, directional beams. The rapid dissipation of the basic rock constituents, such as silicon, magnesium and aluminum, cascade to a normal state and combine with oxygen, thus depleting local oxygen and producing oxide residuals of these metals.

If the laboratory phenomena can be generalized to larger space scales comparable to field observations, then a number of perceptual properties might be expected. Since large scale phenomena (LSP) would be generated by tectonic strain, potentially focused from hundreds of square kilometers, the total energy within a display would be much larger. If the LSP were perceptually about 1 to 10 meters across, the life time might be on the order of minutes. The pulse frequency or rotation speed should be considerably slower than laboratory examples; the observed values of between 1 and 10 Hz are not unexpected. Faster rotating LSP, depending upon volume and stability, would be more elliptical. The color would be influenced by the maximum wavelengths being generated and the context, which in turn would be influenced by the stability of the condition.

Although the major LSP would show more or less homogeneous energy densities and hence a similar color, portions of the ball especially around the equator and poles would undergo local changes; these would be equivalent to the microplasmoids displayed in the laboratory experiments. Lower energy areas within the periphery of the major luminosities could produce different colors. Their movements would be influenced by the rotation of the LSP as well as by its polar-equatorial forces. The most likely observation by a human witness would be "a number of red lights rotating around an object" or "a rotating object with red lights," depending upon perspective. Other possible verbal descriptors would reflect the small circular energy disparities within the larger volume and could include "portholes," "windows," and other experiential similarities.

Very close proximity to homogeneous (white) and luminous LSP would allow detection of the consequences of the magnetic field boundaries. Such structural characteristics would be analogous to the elaborate figure/ground contours of sunspots whereby the darker lines and regions would reflect cooler temperatures. Considering the shape of a luminous LSP, geometric delineations of darker regions, such as lines, matrices or some other ordered structure are expected. Even without direct stimulation of the observer's nervous system by the intense time-varying electromagnetic fields (Persinger, 1983c), great individual variability of LSP is expected. Both their duration and large size (compared to the observer) would allow detection of innumerable features.

Some characteristics would be related to the particular sources of tectonic strain and geochemical strata from which the phenomena were generated. Dull grey or metallic lusters could be related to the vapor deposition of remnant rock metals, such as magnesium or manganese, along the magnetic boundary of the LSP. Since a *stable* thickness of about 5 $\mu$m can be readily perceived as a metallic surface, the total volume of material required for a ball 1 m across would be in the order of 1 to 10 cc. Considering the importance of a stable thickness, relatively few (compared to luminosities) LSP with "metallic textures" should be observed; they should be limited to circular or elliptical conditions that do not undergo rapid changes in either shape or diameter. If this condition were disrupted, metals could be extruded, be combined with local gases and fall to the ground. Indeed some LSP have been reported to "release materials" (Keel, 1970) that were later determined to be "slag" or high temperature metal combinations.

Magnetic field strengths, both those associated with the magnetic boundary of the LSP and those produced by the extremely low frequency components (generated by the rotation) would be quite substantial, even considering the attenuation with the inverse cube of the distance. Either the movement of a LSP or its time-varying components could induce electric currents within a variety of electronic systems, such as television and light circuits; interference with transmission and reception of radio and television signals would be expected. Direct stimulation of the human brain by current induction within sensitive regions such as deep temporal lobe structures (Persinger, 1983c) would be expected to evoke profound experiential and psychological changes

quences of close proximity to UFO-related luminosities. *Perceptual and Motor Skills*, 1983, 56, 259-265. (c)

PERSINGER, M. A. The tectonic strain theory of UFOs. *Pursuit*, 1983, 16(1), 21-35. (d)

PERSINGER, M. A. Tectonogenic luminosities: geomagnetic variables as possible enhancer conditions for UFO reports preceding earthtremors within the New Madrid states. *UPIAR Research in Progress*, 1983, in press. (e)

PERSINGER, M. A., & LAFRENIERE, G. F. *Space-time transients and unusual events.* Chicago, IL: Nelson-Hall, 1977.

RUTLEDGE, H. D. *Project identification: the first scientific field study of UFO phenomena.* Englewood Cliffs, NJ: Prentice-Hall, 1981.

WAGNER, W., HULSE, R., & MCGRATH, J. "Spook lights:" the Vestigia update. *Vestigia Newsletter*, 1978, 2(3), 1, 2-7.

WIEDEMANN, C. L. Results of the New Jersey "spook light" study. *Vestigia Newsletter*, 1977, 2(1), 1-4.

WEISER, H. G. Depth recorded limbic seizures and psychopathology. *Neuroscience and Biobehavioral Reviews*, 1983, 7, 427-440.

ZOBACK, M. D., & ZOBACK, M. L. State of stress and intraplate earthquakes in the United States. *Science*, 1981, 213, 96-104.

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