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How Much of Your Brain Do *You* Use?

By Mickey Rowe

The claim is frequently made that the average individual uses only 10% of their brain's potential. This claim is usually buttressed by a reference to the generic "experts," thus making the statement's validity of unquestionable value. But who are these experts, and how did they reach this conclusion? I've heard the claim so many times in my life that I've naturally been curious to discover its basis. Unfortunately, after asking many of the people that might reasonably be considered experts and searching through some of what I thought might be the relevant literature, I'm left with a mystery even more puzzling than that which I faced at the outset of my search.

Although I can't yet delineate the origins of the belief in our untapped mental potential, I can at least shed some light on the merits of the claim. There are three topics which I wish to pursue for the remainder of this article: what *have* the experts typically thought about tapping our brain's potential, where might a belief in our untapped potential have arisen, and finally, what does current neuroscience have to tell us about the verisimilitude of "the 10% hypothesis"?

The Mental and the Physical

The significance of the 10% hypothesis seems to be that people are generally more intelligent than they appear, or even perhaps than think they are. As such it seems likely that the claim must have its origins with some understanding that intelligence (whatever that may be) is a product of our brains. Perhaps one of the seminal points in the history of scientific thought in this area was the turn of the 19th century—particularly the writings of Franz Joseph Gall. Gall pushed two major propositions: that brains are composed of multiple "faculties", each underlying a different mental "faculty"; and that the size of individual brain faculties—and hence the size of the bumps on the overlying cranium—varied according to their strength in any given individual. Unfortunately for Gall, he is principally remembered for the last bit of the second proposition, which served as the basis for one of the worst offenses of pseudoscience in the 19th century, phrenology. Later historical revisionism has attempted to distance science from that unfortunate offshoot of his theories, but in fact Gall had a large effect on the study of neuroanatomy and the field that would later be labeled psychology.

For instance, in 1832, Samuel Jackson described Gall's proposition that "intellectual faculties and cerebral organs executing them are multiple" with this endorsement:

The testimony, as to its general truth, presented by the morbid phenomena of the nervous system, and of the intellectual and moral faculties, is so conclusive, that few well instructed and

observing physicians, accustomed to analyze and reflect on what passes under their observation, have any difficulty yielding to this proposition. No problem in physiology rests on a clearer demonstration.

Gall's ideas set the stage for much of the later investigations on the physical basis of intelligence. Toward that end, we should take particular note of Gall's belief that the size of different brain regions was an objective measure of the particular mental ability which that brain region subserved. Although often appearing in slightly different guises, this has been a recurrent theme in investigations of the physical correlates of mental ability.

In this pursuit much time and effort have been wasted. Although for many years quite popular amongst the general public, the idea that the sizes of bumps on the skull could lead to significant insights into the mental abilities of the bearers of those skulls did not take root among many experts except for those of the self-proclaimed variety. The real experts, those with scientific training, pursued other avenues. One of the most popular avenues among these circles was the attempt to demonstrate that the size or weight of the brain relative to the body containing that brain correlated with intelligence.¹ When such a correlation proved elusive, other researchers attempted to measure the mass or size of particular parts of the brain.² These measurements included surface area of individual cerebral lobes as well as their mass. The measurements of surface area were an attempt to demonstrate another belief often heard today—that the size or number of convolutions of the cerebral hemispheres (or parts thereof) is an indication of the power of the brain bearing them. In all of these cases (and a few others), the implicit assumption seems to be either a) a person who is of above average intelligence is so because some particular physical aspect of her brain is larger, or b) the size of the brain (or parts thereof), like that of muscles, is a function of the amount of training which it undergoes by virtue of the thinking of its owner.³

If the average person did use only 10% of their brain's capacity and assumption a) above was correct, it might still make sense to search for a correlation between say, brain size and intelligence. If instead, assumption b) is correct, it would make little sense to claim that humans typically use only a portion of their brains—why would our brains respond to use if we weren't pushing them to their limits? However, there is at least one other possible assumption about the relationship between brains and intellect. It might be that all of our brains possess the same (or similar) potential, and intelligence is correlated with the extent to which we make use of that potential. Although this assumption would seem to make the most sense in terms of a backdrop for the statement that on average humans use only 10% of their brains, it seems to be an

assumption that never occurred to those looking for the physical basis of intelligence. At the very least, serious discussion of this possibility seems to have evaded reviews of the primary literature. For this reason I'm doubtful that any expert ever actually made the claim. So how did the urban legend originate?

Who said what?

One possibility immediately suggests itself. People are often misquoted, particularly in reference to technical subject matters. An almost humorous account of such misquoting appeared in a footnote to the printed version of a lecture given by Karl Pearson in 1924. After Pearson indicated that the speed at which humans can respond to an auditory stimulus is a maximum at age 21, he reports:

A light headed pressman who unfortunately got access to my lecture theatre reported next day that I had said that a man reached his "intellectual prime" at 21 years. From his newspaper the report spread round the world and formed the thesis of an after dinner speech by the late Lord Curzon. If intellect were identified with mental agility, then and then only there would have been truth in the report. It is, indeed, impossible to interpret our curves with regard to mental agility in any other sense.

To make the story of a misquote plausible, one must suggest a statement of fact (true or not) which could then be misquoted. Fortunately (or perhaps not) there are many possibilities. Rather than provide a fully exhaustive list, I'll discuss only some of the top contenders, i.e. those that I've heard most often, or sound the most plausible. Before proceeding I would like to emphasize that I have no hard evidence backing *any* of these scenarios. In a sense, each is a meta-urban legend ostensibly created to make sense of a previous urban legend.

One area that might have lead to the 10% hypothesis with the least amount of misquoting is early studies of brain lesions. These studies have come in two flavors—the examination of patients that acquired accidental injury, and the study of animals in which injuries were deliberately applied. In both cases, attempts are made to correlate dysfunction with neurological damage to discrete brain regions. Naturally, the ability to discover a dysfunction is highly dependent upon the expectations an observer might have on what a "dysfunction" is. It's not unexpected that such studies will often lead to the conclusion that there are no lasting deficits resulting from the destruction of a particular region, because the deficits just aren't recognized. It wouldn't be too surprising to find that someone had added up all of the different brain regions that have been destroyed with no obvious harm, and this summation could then have been twisted into a claim that this much of the brain is unnecessary. By implication it would seem that if these

areas aren't necessary, then most of us must be getting by without using them.

An obvious problem with this conclusion is that humans and other animals have some ability to recover functionality because some functions can be carried out by more than one anatomical pathway. That is to say that biological systems are robust due to their considerable redundancy. However, this redundancy is both limited and specific. It's limited in the sense that "backup" systems perform some functions even when the "primary" systems are undamaged. For instance, one might conclude that our left eyes are unnecessary; why do we need two eyes when only one is required for vision? Of course, the answer is that two eyes give us a larger visual field and some cues for depth perception that are not available to cyclopean individuals. As suggested above, nuances in the benefits of particular structures can easily escape detection. Redundancy is specific in that not all brain regions can perform the tasks of all of the others. As more and more of a given brain is damaged, fewer and fewer cells will be around that can take over for those already destroyed.

We now have an obvious test of the 10% hypothesis if it came about from lesion studies. Find a human (or use inference from other animal models) in which 90% of the brain has been destroyed. Even the most casual observer would discover some dysfunction in such an individual. If a scientist ever arrived at the 10% hypothesis from this direction, it would seem unlikely that he would fail to test it by seeking an individual with 90% of his brain damaged, or claim the 10% hypothesis with any conviction if he hadn't. I'm not aware that anyone has attempted this falsification (and I honestly hope that this silly idea was never considered worthy of such a test).

The opposite of discovering function by destruction is exploration by stimulation. Nervous tissue is easily excited by the passage of small electrical currents. Although we don't yet have the technology to stimulate an arbitrary set of neurons in a pattern resembling that which those neurons would see under normal physiological conditions, it is possible to stimulate all of the neurons in some reasonably small volume (in some experimental setups, it is possible to impale a single neuron and stimulate it alone). Prior to surgery for intractable epilepsy, it has become quite routine to stimulate the brains of alert patients who can report any sensations they experience as a result of that stimulation. Regions where stimulation lead to no particular sensation, loss of ability, or discernible bodily movement were initially lumped into a wastebasket category called "association" areas.⁴ I've also heard that these association areas extended to 90% of the brain's surface, thus potentially leading to the 10% hypothesis. An obvious problem with this conclusion is that the stimulation is very different from the natural excitation of neurons. Although patients might report a particular type of sensation (e.g. visual or auditory), they do recognize that the sensations arise from stimulation—the appearance of the percepts is not normal. Given the

abnormality of the neural activity produced even by the most refined techniques of electrical excitation, it's almost surprising that any of it leads to specific perceptions or movements. Additionally, there is a self-report problem. Not only do patients have to be aware of a change brought about by the electrical stimulation, they must be able to verbalize that feeling for the experimenters to be able to document the function of the stimulated region.

Currently far more common than either of the above two approaches to elucidating the function of different brain regions is the use of recording electrodes. In a general sense, electroencephalography (EEG) is an instantiation of this technique, since an EEG trace is just a recording of the electric potentials resulting from the activity of billions of neurons. Much more precise localization is possible, however, with the surgical insertion of smaller electrodes. The advantage of recording vs. lesioning or stimulation is that it's a passive technique, so the information obtained is less tainted by the effects that the "measurement" has on the system under study. On the other hand, in order to obtain that information the experimenter has to be creative in the presentation of stimuli or the training of subjects in order to discern what sorts of sensations or activities are correlated with changes in the activity of neurons in the region under investigation. We now have an additional explanation for the 10% hypothesis, that early researchers who were unable to discover what activated specific regions might have thought those regions uncommitted to any specific function. Naturally it could be argued that an inability to find a specific function is more easily attributed to experimenters not knowing what to look for than to the brain region in question not having a function.

Another common story about the origination of the 10% hypothesis relates to severe cases of hydrocephaly. Deep within the cerebral hemispheres and extending down the brain stem and into the spinal cord there are fluid filled ventricles in all normal humans. The fluid is continuously extruded from the blood supply to the central cavities, and it circulates around the brain and spinal cord. During the course of that circulation the fluid must drain out of the central cavities through one small tube which travels down to the brain stem. If that tube is blocked—a condition brought about by the growth of nearby tumors, or more frequently by congenital defects—the ventricles swell at the expense of the surrounding cerebral tissue. This condition is known as hydrocephalus. In some severe cases, the cerebral hemispheres are compressed into a narrow ring of tissue around the interior of the skull. If such a condition obtains in a young child, the person may grow up to be of normal intelligence. Seeing that the volume of the cerebrum had been condensed to 10% of normal size without gross defects in mental abilities, it is conceivable that someone could draw the conclusion that our brains are much larger than they need to be. However, the brains of these patients are compressed, not destroyed. A brain compressed to 10% of its normal volume is not 10% of a normal brain.

It's probably not commonly known, but one thing experts *do* say is that the number of non-neuronal cells in the brain is ten times as large as the number of neurons. These cells have many known functions, which can be summed up here as being supportive of the activities of neurons. No one currently believes that these cells play any active role in the mediation of our perceptions, motions or thought processes. This information could easily be twisted into the 10% hypothesis if it began as "90% of the cells in our brains are not used for thinking, remembering, perceiving, etc."

This list is not exhaustive, but I think it covers most of the meta-urban legends. As I've indicated after each scenario, none of these "explanations" really seem to offer any support to the conclusion that our brains have a wealth of untapped potential. So what can we confidently say about the subject?

I Hope I Use Less than 10% of My Brain...

If you ask a neuroscientist if it's true that you use only 10% of your brain, the most common response is a laugh followed by one of the above meta-urban legends of the origin of the statistic. If you press on, then the story is typically followed by an explanation revolving around the prematurity of the 10% hypothesis. From a scientific standpoint, not enough is understood about the relationships between brains and mental ability to make any sort of definitive statement about how much mental ability a given brain can produce. A common sense approach to biology would indicate that the 10% hypothesis is false, however. Our brain is the most energy intensive structure of our bodies, especially on a per weight basis. Much of our metabolism is devoted to feeding the ion pumps that make electrical activity across nerve cell membranes possible. Considerable effort is also required to keep our brains from overheating as a result of that metabolism. Biological systems aren't known for investing such efforts needlessly.

Sometimes experts will offer a different sort of response, however. The response is posed in the form of a question: What does it mean to say that we only use 10% of our brains, or how would you go about measuring it? Because of the difficulties described above in association with lesion, recording, and stimulation studies, firm conclusions cannot be drawn from them about the lack of a particular finding. In addition to the aforementioned difficulties, one also has the problem that even if a particular region isn't necessary at the time of the observation, that doesn't mean that it isn't ever necessary. This train of thought could lead to the question "how much of my brain am I using *right now*?". Once again, the question isn't immediately answerable, but there are two lines of evidence which can shed some light on the significance of whatever the answer might be.

The first line involves the activity of individual neurons. Most neurons have some basal activity level even at "rest." In that sense it could be argued that we're always using *all* of our neurons. At any given time,

perhaps most neurons are exhibiting only basal activity, but even that carries information. The information conveyed by such a neuron is similar to a guard at a watchtower calling out "9 o'clock and all's well." The neuron is basically saying that its inputs aren't changing; it has nothing new to report. Much as the guard's report conveys an important message—that nothing interesting is happening—so does the basal activity of an individual neuron.

The second line involves the activity of groups of neurons as indicated by PET and SPECT scanners. These experimental techniques weren't included in the list of sources for the 10% hypothesis because I'm pretty certain that the urban legend predates them. However, they provide a wealth of information pertinent to the question of how much activity is going on in a living brain at a given point in time. The experiments rely on radioactive tracers injected or inhaled by subjects. Typically the tracers are atoms in a water molecule, an inert gas, or best yet a glucose analog. The first two give information about regional blood flow; the third gives information about local metabolism. Although a determination from these measurements of *absolute* levels of activity requires some assumptions about the distribution of the tracer in the rest of the body, the techniques give a tremendous amount of direct information about the *relative* amount of activity in different brain regions as well as the relative changes in activity in a given region under different conditions.

An interesting finding from PET studies is that as patients get better at performing different tasks, the changes in activity that accompany the performance decrease in magnitude. Furthermore, subjects that are better at performing a given task generally don't seem to work as hard—activity levels don't rise as much to meet the challenge. Much as an Olympic marathon runner's body doesn't have to work as hard as the average persons to complete a six minute mile, a person who is good at say, mentally rotating a given object, is good at it not because her brain is bigger, but because her brain is more efficient. This leads to the interesting speculation that "more intelligent" people typically use less of their brains than "less intelligent" people. If you think that you *do* use more of your brain than the average person, perhaps you shouldn't brag about it!

Further reading:

Those interested in learning more about the functioning of our brains might want to look at the September issue of *Scientific American*, which is a special issue devoted to "Mind and Brain". Also on that topic is: P.S. Churchland's *Neurophilosophy*, MIT Press, Cambridge 1986. Readers might also look for an exhibit entitled "It's All in Your Head" which opened this summer at the Franklin Institute and is about to tour eight U.S. cities. Its final stop is the California Museum of Science and Industry in Los Angeles, where it will appear in October 1994. For more information on the history of thought behind the physical correlates of mental abilities, there is S.J. Gould's *The Mismeasure of Man*, W.W. Norton and

Co., New York, 1981, and J.D. Davis's *Phrenology: Fad and Science*, Yale University Press, New Haven, 1955. An additional reason to read Gould's book is that it attacks another assumption that was left unchallenged in this article, the assumption that "intelligence" is a single thing whose basis can be found in a single measurement. The sources of my two quotes are S. Jackson, *Principles of Medicine*, Carey and Lean, Philadelphia, 1832, and K. Pearson, "On Our Present Knowledge of the Relationship Between Mind and Body," *Ann. Eugen.* 1(1925):382-406. The quotes come from pages 208 and 397 respectively.

Notes

- ¹ Indeed the search for this holy grail of a correlation continues today, as one or two papers per year are still published purporting to show that it really exists.
- ² For good reviews of some of this research, see Hamilton, J.A. (1936) "Intelligence and the Human Brain," *The Psychological Review* 43:308-321. and Donaldson, H.H. (1932) "The Brain Problem—In Relation to Weight and Form," *American Journal of Psychiatry* (sometimes bound as *American Journal of Insanity*) 12(2):197-214.
- ³ Actually human brains apparently grow and then shrink as we mature and then age. During childhood, brain cells enlarge, and new connections between brain cells are made (in humans, few if any brain cells are added after birth). As we age, some brain cells die and are resorbed; other cells shrink.
- ⁴ "Association" cortex is rapidly disappearing in the face of continuing research into functional anatomy. At present, the term is mainly of historical interest.

Acknowledgments

I'd like to thank Alan Rosenquest and Teresa Pantzer for making suggestions in the writing of this article. Mickey Rowe received a B.S.E. from Arizona State University in 1986, where he majored in biomedical engineering. He is presently completing his Ph.D. thesis in the neuroscience graduate program at the University of Pennsylvania. His thesis involves the mechanism of detection of polarized light by fish.

Phoenix Skeptics and the Sedona Harmonic Diversion

By Mike Johnson

I visited Sedona during the recent Harmonic Convergence and again found overwhelming evidence of psychic energy transfer to my car; there was a consistent 20% increase in my car's mileage on the return ride from Sedona to Phoenix. It seemed quite reasonable to attribute this increased mileage to the energy added to my fuel by the Psychic Vortex in Sedona.

When I presented my case to the Phoenix Skeptics meeting in August, I was met with their usual glib scientific rebuttals. The *scientists*, in their ignorance, believed the increased mileage was due to Sedona being 4,000 feet higher than Phoenix. While I admit that elevation may have had a slight effect, clearly with 4,000

feet being less than one mile, and Sedona being 120 miles away, the effect should have been less than 1%!

I challenged them to devise an experiment to refute my claim. They suggested running more cars. I consider this irrelevant; however, I did happen to have some data on friends' cars which demonstrated a similar 20% effect. Eventually, someone suggested running my car to Payson, which is about the same altitude and distance as Sedona, but without a vortex. I had already done this and also found a 20% effect. The scientists misinterpreted this as supporting the altitude theory. To me, it was clear that Payson must have a psychic vortex too, albeit unrecognized (the Psychic Society will discover it soon, now that I've put them on the right track).

Mount Lemmon came up. A very strong mileage effect was reported. The scientists noted that Mount Lemmon is at 9,000 feet, therefore altitude was the cause. It's amazing how myopic these scientists can be. I could see absolutely no reason not to accept that there must be a particularly strong vortex on Mount Lemmon.

Data for other trips uncovered a similar relationship between high altitude and gas mileage modification. In a rare flash of creativity, I recognized a broad new psychic principle: *Vortices are much more widespread than previously realized, and their strength is proportional to their altitude.* This is likely due to their proximity to extraterrestrial psychic emanations and will be easily understood when we overcome the inhibitions wrought by rigid scientific thinking!

The discussion led to Occam's razor: the principle that the simplest explanation is preferred. So, whose explanation is simpler, the altitude or the vortex? (Some thought that defining "simplicity" was by no means simple.) For the Sedona phenomenon, it might be hard to choose based on simplicity alone.

I thought we might add *generality* to the simplicity requirement. The altitude theory is based on well-established principles of physical energy. It works for cars going up and down hills (if you do the right calculations), for planetary motion, bullets, aircraft, and a zillion other phenomena. Vortices don't predict well for these. In a given case, simplicity may be unclear, and only resolved when you broaden the application to other cases. I think this will be the subject of much debate by the Skeptics.

A slightly longer version of this article appeared on p. 20 of the September 1992 issue of Much Ado About Mensa. Reprinted by permission of the author.

Jehovah's Witnesses and Earthquake Frequency

By John Rand

Like many evangelical groups that claim the "end is near," the Watchtower Society claims there has been a tremendous increase in earthquake frequency in recent times, specifically since 1914. A perusal of the actual data shows this claim to be without foundation, but they have often misused statistics to confirm their views. Sometimes this seems to be a result of perennially poor

scholarship; other times it seems more like deliberate deception.

1. The *Awake!* magazine of Feb. 22, 1977 said:

Interestingly, for a period of 1,059 years (856 to 1914 C.E.), reliable sources list only 24 major earthquakes, with 1,972,952 fatalities. But compare that with the accompanying partial list citing 43 instances of earthquakes, in which 1,579,209 persons died during just the 62 years from 1915 to 1976 C.E.... The dramatic upsurge in earthquake activity since 1914 helps to prove that we are now living in the time of Jesus' presence.

The fact is that reliable sources list thousands of destructive earthquakes for this period. The U.S. Geological Survey's Earthquake Data Base System shows that the 20th century is pretty much the same as any other in terms of frequency of quakes. Many other sources show the same for both the frequency and the number of deaths caused per year.

In 1978 the Watchtower Society began using a "neutral" source to prove its contentions about earthquakes. A close look at this source provides an interesting lesson in the art of "proving" by quotations.

The October 8, 1978 issue of the Italian journal *Il Piccolo* stated (quoted from *The Watchtower* magazine, May 15, 1983, p. 6):

Our generation lives in a dangerous period of high seismic activity, as statistics show. In fact, during a period of 1,059 years (from 856 to 1914) reliable sources list only 24 major earthquakes causing 1,973,000 deaths. However, if we compare this figure to the partially complete list of recent disasters, we find that 1,600,000 persons have died in only 63 years, as a result of 43 earthquakes which occurred from 1915 to 1978. The dramatic increase further goes to emphasize another accepted fact—our generation is an unfortunate one in many ways.

A comparison of this statement with the above shows that the Italian journal was quoting virtually word-for-word from the 1977 *Awake!* magazine article, without attributing the quotation. A few numbers were rounded off and the origin date of 1977 was changed to 1978, but that's about it.

The problem with this is that the Watchtower Society used the Italian journal quotation at least ten times in various publications through 1985 to "prove" its contention about earthquakes. Very nice, the Watchtower Society quoting its own magazine *Awake!* via *Il Piccolo*.

Here is one instance where *Awake!* quotes itself this way. The Oct. 8, 1980 issue said, p. 20-1:

Has the frequency of earthquakes really increased? The Italian magazine *Il Piccolo* observed: "Our generation lives in a dangerous period of high seismic activity, as statistics show." And then it produced figures for the past thousand years to prove it.

With this sort of scholarship as a base, any reader of Watchtower publications should ask if this Society is deserving of his or her confidence.

2. Earthquakes are a random phenomenon, of course, so that there will be random statistical variations in the number of them in any given time period. The *Watchtower* magazine of May 15, 1983, p. 6, said:

Some seismologists believe that the earth is now in an active earthquake period. For example, Professor Keiiti Aki of the Department of Earth and Planetary Sciences at the Massachusetts Institute of Technology speaks of "the apparent surge in intensity and frequency of major earthquakes during the last one hundred years," though stating that the period from 1500 through 1700 was as active.

The impression given is that this seismologist is using "apparent surge" in the sense of "obvious surge," but that is not his intent. His full statement was:

The apparent surge in intensity and frequency of major earthquakes during the last one hundred years is, in all probability, due to improved recording of earthquakes and the increased vulnerability of human society to earthquake damage. The main reason is the well established plate tectonics which indicates a very steady fault motion over the past many millions of years.

A measure of earthquake strength more objective than casualty is the Richter scale. It is in general difficult to assign the Richter scale to earthquakes more than 100 years ago. An attempt, however, has been made in China, where historical records are kept in better shape than in other regions. Enclosed figure shows the Richter scale (M) of earthquakes in China during the period of about 2000 years. The past 100 years are certainly active, but there have been periods as active as that, for example, from 1500 to 1700.

Clearly the professor is talking about a "seeming surge" due to better reporting, etc. His true position is that there has been no increase at all in earthquake activity in our century, and that the seismicity of the earth has been stationary for thousands of years. In private letters to one author he stated:

I feel strongly that the seismicity has been stationary for thousands of years. I was trying to convince Jehovah's Witnesses about the stationarity of the seismicity, using the data obtained in China for the period 1500 through 1700, but they put only weak emphasis in the published statement.... It is clear that they quoted the part they wanted, eliminating my main message.

Obviously the Watchtower Society quoted the professor in a way that misrepresented his true statement and views. Other recent articles show similar distortions of fact in Watchtower literature (e.g., Hector Avalos, "The Jehovah's Witnesses and the Watchtower Society," *Free Inquiry* 12(2, Spring 1992):28-31; Malcolm P. Levin, "Life—How It Got Here: A Critique of a View from the Jehovah's Witnesses," *Creation/Evolution* 12(1, Summer 1992):29-34). *The Sign of the Last Days—When?* by Carl Olof Jonsson and Wolfgang Herbst (1987, Commentary Press, P.O. Box 43532, Atlanta, GA 30336) thoroughly debunks end-times predictions and was used as a source for this article. "John Rand" is the pseudonym of a former Jehovah's Witness who wishes his true identity to remain secret because of his continuing relations with Watchtower Society members. He has assembled detailed critiques of misrepresentations by the Watchtower Society on numerous issues.

The Institute for Creation Research and Earthquake Frequency

By Jim Lippard

The Institute for Creation Research (ICR) offered some commentary on "end times" earthquake frequency in its *Impact* No. 198, December 1989. ICR geologist Steven A. Austin, known for his claims that Mt. St. Helens proves various aspects of young-earth creationism and his Grand Canyon Dating Project, writes about "Earthquakes in These Last Days" by pointing out various occasions in the Bible where earthquakes were signs of momentous events. Among these was the earthquake described in Matthew 27:51-54 at the moment of the death of Jesus, which was allegedly accompanied by the resurrection of many dead saints (though no other gospel—or historical source of any kind, for that matter—notes this major miracle).*

After a brief survey of the significance of earthquakes, Austin points out that Jesus spoke of earthquakes as signs of his Second Coming. He cites Jesus' statement that "There will be earthquakes in divers places (Matthew 24:7; Mark 13:8)" as "a fact now verified by the global distribution of earthquakes recorded on seismographs." Austin seems to imply that this is something new, yet he gives no evidence that the global distribution of earthquakes has ever been any different.

Strangely, he then goes on to debunk the claim that earthquake frequency has been increasing. He writes:

Some people have supposed that earthquake frequency and intensity have been increasing significantly in recent times, and that this is fulfilling prophecy. This is an illusion caused lately by more frequent detection of earthquakes (more seismographs with greater sensitivity). (p. iv)

He goes on to point out that there was a peak in global earthquake energy release between 1952 and 1965, and that the 1989 global energy release will be only about a tenth of the amounts of those peak years. Yet even though he engages in this debunking, he still concludes that earthquakes should be understood as fulfilling the divine purposes of "judgment, deliverance, and communication."

It is pleasing to see something approaching a debunking issued by the creationists (also see "Dissension in the Ranks of the Institute for Creation Research," AS, February/March 1990).

Notes

* John Rand notes that the Jehovah's Witnesses New World Translation of the Bible makes this verse sound as though there are simply observers of the earthquake in the cemeteries who then go into the city, and other Watchtower Society literature claims that the earthquake simply opened up graves and revealed dead corpses. This interpretation is not supported by any reputable translations.

QUAKE DAY - Minus 7

By Mike Jittlov

It's 1:47 a.m., 9/15/92, and we just had a little rock & roller in Hollywood. It's probably a good time to bring this up, without

:@ ALARMING EVERYONE!!! :@

An 8.3 (-/+ .5) earthquake is being predicted to occur, between now and September 22, 1992, and epicentered within 100 miles of Palm Springs, California. Lest you Northerners think you're home-free, there's a 7.8 (-/+ .4) scheduled for Sonoma County, by September 28th. And a 7.1 for San Diego, by October 14.

This information comes from Gordon-Michael Scallion, a clairvoyant living quite safely in faraway New Hampshire. Scallion publishes a newsletter, and therein has reportedly been quite accurate in predicting the recent Florida hurricane, and other natural disturbances.

I have seen his new "Future Map of the United States." It's 22x34, in color, with the new coastline all the way to Denver, plus lots of new islands, and even the resurfacing of Atlantis just east of Miami. (Hey! Our old family deed might be worth something!) Needless to say, this is quite impressive and should be hanging in everyone's bunker or shelter. It includes Early Warning Signs, Migration Regions, Political Changes, Weather Insights, and more—all this for just \$11.95. "Not Sold

in Stores, Available only through the Matrix Institute, RR1 Box 391, Westmoreland, NH 03467, 603-399-4916."

I'm sending for mine, today. Hopefully it'll arrive before the postperson has to deliver it by rowboat.

Can't say I'm entirely unhappy about all this. My ex-business partner (who played the evil, slimy, embezzling, sociopathic producer in my movie) is secretly living in Arleta. Only seven more days, and he could be 50 feet under sea-level.

Those of you located near the epicenter/shoreline could probably give any house-cleaning a rest, for a week. Might be depressing to do all that work, just to have a collapsing roof mess it up.

Let the count-down begin.

Mike Jittlov directed, wrote, and starred in "The Wizard of Speed and Time," a 1988 feature film adapted from his short subject of the same name. This no longer timely article was originally posted to the alt.fan.mike-jittlov and sci.skeptic Usenet newsgroups.

New Skeptical Group/Magazine

A new skeptical group, the Skeptics Society, has formed in Los Angeles. They publish a quarterly magazine, *Skeptic*, the first issue of which has just come out. It features a tribute to Isaac Asimov by Steve Allen, Harlan Ellison, and Martin Gardner, "A Skeptical Manifesto," and the text of an address by James Randi given at Caltech, among other articles.

A one-year subscription to *Skeptic* is available for \$30 from Skeptics Society, 2761 N. Marengo Ave., Altadena, CA 91001, (818) 794-3119.

Upcoming Meetings

The Phoenix Skeptics will meet at the Jerry's Restaurant on Rural/Scottsdale Road between McKellips and the river bottom, with lunch at 12:30 on the first Saturday of each month except where it conflicts with a holiday.

The October meeting speaker will be Peter Lima on the search for the historical Jesus; the November meeting will be for collecting predictions for 1993.

Articles of Note

Fortean Times Issue 64 (August/September 1992) contains articles about the Filipino who (falsely) claimed to be a pregnant hermaphrodite, waterspouts and seiche waves, the "Alternative 3" life on Mars and the moon hoax, more UK allegations of Satanic Ritual Abuse, and much more.

Richard A. Kerr, "The Lessons of Dr. Browning," *Science* 253(August 9, 1991):623-633. Reports on the widely disseminated Missouri earthquake prediction of self-taught climatologist Iben Browning. Browning predicted that the New Madrid Fault would be responsible for a major quake on December 3, 1990, which created somewhat of a panic but failed to occur. One of Browning's supporters, David Stewart, director of the Southeast Missouri State University Earthquake Information Center, with a Ph.D. in geophysics, had previously promoted California psychic Christa Bernhardt's

prediction of a 1975 earthquake in Wilmington, North Carolina, at a nuclear reactor site (Stewart opposed its construction). That quake also failed to occur. Stewart was then denied tenure at the University of North Carolina at Chapel Hill, and subsequently moved to Missouri. (See sidebar, "Will the Fourth Time Be a Charm?", p. 625.)

Jay Mathews, "The Big One," *The New Republic* 207(July 27, 1992):26,28. Corrects misinformation about a supposed "megaquake" hitting California in the future.

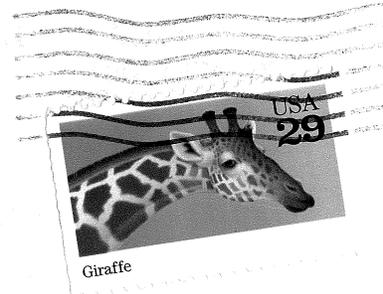
"Circle Hoax Contest," *Science* 257(July 24, 1992):481. A news report on a crop circle making contest sponsored by *The Cerealogist* and Rupert Sheldrake

to see if humans can make "real" crop circles, with a \$5,200 prize for the winner. The Wessex Skeptics declined to enter, but twelve others did, some producing impressive results. (One of the judges, however, claimed that none of them were quite as good as the "real" thing.) The winners were a team of three design engineers from the Westland helicopter company who used a rope, plastic piping, and a ladder suspended from a trestle. The first runner-up was Jim Schnabel, an American working on his Ph.D. in sociology of science at the University of Bath. Schnabel was the only contestant to work alone, and he did so using only a plank, some rope, and a garden roller.

The Arizona Skeptic is the official publication of the Phoenix Skeptics and the Tucson Skeptical Society (TUSKS). The Phoenix Skeptics is a non-profit scientific and educational organization with the following goals: 1. to subject claims of the paranormal, occult, and fringe sciences to the test of science, logic, and common sense; 2. to act as clearinghouse for factual and scientific information about the paranormal; and 3. to promote critical thinking and the scientific method. The contents of The Arizona Skeptic are copyright © 1992 by the Phoenix Skeptics unless otherwise noted. Material in this publication with Phoenix Skeptics copyright may be reprinted provided that The Arizona Skeptic and the author are provided copies of the publication in which their work is reprinted. Address all correspondence to the Phoenix Skeptics, P.O. Box 62792, Phoenix, AZ 85082-2792. Submissions for publication in The Arizona Skeptic may be sent to Jim Lippard, P.O. Box 42172, Tucson, AZ 85733 or electronically to LIPPARD@CCIT.ARIZONA.EDU. All manuscripts become the property of the Phoenix Skeptics, which retains the right to edit them. Subscription rate is \$12.50 per year. Editor: Jim Lippard. Production: Ted Karren.



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