

MAHARISHI VEDIC ARCHITECTURE

BACKGROUND AND SUMMARY OF SCIENTIFIC RESEARCH

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The ancient predictions for the effects upon us of living in buildings designed according to the guidelines of Vedic architecture or *Sthapatya Veda* are quite remarkable. The ancient texts propose in detail how influences may be designed into a building to promote such qualities as prosperity, happiness, health and enlightenment. Just as importantly, the text delineate negative influences of improper building design and construction that promote anger, fear and chronic disease, influences that may be diminished through correct design.

Manasara and *Maya Mata* are ancient Sanskrit texts that describe the knowledge (*Veda*) of establishing form (*Sthapatya*). These texts apply to all created objects and are especially valuable in the area of architectural design and construction, and community design. Vedic architecture is considered the oldest and perhaps the most systematic of the various architectural traditions and is has been recognized as the original source of the East Asian geomancy system of *Feng Shui*¹.

Vedic architecture is also known more commonly by the Sanskrit word *Vastu*. The surviving strands of the ancient Vedic system have recently been unified and restored to their wholeness by Maharishi Mahesh Yogi, the founder of the world-wide Transcendental Meditation program. The system as he has restored it is referred to as Maharishi Vastu^{SM 2}, Maharishi Vedic architecture, or Maharishi Sthāpatya VedaSM architecture. The last two names are used interchangeably in this report.

Current Progress

The predictions in the ancient Vedic texts have been verified time and again by the overwhelmingly positive subjective experiences of the thousands of people world-wide who are living, studying or working in buildings designed within the past decade with the principles of Maharishi Vedic architecture. In North America alone about \$250 million worth of these buildings have been built in the past decade, and there have been many dramatically positive subjective reports by their users of improvements in well-being, physical health, family harmony, and financial success.³

To what degree have medical and scientific research verified and explained these remarkable predictions and personal experiences? Here, we summarize research conducted on Maharishi Vedic architecture. Some of the research has been published, some of it has been accepted for publication in a peer-review medical journal, and some of it is preliminary and not yet submitted for publication.

Design Principles

Maharishi Vedic architecture is defined by Maharishi Mahesh Yogi as “the most ancient and complete system of architecture and planning according to the solar, lunar and planetary influences on the earth with reference to north and south poles and the equator – connecting individual life with Cosmic Life, individual intelligence with Cosmic Intelligence.”⁴

Maharishi Sthapatya Veda theory predicts that a number of influences impact the users of buildings. These influences include:

- The orientation of the building
- The placement of rooms
- The proportion and Vedic measurements of the building
- The building elements,
- The site elements
- The slope and shape of land
- The degree of exposure to the rising sun; and
- The various elements in the immediate environment including water bodies.⁵

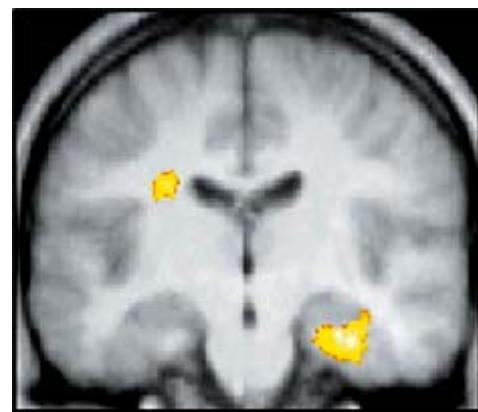
Of this list of influences Maharishi considers *orientation* to be the most significant. In order for us to gain a scientific understanding of the nature and significance of orientation in Maharishi Sthapatya Veda design we would benefit from a modern scientific model offering a plausible biophysical mechanism by which orientation could affect human mind/body functioning and behavior.

Brain Research on Orientation, Navigation and Placement

The useful first step in constructing such a model would be to determine whether any critical centers in the body are sensitive to orientation. Research with animals indicates that several assemblies of brain cells are sensitive to environment cues—*spatially-tuned*— including head

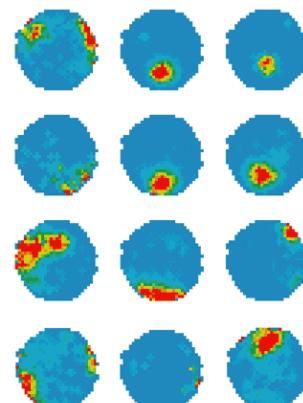
direction, place, etc. These cells have been located most often in the hippocampal and thalamic regions.

Navigation Systems: Indirect evidence for orientation comes from **human neuroimaging work which demonstrates that the right hippocampus and inferior parietal cortex cooperate to enable navigation to an unseen goal** (Maguire, et al., *Science* 280:921-924, 1998). More specifically, the hippocampus provides an allocentric (environment-based) representation of space that allows the computation of the direction from any start location to any goal location, and the right inferior parietal cortex uses this information to compute the correct body turns to enable movement toward the goal given the relative (egocentric, body-centered) location of obstacles in the way (doorways to go through, barriers across roads, and so forth) and the current heading direction. The PET image of the human brain on the right shows hippocampal activation (lower right area) during the navigational task.



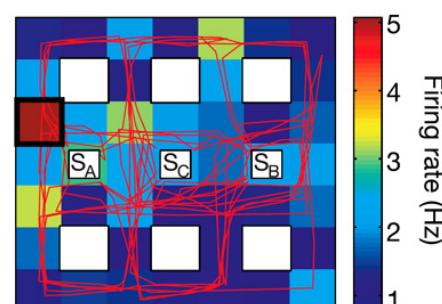
Place-Cells: Animals devote considerable attention to their location and movement in environment. Place cells are key to this spatial mapping ability of mammals that permits them to effectively deal with their working space. The calibration of space requires that individuals know where they are and where the various important environmental elements or objects are located. Exploration and navigation create central representations of environmental cues.

The rat hippocampus is considered to contain a stable, yet flexible ‘cognitive map’ or ‘navigational system’, to assist the animal to effectively deal with each and every environment. Each cell fires or is activated by a specific location or place in the environment. Thus, each cell can be considered to ‘represent’ a specific place or ‘place field.’ This ability is, in part, based on sensory cues. Place cells firing can be dependent or independent of head direction (see below). Image on right shows the activity of 12 cells. Red color shows preferentially firing at that location or place of the environment (James Knierim, Ph.D.; nba.uth.tmc.edu/homepage/jknierim/research.htm).



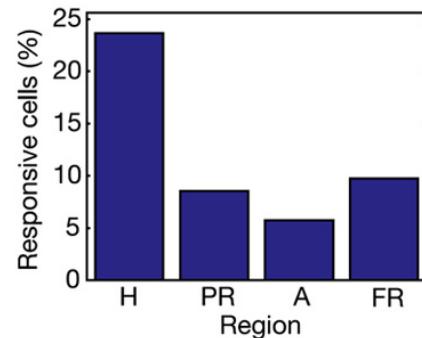
There is some evidence from primates that hippocampal cells can code for *allocentric* position in space, e.g., these cells map a location in space ‘out there’, not the location of the animal.⁶

Recent work in humans show similar cellular networks underlying human spatial navigation (Ekstrom, A. et al., *Nature*, 425:184-187, 2003). The graph on the right shows the activity or firing-rate map of a single human hippocampal cell showing significant place selectivity



while the individual is *viewing* a virtual city layout. Lettered squares (SA,SB,SC) indicate target store locations, white boxes indicate non-target buildings, red lines indicate the subject's trajectory, and the red square (upper left) indicates regions of significantly high firing rate (all examples, $p < 0.01$).

Place cells like the one whose map is shown above are found in several regions of the human nervous system. Anatomical distribution studies show place-responsive cells are clustered in the hippocampus (H) as well as the amygdala (A), parahippocampal region (PR) and frontal lobes (FR).



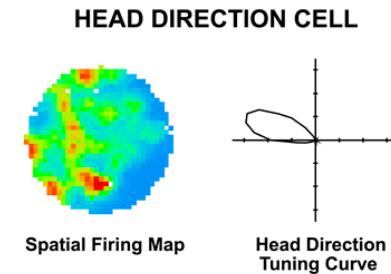
Head Direction-Cells (HD cells): Research has identified a population of cells in the rat hippocampal formation which discharge as a function of the animal's head direction in the horizontal plane, independent of its behavior and location in the environment. For example, a particular neuron would discharge only when the animal's head pointed northeast, while another neuron might discharge whenever the animal pointed its head west. The image on the right shows the directional preference of a HD cell (James Knierim, Ph.D.; nba.uth.tmc.edu/homepage/jknierim/research.htm).

It is not clear how the head direction signal is derived and processed from known sensory inputs. What primary sensory information is transformed into a signal which represents the animal's directional orientation with respect to its environment?

Published work has been shown that some of the neurons in the thalamus of laboratory animals fire, or communicate, at different rates depending on what direction their heads are facing.⁷ For example, in the rat, some anterior thalamus cells encode the directional heading of the animal in absolute space. These neurons, like the hippocampal cells are referred to as head direction-cells, fire selectively when the rat points its head in a specific direction in the horizontal plane with respect to the external laboratory reference frame.

The thalamic nuclei are located at the center of the human brain and are considered the central gateway mediating the exchange and control of information between the cortex and the world of perception, thinking and behavior, and the environment (body and space around us). Most of the information that is to be conveyed between the body and mind must pass through the neurons or cells of the thalamus. In other words, the thalamus is a key location of mind-body connection. The anterior nuclei connect with the mamillary bodies, and through them, via fornix, with the hippocampus and the cingulate gyrus, thus taking part in the limbic circuit, processing and controlling emotional behavior.

These findings in laboratory animals indicate that the mammalian brain computes a metric or map of the body/environment relationship presumably to serve some evolutionary useful end. Based on considerable evidence of perseverance of evolutionary



trends across species, we can safely assume human brains most likely possess similar characteristics. Little information is available to determine the functional significance of the head direction cell signal to the organism; that is, we do not know how animals use these cells for orientation and navigation, or how they may alter the cognitive and emotional state of the organism.⁸ Recent work suggests these cells maybe part of a circuit serving as a functional component of a neural system for path integration of the rat's directional heading.⁹ Since the HD Cells are in the limbic portion of the thalamus, they could exert some influence over emotion computation concerning environmental signals. It is not clear how HD cells fit into the possible limbic function in the process of representing an essential component of a neural network that processes allocentric spatial information.

Mammalian Magnetoreception: Although Vedic Architecture clearly and repeatedly suggests preferential sensitivity to the eastern direction there is no evidence yet as to whether any neurons in mammalian brains are sensitive to the *cardinal* directions, i.e. whether brain cells are either sensitive or selective to magnetic field orientation and/or to environmental cues signally the direction of the rising sun. In this context, we can note that there are two decades of reports of magnetite in mammals, in particular, biominerization in the human brain (see, Kirschvink, Kobayashi-Kirschvink, and Woodford, Magnetite biominerization in the human brain. *Proc Natl Acad Sci U S A.* 89(16): 7683–7687, 1992). These processes have now been extensively studied in magnetotactic bacteria, and the transporters and chelators involved have been sequenced. This approach might lead to improved methodologies for locating small clusters of magnetite crystals in animals and deciphering their function. Recent advances are consistent with the hypothesis that a magnetic compass based on chemical magnetoreception exists in birds, and candidate magnetite-based receptors, possibly functioning in a magnetic map sense, have now been reported in both birds and fish. (for review, see Sönke Johnsen and Kenneth J. Lohmann, The Physics and Neurobiology of Magnetoreception, *Nature Reviews, Neuroscience* 6: 703, 2005)

Vedic Architecture infers and Maharishi has predicted that brain cells are sensitive to magnetic field orientation and that the human brain is sensitive to and responds to the cardinal orientations, in particular and preferentially to the rising sun, “When one is facing east, the brain physiology functions differently than when one is facing north, south or west. This natural tendency of the brain to function with reference to direction follows the same laws of Maharishi Sthapatya Veda that guide the structuring dynamics of creation, underlying all individual and cosmic values that sustain order in the universe.”¹⁰

Although many cells in the physiology contain magnetic particles that could be employed to transduce the environmental fields (not unlike migrating birds, etc.), there is little research of an effect in higher mammals, and specifically humans. Nevertheless, we could speculate here that cells or a distributed cell circuit of the human brain are sensitive to solar rhythms and/or magnetic fields in terms of orientation. The elements in the sky, most notably the sun, pass overhead from east to west. The sun, and perhaps other celestial bodies, may well have some mind-body effects upon life in response to which creatures have evolved to function differently.

Research on Maharishi Sthapatya Veda

Maharishi Sthapatya Veda asserts because of this putative environmental sensitivity of the brain, the body and mind also would function differently depending upon orientation. Below are a series of related predictions from Sthapatya Veda and the corresponding state of research.

Prediction 1. SLEEP: Body Orientation and Mind-Body Health

Maharishi Sthapatya Veda design predicts that our health is affected by the orientation we take when we are sleeping. Specifically, it predicts that it is healthiest for us to sleep with our heads pointed to the east and most unhealthy to sleep with our heads to the north.

Research Findings

This hypothesis has been examined by Veronica Butler, M.D., a rural Iowa physician, who discovered via a survey of her patients that those who sleep in north-facing beds suffer from significantly more depression and anxiety than do those who sleep in beds without this orientation.¹¹

In her study, she found the head direction correlated with mental health. she reported that planned comparisons [based on the ANOVA, a standard statistical analysis procedure] with direction of sleep as the grouping variable revealed that those individuals sleeping with their head pointing north had significantly lower scores on the Mental Health Inventory compared to patients who slept in other directions ($F(1,150) = 9.08, p = .003$). Thus, there is initial concrete evidence in support of Maharishi Sthapatya Veda design's predicted effect of our sleeping orientation on mind-body health.

This human work is consistent with some unpublished pilot animal data from Ohio State University looking at sleep orientation and behavior (Sharma, et. al., Dept of Pathology, unpublished results). Laboratory rats were placed in narrow cages, so that the direction in which they slept could be controlled.¹² Half of the animals were made to sleep with their heads to the east, and half of them with heads to the north. In the morning it was found that the animals that had been made to sleep with their heads to the north had elevated levels of stress hormones (including cortisone) in their bloodstream. Animals made to sleep with head to the east had reduced levels of stress hormones in their bloodstream.

In addition, the animals that were made to sleep with their head to the north then displayed aggressive and anti-social behavior as noted by their increased tendency to fight with each other. Such behavior is as might be expected if their stress hormones were elevated. Conversely, the animals that were made to sleep with their head to the east displayed more peaceful behavior.

Ongoing research includes evaluating brainwave and neuroendocrine patterns during different sleep orientation in humans. Also, research has begun to examine the brainwave patterns associated with head orientation and cardinal directions inside and outside a building with proper vastu (see below).

Prediction 2. Building Orientation and Occupant Mind/Body Health

Sthapatya Veda also predicts that not only our own personal orientation, but also the orientation of the buildings we occupy, will affect us in detectable, well-delineated ways. Specifically, Maharishi Sthapatya Veda theory predicts that the widest range of auspicious influences benefit those who live in east-facing houses, and the broadest, most life-damaging influences come to bear on those in south-facing houses. The texts state that enlightenment, affluence and fulfillment will increase to those who live in east-facing houses and that all negative influences – problems and suffering – will affect the lives of those who live in south-facing houses.¹³ Though we do not yet have a bio-mechanical model to explain this predicted effect, we can nonetheless test to see whether it does occur.

Research Findings

1. Mental Health: The first such test was carried out as a component of Dr. Butler's research cited above. As a part of her survey of patients Butler discovered that there was a strong correlation between house orientation and scores in the areas of mental health and prosperity among her patients. Significantly lower scores were found in these areas among patients whose homes faced south.

Specifically, she found that patients whose homes had south entrances had significantly poorer overall scores on the Mental Health Inventory than patients with north or east entrances ($F(1,154) = 4.51, p = .035$)....Patients whose homes had south entrances also reported more financial problems relative to those with north or east entrances ($F(1,154) = 4.18, p = .043$). This result remained significant even when controlling for level of income ($F(1,153) = 3.98, p = .048$).

2. Cardiovascular Health: A second finding comes from pilot preliminary review of data from a practicing cardiologist in southern California. He found that 50% of his patients lived in south-facing houses – this disproportionately high percentage correlates with the Maharishi Sthapatya Veda prediction that residents in south-facing buildings come under an influence of problems and suffering.¹⁴

3. Hospital Recovery Rates: A third finding looked at the effect upon individuals in east vs. west facing sides of buildings, e.g., when rooms are placed so as to permit sunlight from the east to enter them versus the sunlight from the west. In a peer-reviewed published study, the recovery rates of patients housed in a wing of a hospital were compared where half of the patients were located in bedrooms on the east side of a corridor, receiving eastern sunlight into their rooms, and the other half were housed in rooms on the west side of the same corridor, receiving only western sunlight into their rooms. In all other respects the patients had the same treatments, administered by the very same doctors and nurses. It was discovered that the patients whose rooms were on the east side of the corridor were released from treatment on average four days earlier than the patients in rooms that received only western light.¹⁵

4. Crime Rates: A fourth finding comes from a study examining the correlation of negative behavior and house orientation. The research reported that there were 75% more burglaries in south-facing houses than in houses facing east, west or north.¹⁶

5. Subjective Sensitivity to Vastu Buildings: A fifth study has shown that individuals can detect the nature of the building they are in with no classical sensory cues (visual=blindfold, auditory=headphones with nature sounds, smell=same aroma, motor =moved in wheelchair input). Under these sensory-deprived conditions, individuals were randomly exposed to and could distinguish new Vastu buildings, from “rectified” Vastu office building, from non-Vastu buildings.¹⁸

Each of these individual cited studies is preliminary, but taken collectively they lend support for the principle of Maharishi Vedic architecture that mind-body health and wellbeing is promoted by the design of east-facing buildings, and designs that provide a maximum of eastern sunlight for their occupants.

The Cumulative Influence of Multiple Design Factors

Maharishi Vedic architecture is considered by its practitioners to be a holistic science. When multiple predictors are present the effects are anticipated to be stronger. A study is underway to examine this prediction.¹⁷ In this study 100 publicly-owned businesses have been selected randomly in the Faroe Islands, a territory of Denmark. Five years of financial records for each company has been compiled from public records, as have aerial photos, topographic maps, and site plans of their headquarters. Companies have been excluded from the study if their income is not generated within their headquarters – fishing and shipping companies, for example, have therefore been excluded.

A Maharishi Sthapatya Veda consultant has begun to evaluate the collected drawings and photos and has concluded that there are five Maharishi Vedic architecture factors that can be observed in the documentation on each company:

- Building orientation
- Building shape
- Direction of nearest mountain
- Direction of nearest water body
- Orientation of fenced enclosure around the building, where present

The consultant has begun to grade each company according to the predicted influence of each of the five factors and is compiling a single numerical predictor for their overall influence, and is then ranking the companies on the basis of this predictor. Independently, the study’s lead researcher, a professor of business and statistics, is ranking the financial success of the companies on the basis of the amount of profit generated per employee over the five year period and other standard financial statistics.

In a preliminary review of the data, results for thirty of the companies have been compared, and in the cases of 27 out of the 30 companies the researchers report that the Vedic architecture indices correlated with the amount of profit generated per employee by the companies. 27 out

of 30 is a remarkably high correlation. The researchers plan to submit the study for publication in a peer-reviewed journal when they have completed their analysis of all of the 100 companies.

Summary Perspective on Research

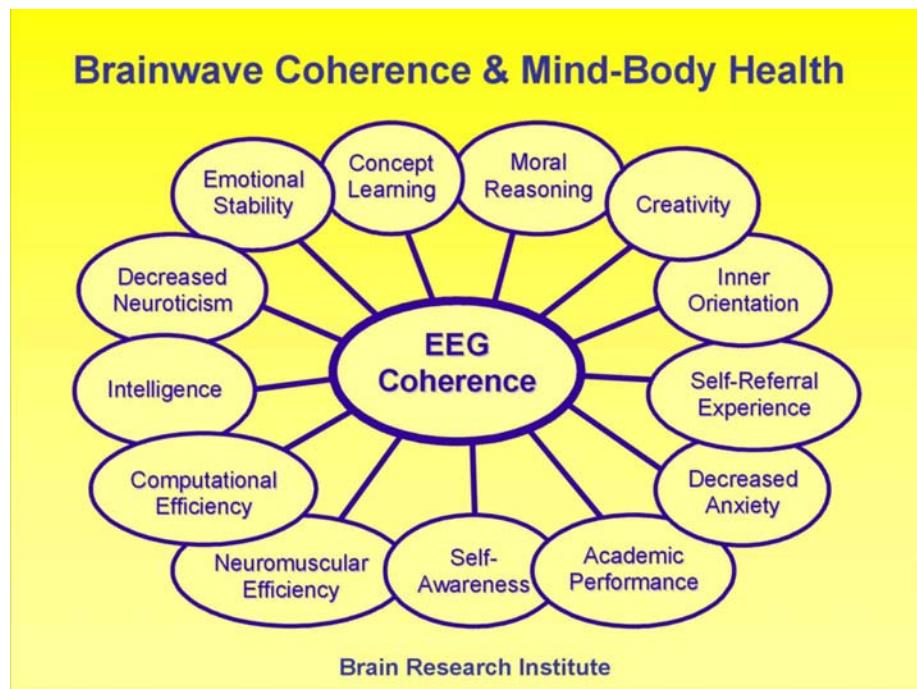
What people experience when they enter, live, or work in vastu is a far greater sense of self. Individuals attempt to define or give expression to this experience. This experience has been expressed in as many ways and words as there are people. It appears to center around a shift from being dominated by the objects and boundaries of the space to being more aware and established in one's self. Despite the great diversity of personal expressions of this profound experience, the development and experience of self is at the core of human wellbeing. Our sense of self underlies the proper functioning of our emotions, intellect, senses and behavior. This self-referral functioning—brain activity supporting a greatly enhanced sense of reference to the innermost self of an individual—is thus enlivened or enhanced by an environment created by the principles of Vastu vidya.

When brain scientists conduct controlled studies of the effects of Vastu on human brain functioning, health and longevity, we would expect that they will find an increase in brain dynamics that reflect enhanced self-referral functioning—brainwave coherence.

This self-referral functioning has been documented over the last 40 years to be directly correlated with remarkably high levels of brainwave coherence. High levels of coherence are strongly correlated with numerous indicators of greater mind-body health (see graph to right).

This self-referral experience has been recorded during Transcendental

Meditation correlated with the self-referral experience of consciousness or Atma (the Sanskrit term). High levels of self-referral experience has also been found in daily waking activity in long-term practitioners of Transcendental Meditation who have stabilized this experience of Atma or self-referral consciousness across the 24 hrs of the day.



Thus, the experience of being in a Vastu and the experience of facing different directions are fundamentally connected to enlivening the Self or Atma of an individual and would predictably be found in increased brainwave coherence. Preliminary research trials in Europe¹⁹ give some support to the concept of differential patterns of brainwave coherence based on the direction an individual is facing. When brainwaves of students subjects are examined facing East (positive influence predicted) compared to facing South (negative influence predicted) frontal coherence patterns appear to be different (in picture, subject was outfitted to eliminate auditory and visual directionality cues).



We would encourage the national research institutes, such as the NIH, to examine using current scientific methods these principles of Vastu and the great potential they offer to the health and welfare of the citizens they serve.

Conclusion

Preliminary research on homes and office buildings shows significant correlations with the behavior of their occupants, supporting the contention of the texts of Maharishi Vedic architecture that the application of its principles can “influence health, happiness and success.”

We would encourage future research to clarify the relative merit of these ancient principles through manipulation of individual principles or combinations of principles. Research can be conducted to examine the effects of the several hundred buildings built world-wide over the past decade entirely according to the recommended principles of Maharishi Vedic architecture. It is proposed that even more measurable effects upon occupants’ well being and success will be found in them, in accordance with anecdotal evidence and research findings.

References and Footnotes

¹ This statement is based upon conversations with masters of Feng Shui and Sthapatya Veda by the author. We recommend research by an historian of Asian architectural history on this assertion.

² Maharishi Vedic, Maharishi Sthāpatya Veda and Maharishi Vastu are registered or common law trademarks licensed to Maharishi Vedic Education Development Corporation and used under sublicense or with permission.

³ Financial calculation and anecdotal experiences of building users collected by Eloise Raymond, Director of Sales & Marketing, Maharishi Global Construction / 500 North Third Street / Fairfield, Iowa 52556, (641) 472-9605, Eloise@mgc-vastu.com.

⁴ *Building for the Health and Happiness of Everyone, Creating Ideal Housing in Harmony with Natural Law – Exhibition*, Maharishi Vedic University, The Netherlands, 1998. Page 3. Available from Maharishi Global Construction/500 North Third Street, #110/Fairfield, Iowa, 52556 USA

⁵ *Ibid.* page 15

⁶ Georges-Francois, et. al., *Cerebral Cortex* 9:197-212, 1999

⁷ Stackman, R. W., & Taube, J. S. (1997). "Firing Properties of Head Direction Cells in Rat Anterior Thalamic Neurons: Dependence upon Vestibular Input," *Journal of Neuroscience*, 17, 4349-4358.

Taube, J.S., Muller, R.U., Ranck, J.B Jr., "Head-Direction Cells Recorded from the Postsubiculum in Freely Moving Rats. II. Effects of environmental manipulations," *Journal of Neuroscience* (JDF), Feb 1990, 10 (2): 436-47. And:

Taube, J.S., Burton, H.L., "Head Direction Cell Activity Monitored in a Novel Environment and During a Cue Conflict Situation," *Journal of Neurophysiology* (JC7), Nov. 1995, 74 (5) 1953-71. And:

Taube, J.S., "Head Direction Cells Recorded in the Anterior Thalamic Nuclei of Freely Moving Rats," *Journal of Neuroscience* (JDF), Jan. 1995, 15 (1 Pt 1): 70-86.

Muller, R.U., Bostock, E., Taube J.S., Kubie, J.L., "On the Directional Firing Properties of Hippocampal Place Cells," *Journal of Neuroscience* (JDF) Dec. 1994, 14 (12): 7235-51.

It should be noted that because of the intrusive nature of the testing these tests have not yet been conducted on human subjects.

⁸ Taube, J. S. (1998). "Head Direction Cells and the Neurophysiological Basis for a Sense of Direction." *Progress in Neurobiology*, 55: 225-256

⁹ Hugh T. Blair, Brian W. Lipscomb, and Patricia E. Sharp. "Anticipatory Time Intervals of Head-Direction Cells in the Anterior Thalamus of the Rat: Implications for Path Integration in the Head-Direction Circuit," *J. Neurophysiology* 78(1): 145-159, 1997

¹⁰ *Building for..., pp 24-25.*

¹¹ Travis, F., Butler, V., Rainforth, M., Alexander, C.N., Khare, R., Lipman, J. (in press) "Can a Building's Orientation Affect the Quality of Life of the People Within? Testing Principles of Maharishi Sthāpatya Veda," *Journal of Social Behavior and Personality*. Publication scheduled for October, 2004. Butler's study's subjects did not live in Maharishi Sthapatya Veda-designed houses and were generally unacquainted with Maharishi Sthapatya Veda design. Approximately 100 subjects were included in the study.

¹² Preliminary research conducted by Dr. Hari Sharma, M.D., Director Emeritus, Pathology Department, Ohio State University, Columbus, Ohio. Described to the author in 1999. The

experiment at that time had been conducted on a small sample of laboratory rats. Study on a larger population will be required before the research can be submitted for publication.

¹³ *Building for...,* page 13.

¹⁴ John Zamarra, M.D., verbal description of preliminary review conducted by on 100 of his recent patients. Orientation of house was based on street address. Addresses were categorized into one of four cardinal directions. Zamarra hopes to follow this up with a comprehensive study of 3000 patients and submit his findings for publication.

¹⁵ Benedetti, F., "Morning Sunlight Reduces Length of Hospitalization in Bipolar Depression" Journal of Affective Disorders 62 (2001) pp. 221-223

¹⁶ *Prev. cit.:* Travis, F., Butler, V., Rainforth, M., Alexander, C.N., Khare, R., Lipman, J., Study conducted on 110 burglaries reported in Fairfield, Iowa. A preliminary, unpublished study in 2000 by student Jar-El Cohen at the Maharishi School of the Age of Enlightenment, Fairfield, Iowa conducted on burglaries reported in Ottumwa, Iowa yielded similar results.

¹⁷ Lead researcher is Olavur Christian, Ph. D., a professor at the University of Denmark. This report is based upon an oral presentation made by Christian in August of 2001 to the faculty of the business school at Maharishi University of Management, Fairfield, Iowa.

¹⁸ DeFrientas, Graham, Preliminary Report on a Study on Vastu-sensitive subjects, Unpublished research, Maharishi University of Management, 2005

¹⁹ Arenander, A, Travis, T. and Wallace K. working at MERU in Netherlands, 2005.