



# *The North Texas*

# Skeptic

Volume 17

August 2003

Number 8

<http://www.ntskeptics.org>

## Left behind

John Blanton

In early 2002 detractors of evolution in Ohio had a go at the state science curriculum. Newly-introduced House Bill 481 spoke of the need "...to enhance the effectiveness of science education and to promote academic freedom and the neutrality of state government with respect to teachings that touch religious and non religious beliefs..." To accomplish this worthy end it would "Require that whenever explanations regarding the origins of life are presented, appropriate explanation and disclosure shall be provided regarding the historical nature of origins science and the use of any material assumption which may have provided a basis for the explanation being presented..."<sup>1</sup> The proposed bill made no mention of quantum mechanics.

House Bill 484 sought "To provide that before the science curriculum standards that are to be adopted by the State Board of Education prior to December 31, 2002, may be effective, those standards must be approved by a concurrent resolution passed by both houses of the General Assembly."<sup>2</sup>

I am no lawyer, but it would appear the first bill took aim at the teaching of evolution, and the second one wanted to make sure the state legislature had the final word in the matter.

It soon became apparent this was the work of the Discovery Institute (DI), a creationist think tank that pushes *intelligent design*. Does it seem there's never a dung beetle around when you need one?

Of course, a lively discussion of the issues soon developed. Everybody got into the act. By *everybody* I mean the Discovery Institute on the one hand and the supporters of science on the other.

In a debate on 11 March the two sides squared off at the Veterans Memorial Auditorium in Columbus. It was a panel discussion sponsored by the Ohio Board of Education. Possibly the Ohio BOE had a purpose in setting up this very public presentation. Possibly the purpose was to embarrass the Discovery Institute.

The discussion saw DI Fellows Stephen C. Meyer and Jonathan Wells pitch their wares against Lawrence Krauss and Kenneth R Miller, who were there to stand in for science. Meyer is an associate professor of philosophy at

## EVENTS CALENDAR

### August Program

#### If Creationism Were True

August 9 (Saturday) at 2 p.m. at 2900 Live Oak Street in Dallas (Center for Nonprofit Management, corner of Live Oak and Liberty) Free and open to the public

The North Texas Skeptics will present a lecture on "If Creationism Were True." If some of the bizarre claims of the creationists were actually true, what a different world we would see around us. NTS members John Blanton and Curtis Severns have researched the issue of creationism for the last decade. They will base their talk on the many creationist lectures they have attended and on their numerous interviews with creationists.

#### Social dinner and board meeting

August 23, at 7:30 p.m., at the Black-eyed Pea Restaurant Forest Lane in Dallas (one block west of Central Expressway). Let us know if you are coming. We sometimes reschedule or cancel these events.

214-335-9248 (hotline)

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Our newsletter, *The North Texas Skeptic*, is  
 published monthly by The North Texas Skeptics, P.O.  
 Box 111794, Carrollton, Texas 75011-1794.

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Whitworth College in Spokane, Washington. Wells is author of the famous creationist book *Icons of Evolution*. Wells apparently became allergic to evolution while obtaining a Ph.D. in theology at Yale. In order to better pursue his new-found goal of defeating Darwinism he went back to school and earned a Ph.D. in biology at UC Berkeley. Lawrence Krauss heads up the physics department at Case Western Reserve University in Cleveland, and Kenneth Miller is a biology professor at Brown University.

Miller has written a nice history of the discussion, and what you are reading is taken principally from his on-line account.<sup>3</sup>

The advent of intelligent design, with its cadre of college-tutored sales representatives, has so far failed to spawn a new wave of scholastic diligence. Lackluster scholarship has dogged the creationist movement from the get go, and intelligent design seems unable to pave over the problem with a wall full of diplomas. Even so, the debate provided a wonderful exhibition of the Discovery Institute's best efforts.

## Santorum

Meyer's failure to stay current became apparent during a question and answer period. A question about the "Santorum" language in the "No Child Left Behind Act" brought an unfortunate response from the educated professor Meyer. The Act, proposed by President Bush and passed by Congress, is intended to strengthen public education in this country. During the bill's journey through the legislative mill Senator Rick Santorum of Pennsylvania introduced amendment 799 to the Senate bill. Lest there be any confusion about the wording of the amendment, I reproduce some of it here:

...(1) good science education should prepare students to distinguish the data or testable theories of science from philosophical or religious claims that are made in the name of science; (2) where biological evolution is taught, the curriculum should help students to understand why this subject generates so much continuing controversy, and should prepare the students to be informed participants in public discussions regarding the subject.<sup>4</sup>

The senator obviously had evolution in his gun sights with this amendment, and creationists were delighted when the bill became law.

In any event, Meyer responded to the "Santorum" question by agreeing the law requires the teaching of alternate scientific theories. The state of Ohio should follow the law, he stated.

The problem is, by the time the bill was signed into law the Congress had washed Santorum's critical phrasing out of what is now Public Law 107-110. The references to evolution, by now considerably diluted, have been relegated to the report of the joint Senate-House conference committee. While a conference report may provide great reading, it has no force of law. We may wonder, then, *what* law it is Meyer wants Ohio to follow.

At the debate Miller unkindly pointed this out to Meyer, Wells, the others in attendance, and the whole world, for that matter. It was not his plan to make friends among the creationists.

Other creationists besides Meyer continued to assume the law included the Santorum language. By February 2002 creationist Phyllis Schlafly saw fit to pronounce the following:

The “No Child Left Behind” bill signed by President Bush on Jan. 8 includes a science requirement that focuses on “the data and testable theories of science.” This new federal law specifies that “where topics are taught that may generate controversy (such as biological evolution), the curriculum should help students to understand the full range of scientific views that exist.”<sup>5</sup>

Schlafly may have been parroting the Web site of Science Excellence for All Ohioans, which has since corrected its error. SEAO was formed in reaction to the proposed revision of Ohio science standards, and it’s a thinly-disguised creationist group pushing intelligent design. Thin to the extent that “We support a teach the controversy approach with respect to biological origins. This calls for (a) teaching the evidence for and against biological evolution (macroevolution, the theory of undirected common descent), (b) permitting, but not requiring, teachers to discuss alternative theories such as intelligent design, and (c) adopting a definition of science that allows for consideration of all logical explanations for phenomena in nature.”<sup>6</sup>

## Icons

Meanwhile, back at the debate, the presentation by Wells had developed a wobbly wheel. Wells’ *Icons* book touts a number of issues, his icons, that he considers black marks against evolution. In the debate Wells provided a recitation of the *icons*, and he particularly wanted to bear down on one of these in a dig at Miller.

Here is some background:

Ernst Haeckel was a German anatomist who worked in the nineteenth and early twentieth centuries. He is famous for his phrase “ontogeny recapitulates phylogeny,” meaning that during embryonic development an organism retraces its evolutionary history. Since early in the twentieth century this idea has been discarded, and more recently Haeckel’s drawings depicting vertebrate embryonic development have come under fire. A report in the journal *Science* in 1997 pointed out that Haeckel’s drawings are seriously in error.<sup>7</sup> Embryologist Michael Richardson and colleagues noted problems with the drawings, and they published a report in the journal *Anatomy and Embryology* earlier that year.<sup>8</sup> While the German scientific community had long

ago called Haeckel on the carpet, outsiders had ignored reports of his malfeasance for over 100 years.

Miller’s dilemma was that one of his textbooks featured the faulty drawings. When the *Science* article came out Miller did about all a scientist can do when he has stepped in a ripe cow cookie. He sent out corrections to his texts, and he got his publisher to work on revising the book. During his participation in a debate about intelligent design on PBS *Firing Line* in December 1997 Miller was ready and willing to set the record straight.

Wells is another matter.

Following Wells’ Ohio presentation Miller chose three of Wells’ icons to illustrate his deliberate-or else exceedingly mal-adroit-misuse of information.

## Peppered moths

Peppered moths are sort of gray and spotted-peppered, if you will. Some are very dark. During England’s time of industrial blight a lot of soot darkened tree trunks in industrial areas. Since the light-colored moths no longer matched the dark trunks, any that were unlucky enough to perch there suffered increased exposure to predators. Darker variations of the moths blended in and survived. Amazing! Natural selection resulted in a greater predominance of the dark moths. Later, when England cleaned up its smoke stacks the tree trunks regained their sheen and light-colored peppered moths again predominated.

*Icons* goes to some length to say this is evolutionary deception. In particular, Wells says the moths don’t perch on tree trunks.

What the textbooks don’t explain, however, is that biologists have known since the 1980s that the classical story has some serious flaws. The most serious is that peppered moths in the wild don’t even rest on tree trunks. The textbook photographs, it turns out, have been staged.<sup>9</sup>

Yes, the photos being used in textbooks are faked—*faked!* The photos showing two moths side by side on a tree trunk, one light and one dark, are staged—using dead moths stuck there by the photographer. Wells and the creationists would like you to believe this is evidence of scientific fraud perpetrated to support evolution.

The scientific community has not been quick with a pat on the back. The response has been a big yawn. If you want a picture to illustrate how a moth of one color sticks out while the other blends in, how else are you going to do it? You get two dead moths and stick them there side by side and take the photo.

Regarding where the moths perch, Wells seems to have obtained his Ph.D. in biology and proceeded to park it on a side street. Not desiring to do any biological research, himself, Dr. Wells finds it more fruitful to scan the literature of others to make his arguments against natural selection. He is, after all, a man with a mission. In *Icons* Wells reinforces his claims about the moths by using selected quotes from others. But, apparently unknown to Wells, there is abundant evidence to the contrary, and with a characteristic lack of chivalry Miller has now documented this oversight. For example, Michael Majerus has published the details of a study in his book *Melanism: Evolution in Action*:<sup>10</sup>

#### Resting positions of moths found in the wild in studies between 1964 and 1996

Exposed trunk: 6  
 Unexposed trunk: 6  
 Trunk/branch joint: 20  
 Branches: 15  
 Summary: 32 of 47 moths (68%) were found on tree trunks

#### Resting positions of moths found in the vicinity of traps between 1965 and 1996

Exposed trunk: 48  
 Unexposed trunk: 22  
 Trunk/branch joint: 66  
 Branches: 20  
 Foliage: 22  
 Man-made surfaces: 25  
 Summary: 136 of 203 moths (67%) were found on tree trunks.

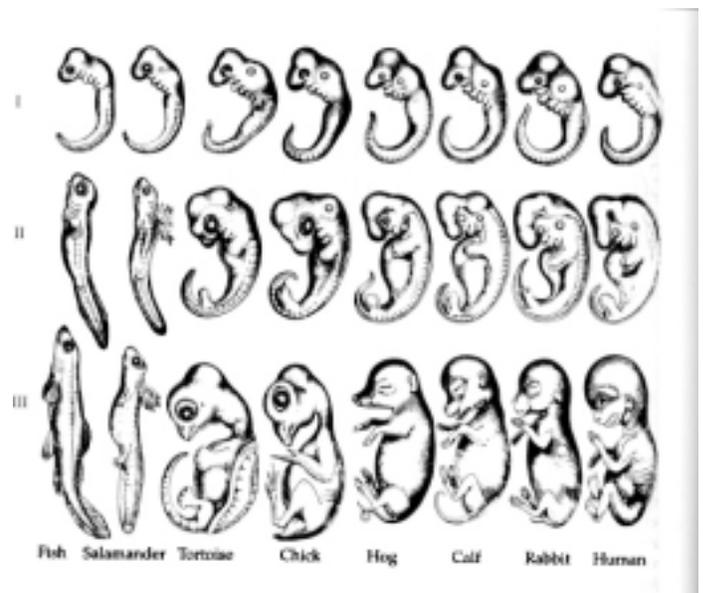
What is curious is that in *Icons* Wells quotes from the Majerus book to make his point. Majerus called attention to the “artificiality” of much of the earlier moth studies and included the statement “peppered moths do not naturally rest in exposed positions on tree trunks.”<sup>11</sup> Wells seems to have picked up on that statement and has ignored the data. Also, he does not particularly emphasize the fact that Majerus and others support the peppered moth evidence of natural selection.

### Haeckel's embryos

In his textbook Miller now uses illustrations of embryos based on photographs instead of the Haeckel drawings, but Wells continues to gripe. The new illustrations show the parallels of embryonic development of vertebrates, but Wells wants to convince us this is a false attempt to demonstrate that all vertebrate embryos start out much the same before diverging to their different forms—a recapitulation of embryonic recapitulation. Of course the illustrations show no such thing, and they

do *not* show the earliest stage of embryonic development—another complaint of Wells.

One fact Wells ignores is that differences in egg type will dictate early differences in the embryos. For example, chicken embryos feed off a one-time slug of nutrition in the yolk, while mammal embryos feed continuously from their mother after attaching to the uterine wall. Reasonably, chicken embryos do not start out looking like mammalian embryos, but eventually vertebrate embryos tend to be very similar during an intermediate stage of development. Which is the point Miller and other scientists are trying to make. More on this later.



Haeckel's embryos

Drawings by German anatomist Ernst Haeckel—from <http://zygote.swarthmore.edu/Richardson1.gif>

### The “Cambrian explosion”

Wells has revisited this icon in a separate publication, asking “Why don’t textbooks discuss the ‘Cambrian explosion,’ in which all major animal groups appear together in the fossil record fully formed instead of branching from a common ancestor — thus contradicting the evolutionary tree of life?”<sup>12</sup>

Miller pointed out that major animal groups (and all plants) appear *after* the Cambrian explosion, contrary to Wells’ original statement. In the debate Wells corrected his original wording and said he meant animal *phyla*, which do appear in the Cambrian explosion. It should be noted that *plants* don’t appear in the Cambrian explosion.

Miller finds it ironic that Wells has contradicted his implied claim that textbooks ignore the Cambrian explosion. Using his

position as a DI Fellow, Wells posted a rebuttal to Miller on the DI Web site. It includes the curious statement:

On the preceding page of the same textbook, Miller included a section entitled "The Cambrian Explosion." In it, Miller wrote: "The ancestors of almost all major living animal groups appeared in the fossil record for the first time." (p. 444)<sup>13</sup>

So, do textbooks discuss the Cambrian explosion, or *don't* they? We will know just as soon as Dr. Wells makes up his mind.

## Steadfast defense

Rather than putting their miscues behind them and moving on, the DI contingent has taken the position of defending the indefensible. They can do little else. There is only so much that can be put behind before there is nothing left to defend.

*Icons of Evolution* lists ten icons that Wells deems worthy of ridicule. These icons have been turned into "Ten questions to ask your biology teacher about evolution," a game the Discovery Institute would like students to play with their teachers.<sup>14</sup> The problem for DI is these are fairly easy questions to answer, and the answers are not what DI wants students to hear. The National Center for Science Education has posted a response to Wells in a way that demonstrates the shallow nature of his challenge. Here, for example, is what the NCSE had to say about vertebrate embryos:

*Q: VERTEBRATE EMBRYOS. Why do textbooks use drawings of similarities in vertebrate embryos as evidence for their common ancestry — even though biologists have known for over a century that vertebrate embryos are not most similar in their early stages, and the drawings are faked?*

*A: Twentieth-century and current embryological research confirms that early stages (if not the earliest) of vertebrate embryos are more similar than later ones; the more recently species shared a common ancestor, the more similar their embryological development. Thus cows and rabbits — mammals — are more similar in their embryological development than either is to alligators. Cows and antelopes are more similar in their embryology than either is to rabbits, and so on. The union of evolution and developmental biology — "evo-devo" — is one of the most rapidly growing biological fields. "Faked" drawings are not relied upon: there has been plenty of research in developmental biology since Haeckel — and in fact, hardly any textbooks feature Haeckel's drawings, as claimed.<sup>15</sup>*

A casual appraisal leads to the conclusion that if Discovery Institute and the other promoters of intelligent design had a more serious argument they would not be putting up chaff like the ten icons.

## Too late for some

Best intentions do not always guarantee a winning game. Public Law 107-110 was intended to ensure all children have access to quality education in the US. It was intended to make sure no child gets left behind. For creationists Meyer and Wells it may have come too late. □

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- 2 [http://www.legislature.state.oh.us/bills.cfm?ID=124\\_HB\\_484](http://www.legislature.state.oh.us/bills.cfm?ID=124_HB_484)
- 3 <http://www.millerandlevine.com/km/evol/wells-april-2002.html>
- 4 See, for example, <http://www.ntskeptics.org/news/news2001-06-22.htm> and <http://www.ideacenter.org/santorum.htm>.
- 5 <http://www.townhall.com/columnists/phyllisschlaflly/ps20020206.shtml>
- 6 From the SEAO Web site at <http://www.sciohio.org/start.htm>
- 7 Elizabeth Pennisi, "Haeckel's Embryos: Fraud Rediscovered," *Science* 1997 September 5; 277: 1435.
- 8 Michael K. Richardson, et al, "There is no highly conserved embryonic stage in the vertebrates: implications for current theories of evolution and development." *Anat Embryol* (1997) 196:91-106.
- 9 Jonathan Wells, *Icons of Evolution*. Regenery Publishing, Inc., Washington, p.138, 2000.
- 10 <http://www.millerandlevine.com/km/evol/wells-april-2002.html>
- 11 "Michael E. N. Majerus, *Melanism: Evolution in Action*, Oxford, 1998, p. 121," cited at <http://www.discovery.org/viewDB/index.php3?command=view&id=1144&program=CRSC>
- 12 See it on the Web at <http://www.millerandlevine.com/ten-answers.html>.
- 13 <http://www.discovery.org/viewDB/index.php3?command=view&id=1144&program=CRSC>
- 14 A number of creationist Web sites cater to this game. See for example <http://www.iconsofevolution.com/tools/questions.php3>
- 15 "Responses to Jonathan Wells's Ten Questions to Ask Your Biology Teacher" at [http://www.ncseweb.org/resources/articles/7719\\_responses\\_to\\_jonathan\\_wells3\\_11\\_28\\_2001.asp](http://www.ncseweb.org/resources/articles/7719_responses_to_jonathan_wells3_11_28_2001.asp)

## The God of structures and buildings

By Kumar S. Golla

Over the years, I have noticed that the people in India have grown more and more superstitious. That or I have grown to notice that they are superstitious. Superstitions are main stream business. For example, to get advance information on outcomes before every sports game major television networks call in predictors like tarot card readers etc. No one seems to do anything without consulting an astrologer. People wear different rings on their fingers to appease stars—certainly helps the jewelers, and business owners rely on numerology to name their companies—gives the numerologists some money to count, too, I guess.

One of these superstitious thoughts that prevail in mass media is the Vaastu Shastra (the science of the buildings). Its Chinese counterpart, Feng Shui, is well known outside India.<sup>1</sup> Almost every newspaper has a daily and or a weekly column about this “science.” They dispense advice right from dwellings to office buildings including industrial plants.

Vaastu Shastra is formed from bits and pieces of ancient Indian religious texts that give guidelines for structures and buildings. As with the norm of Hinduism, of assigning a “dedicated” god to an aspect of science or knowledge, there is a dedicated god called Vastu Purusha—the god of structures and buildings. The guidelines are supposed to be invocations to this god.<sup>2</sup>

It is claimed that the Vaastu Shastra, which is more than three thousand years old is an actual “science;” not a belief, which is actually what it is. The basic premise of this “science” is that all the invisible forces and energies exert influence on the human body, human mind, and human prosperity. Hence, honing these forces to our benefit seemingly will yield a healthy body, a healthy mind, and tons of prosperity. The method to hone all these invisible forces is to build buildings, structures, and houses according to the rules of the Vaastu Shastra.

Some of these invisible forces that are supposed to exert influence on human existence — present, and future — are: cosmic energy, solar energy, wind energy, molecular energy, chemical energy, atomic energy, water energy, electric energy, etc.<sup>3,4,5</sup>

Vaastu Shastra might have started out a couple of millennia ago with some common sense rudimentary principles. These were listed intermittently in the Shastras (religious texts). Gradually, these principles have been extended. Some of these principles now define amenities which did not exist three thousand years ago—or even a couple of hundred years ago—or for that matter a few decades ago. Hence this seems to me as far fetching, and outright ridiculous.

A few rules that Vaastu Shastra professes, which make sense to me, are:

- Do not build houses in water-logged areas (I sure wouldn't).
- Do not build houses at the foot of a hill (lest you be willing it to be bull-dozed by boulders rolling down).
- Build entrances to the house in a north or south facing (lest you want the sun to heat the interior of your house).
- Build stairs with at least one turn instead of a straight stair (the turn might break a fall from the top-most step).<sup>6</sup>

To these principles were added a lot of random beliefs, which are irrational and illogical. One such belief that has no basis in science is what I would call the source-sink theory. This Vaastu system of prescribing “fixes” to buildings tries to identify energy sources and sinks. What is termed a source or a sink is very arbitrary. For example, a body of water, such as a water tank, would be considered an energy sink (depending on who you may ask), while an idol of a god would be an energy source (what might be termed as something with a lot of “power”). The association of an object or a structure as emanating or dissipating energy is subjective.

A Vaastu expert might not explain all the details about the “science” itself. He mostly spares us laymen from all the esoteric technicalities and mumbo jumbo. His lingo is typically restricted to dispensing advice which goes something like, “Because of the water tank to the east, all the energy is absorbed there, and hence your daughter will not get married while staying in this house. I suggest you re-build the tank to the north (which might be farther away from the source of water).” One cannot but wonder what the “energy absorption” has to do with one's daughter getting married. I will assure you at this point that bewilderment only occurs if you don't take the leap of faith.

What amuses me—and annoys me too—is the seemingly new extensions to these rules which deal with things that did not exist three thousand years ago, like plumbing (not to be confused with drainage systems), cars and garages, computers, fans, electrical outlets, etc.

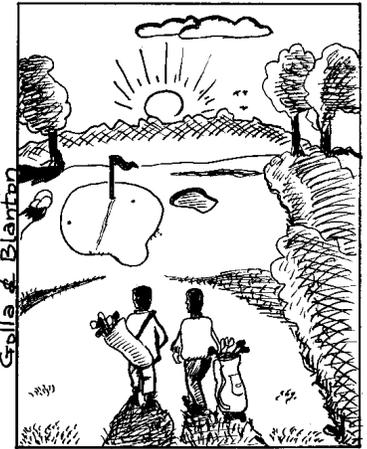
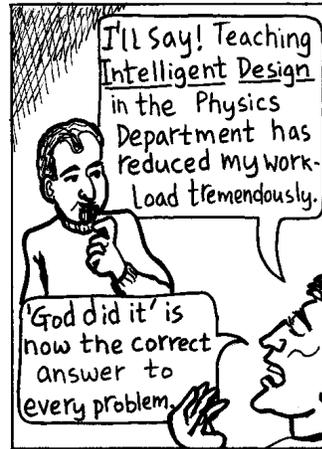
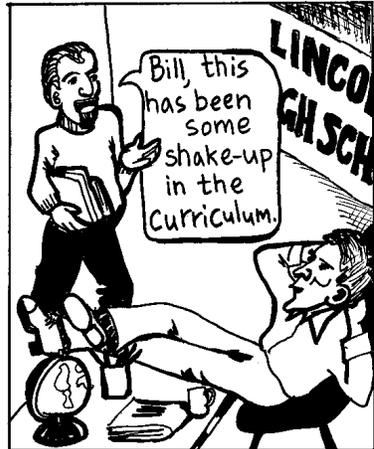
These days a lot of people have set up shop claiming to be the “one-and-only true Vaastu expert.” They give themselves doctoral degrees. People brag about having years of experience and how prosperous they have made their clients. They also brag about the celebrities whose houses they have designed and how they met with some success or the other. Since the government offers educational programs in astrology at universities, they might even consider adding diploma courses in Vaastu Shastra (if they haven't already done that). There is also a sense of nationalism when people talk about Vaastu Shastra. Most people feel that modern architecture is “foreign.”

My parents owned a house in India for the last 25 years. Over the years, inevitably, they involved themselves in a lot of home improvement projects. All these improvements—one would suppose they would be incremental—were initially intended to add

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luxury but soon became wayward in the grip of the irrationality of Vaastu Shastra. Extensions that were not needed from an utilitarian standpoint—which were even aesthetically bad—were routinely made. There were some random movements of windows and doors, repainting of walls, dismantling and rebuilding of water tanks, etc.

Some time back, I bought a ready-made condominium for my parents. The builder was working on a limited space and naturally wanted to maximize on the cost-benefit curve. But he knew, out of previous experiences, that people who buy these condominiums would look into Vaastu Shastra and would not easily fall “prey” to ingenuity, clever planning, and the latest architectural techniques. He therefore recruited the best (according to the brag sheet) Vaastu Shastra expert and got his blessing for his architecture. He paid this expert a lot of money and made several modifications, mostly fearing that his prospective buyers would shy away from a poor Vaastu design.

When my parents looked at the layout for the condominium, they suggested many modifications to the already Vaastu-certified layout. The distraught builder replayed the accolades of his Vaastu expert. However, my parents’ Vaastu expert beat the builder’s expert hands down in terms of accolades. The builder has finally agreed to make some modifications but not without complaining that he has had headaches due to these Vaastu experts. He complained to me, “If the source of this ‘science’ is the same then why do different experts give different layouts?” My parents are still a bit unhappy about the changes that “ought” to have been made, because the builder and I refused to budge completely (for different reasons). The brand-new condominium remains unoccupied since I bought it two years ago. □

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