



Noesis

The Journal of the Mega Society

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Contents

About the Mega Society/Copyright Notice		2
Editorial	Kevin Langdon	3
Option Theory: What I Knew and When I Knew It – Part 2	Edward O. Thorp	4
My Hip Malfunction and What I Know About It (1986)	Kevin Langdon	8
The Rest of the Story (So Far) (2005)	Kevin Langdon	9
Chess Problem Solution	Glenn Morrison	11
Crossing Hands	Ron Yannone	12
Constitutional Amendment Passed	Jeff Ward	13
Lucid Dream of Out of Paradigm Experience	Richard May	15

About the Mega Society

The Mega Society was founded by Dr. Ronald K. Hoeflin in 1982. The 606 Society (6 in 10⁶), founded by Christopher Harding, was incorporated into the new society and those with IQ scores on the Langdon Adult Intelligence Test (LAIT) of 173 or more were also invited to join. (The LAIT qualifying score was subsequently raised to 175; official scoring of the LAIT terminated at the end of 1993, after the test was compromised). A number of different tests were accepted by 606 and during the first few years of Mega's existence. Later, the LAIT and Dr. Hoeflin's Mega Test became the sole official entrance tests, by vote of the membership. Later, Dr. Hoeflin's Titan Test was added. (The Mega was also compromised, so scores after 1994 are currently not accepted; the Mega and Titan cutoff is now 43—but either the LAIT cutoff or the cutoff on Dr. Hoeflin's tests will need to be changed, as they are not equivalent.)

Mega publishes this irregularly-timed journal. The society also has a (low-traffic) members-only e-mail list. Mega members, please contact the Editor to be added to the list.

For more background on Mega, please refer to Darryl Miyaguchi's "A Short (and Bloody) History of the High-IQ Societies,"

<http://www.eskimo.com/~miyaguch/history.html>

and the official Mega Society page,

<http://www.megasociety.org/>

Noesis, the journal of the Mega Society, #178, September 2005.

Noesis is the journal of the Mega Society, an organization whose members are selected by means of high-range intelligence tests. Jeff Ward, 13155 Wimberly Square #284, San Diego, CA 92128, is Administrator of the Mega Society. Inquiries regarding membership should be directed to him at the address above or:

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Editorial

Kevin Langdon

Once again we have an interesting selection of material in this issue, but it's always a bit of a struggle to pull it together and the need for submissions is ongoing. Please submit something for *Noesis*.

Our Constitutional Amendment has been ratified unanimously by those who bothered to vote (see page 13). *Noesis* is now officially an electronic-only publication and the Mega Society no longer charges dues. However, some of you have paid dues in advance and we'll need to do something about these unfulfilled obligations of the society. Perhaps some of you have ideas about the best way to do this.

Ron Hoeflin has carried out his threat to resign from the Mega Society if we changed to online-only publication of *Noesis*. I regret this development and I hope that Ron will rejoin us.

The Mega Society Constitution calls for yearly election of officers, with a call for statements of candidacy in the September issue of *Noesis*. Ratification of the Constitutional amendment mentioned above has abolished the position of Publisher, leaving us with three officers: Administrator, Editor, and Internet Officer. If you are interested in running for one of these offices please send me your statement of candidacy.

Congratulations to member and former Editor Ron Yannone, who was recently inducted into the Association of Old Crows (AOC) Electronic Warfare (EW) Technology Hall of Fame.

Information on the background of the award can be found at the AOC website:

http://www.crows.org/EVENTS/2005/102305_CONV/05CONV_Preview.htm

The deadline for *Noesis* #179 is November 15.

Cover: Roman iron amulet, c. 3rd century A.D., believed to be Mithra/Mithras (photo Copyright © 2005 by Patrick Breen; all rights reserved).

Back Cover: An image generated with "Crossings," a routine in Hallucinations™, by Kevin Langdon.

Option Theory: What I Knew and When I Knew It – Part 2

Edward O. Thorp

Member Ron Lee has obtained the author's permission for us to reprint several of his columns from *Wilmott* magazine under the title "A Mathematician on Wall Street." This is the second of those columns.

In November 1969 I and a partner, Jay Regan, launched what I believe was the world's first market neutral hedge fund. We called it Convertible Hedge Associates (CHA), and later changed its name to Princeton-Newport Partners (PNP). It used warrants, OTC options and convertible bonds and preferreds, along with the underlying common stock, to construct delta neutral dynamically adjusted hedges. (Listed options and publication of the Black-Scholes formula were still almost four years in the future).

Since "the formula" was, to me, highly plausible but not proven, we used in addition a variety of techniques and screens, all of which the proposed mispriced security had to pass:

- [1] the formula (available for options and warrants, suitably modified for when and to what extent the economic value of short sale proceeds are actually available; generally not until expiration; in those days the brokers pocketed it.)
- [2] scatter diagrams of prices: derivative versus stock or derivative versus derivative, over time (e.g. Figure 2.2 of *Beat the Market*).
- [3] cross-sectional scatter plots on standardized coordinate diagrams (at a fixed time, such as that day's closing prices) to compare derivatives within a class (e.g. Figure 10.2 of *Beat the Market*).

1969-1972

The first market neutral hedge fund, which consisted of a collection of derivatives hedges, each of which was (dynamically) approximately delta neutral, prospered. See track records in (Thorp, 71, 75, 00).

Early 1973

The CBOE announced it would soon begin trading exchange-listed options. We at Convertible Hedge Associates were electrified (figuratively and literally) by the news. This could facilitate a major expansion of our business. I had an HP 9830A desktop computer which was easy to program in BASIC, was math user friendly, and drove a pen plotter with which we drew magnificent color coded graphs.

I had the "integral formula" programmed and drawing option and warrant curves when, out of the blue I got a letter and an article from someone called Fisher Black. He said "I am an admirer of your work" and explained that his approach was like *Beat the*

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Market but he and Scholes took another step: they explored the (analytic) consequences of the no arbitrage principle as applied to our (dynamically adjusted) delta neutral hedge, noting that such a hedge should then return the (appropriate time period) riskless rate on net equity invested.

I sat down, programmed in his formula and drew option curves. Shock! The graphs disagreed with my graphs. It couldn't be. But then I realized I was graphing the "short warrants or options, long stock" version of my formula. This version assumed that the interest from the proceeds from the short sale of the warrant or option was captured by the broker, not the investor, as was the practice then for the warrants and over the counter options which I had been trading. But the proceeds from shorting listed options (only calls on a limited number of large companies were initially available when the C.B.O.E. opened in 1973) would be credited to the investor on settlement date for the trade. Thus one needed to pre-multiply by $\exp(-r(t * -t))$ to discount the expected terminal value of the warrant to expected present value. Now the graphs were **identical!**

1973

What I already had, in fact, was not just the Black-Scholes formula but a more general pair of formulas, with the Black-Scholes formula as the limiting case. One of them incorporated a parameter to account for the loss to the broker of some or all, as the case might be, of the interest earned by the short sale proceeds (SSP interest) on the warrant (or option) short versus stock long hedge. This family of curves started with the Black-Scholes curve (all SSP interest available) and moved continuously higher as the fraction of available SSP interest dropped, with the highest curve being my old warrant curve, corresponding to no SSP interest available.

The other formula covered the warrant (or option) long versus stock short hedge. This one parameter family started with the Black-Scholes curve and had successively lower curves as the economic value of the stock SSP interest available to the investor was reduced.

The equations for highest and lowest curves are presented in Thorp (1973). That was written a few weeks after I got the Black-Scholes paper and was immediate because I already knew these formulas. In the original version of Thorp (1973) I had a section showing how I had found the Black-Scholes formula by setting M and d equal to r in the formula for the expected value of the warrant or option (as discussed in the previous column). But I had to delete this to fit my abstract into the space allowed.

The two formulae create a "band" around the Black-Scholes value, within which the delta neutral hedger cannot expect to achieve the riskless rate. This band widens further when one adjusts the required pair of stock and option (or warrant) prices to cover (expected) transactions costs, present and future.

As years passed, industry practice changed with competitive pressures and investors tended to gain some of the interest from their short sale proceeds, splitting this economic benefit with their broker-dealer. Currently, in the U.S. some hedge funds and other institutional investors get an interest credit equal to Fed Funds (a proxy for the "riskless rate" r) minus seventy five basis points (0.75% annualized) or better. So the pair of one parameter families has remained relevant. Yet, even today they have not, as far as I know, been discussed in the literature. This is curious, given their practical value for so many users of the Black-Scholes formula.

Planning ahead for the opening of the CBOE, I had prepared a catalog of standardized call option diagrams (see *Beat the Market*, chapter 6 for standardized variables), of (option price)/(exercise price) versus (stock price)/(exercise price). For stocks which paid no dividends during the life of the call option, for each of a range of r and v (volatility) pairs there was one set of curves for various times until expiration. These “universal” Black-Scholes curves covered all cases where our hedge was short CBOE listed calls (full cash credit at once for SSP) versus the underlying common stock long. We knew how to use numerical methods to calculate correct values for the option price in cases where the stock paid dividends during the life of the option, but it was usually sufficient to use easy approximations which covered most cases and could be incorporated as a quick correction directly on the graphical plot.

Remember, this was 1973 when computing power was comparatively limited, scarce and expensive. With market prices continually changing and the number of options expanding rapidly, plus the need to monitor a substantial list of warrants and convertibles, graphical short cut methods were valuable in this era. We simply plotted the latest recent (stock, option) price pairs on the appropriate r, v diagram and looked to see whether it was far enough above or below the appropriate curve to offer a profitable hedge. Delta, the hedge ratio, corresponded to the slope of the tangent and could be immediately read off the picture. We expanded the r, v catalog of diagrams as needed.

References

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My Hip Malfunction and What I Know About It

May 1986

Kevin Langdon

I was born in 1943, with a condition later diagnosed as bilateral hip dysplasia. The condition was not discovered until I was a year old. During my early childhood, I had a series of operations intended to correct this condition, including implantation of a pair of steel pins which are still in my hip joints, but they did not produce fully satisfactory results.

I walked with a limp throughout my childhood and early adulthood. On my thirty-third birthday, I had a fall out of a tree which caused enough trauma to my hips that I had to appeal to passing hikers to carry me home (which, fortunately, was nearby). I recovered from this incident, but I believe it weakened my hips significantly.

A year or two later, I was living in a walk-up apartment and I reached the point one day of being unable to walk. My orthopedic physician, Dr. Sanford H. Lazar, who practices in San Francisco, prescribed complete bed rest for two weeks with supervised therapeutic exercises for the hip joints, in a hot pool, every week day. At the conclusion of the two weeks, I was back to the point at which I'd been before this incident. I moved out of the walk-up.

By this time, it had become clear that there was a slow but steady deterioration of function in my hips. A few years later, in approximately 1982, I began walking with a cane. By February or March 1986, my condition had deteriorated to the point where I experienced a lot of pain and stiffness in my knees as well as in my hips and I started using a walker.

My condition has been diagnosed as osteoarthritis; recent X-rays show that nearly all of the cartilage is gone in my hips, but my knees do not show any abnormality. Dr. Lazar has recommended replacement of both hip joints.

I do not want to undergo such a radical and expensive procedure until I have exhausted all other avenues of relief from this condition. I am currently taking indocin and a variety of nutritional supplements, trying to keep the stress on my hips and knees to a minimum, and arranging to be able to exercise in water every day. I am also investigating several other approaches, though more cautiously, including Chinese and Tibetan medicine, homeopathy, etc. I am sceptical, but I don't rule out any possibility. If I knew of a good faith healer, I'd try that.

I would appreciate any further information about this condition and other possible approaches to a solution.

The Rest of the Story (So Far) (2005)

Kevin Langdon

In May of 1986, my hip joints failed complete, within an hour of one another. There are two “cutouts” in the bottom of the pelvis where the femora join it, known as the acetabula. Additionally, there are smaller “cutouts” above the acetabula, known as the “false acetabula.” In each case my femur had ridden up into the false acetabulum. I couldn’t straighten up further than about 135 degrees and I was unable to walk until my mother, with whom I was living at the time, arranged to get me a walker.

In addition to the loss of function, I was in excruciating pain most of the time. When it was worst I took some pain medication but I avoided it most of the time because I didn’t want to dull my awareness.

Severe pain is debilitating and it consumed a great deal of my energy. I needed relief but because the state of the art of hip-replacement surgery was changing rapidly and the old, cemented type, which was what was available then, tended to fail within ten years and I was in my early forties it didn’t make sense to rush into it.

It turned out that I had to wait four years for my hip replacements but fortunately relief from my chronic pain came much sooner.

The year before I had heard an interesting lecture on Tibetan medicine by the late Dr. Trogawa, one of the most senior Tibetan physicians. I was very impressed by the presence of this man and it was clear to me that he was drawing on a wealth of practical knowledge. Through friends at a local Tibetan Buddhist center I learned that Dr. Trogawa was to be in San Francisco just a few months after my hips failed. I made an appointment to see him. I was instructed to bring a urine sample.

When I saw Dr. Trogawa he was dressed in a traditional Tibetan monk’s robes, with a shaved head. He definitely looked like the serious Tibetan Buddhist practitioner he was. He greeted me and asked me about my condition. He asked many questions and extracted from me a history of my physical ailments over my entire lifetime.

He examined my eyes, my ears and my mouth, stirred my urine sample with a stick and looked intently at the swirling liquid, and took my pulse for about two to three minutes for each wrist (Tibetan doctors are trained to be sensitive to certain subtle rhythms in the pulse)..

He said that I had too much *lung* (wind), one of the three principal humors of Tibetan medicine. He prescribed three different kinds of little round Tibetan herbal pills, certain dietary changes, and herbal baths. I was in a lot of pain so I followed his advice religiously—and within two weeks *the pain completely went away*.

This was a miracle, for which I was extremely grateful, but I was still left with nonfunctional hip joints and I still had to drag myself around with a walker, which was inconvenient and often embarrassing and severely limited my mobility and drained my energy.

A particular type of Tibetan herbal pills is typically composed of between ten and twenty different herbs, most of them found only on the Tibetan plateau. Some are pleasant-tasting, others are bitter, still others are just weird. They're generally taken with "lukewarm boiled water." In addition to helping with the condition that had caused me to seek out Dr. Trogawa they also seem to act as a tonic, promoting general health, good energy, and an overall sense of wellbeing. I was glad to have this support while I was unable to walk normally.

In 1990, Dr. Lazar told me that the new type of hip replacement was available and I decided to go ahead with it. We'd originally planned to have the operations three months apart but when Dr. Lazar saw how well I was doing after the first surgery the second one was moved forward two months. This turned out to be a very good thing, because it made it much easier for me to learn to use my new hips. (I also had some good physical therapy assistance, which I made good use of because I was a very quick study.)

The hip replacement involves removing the head to the femur and inserting a titanium-alloy replacement with a ball at one end and a long prong at the other which is inserted into the top of the femur. This alloy is so porous that bone cells actually grow through it and it becomes very strong over time (I had to be very careful for the first six months to a year after the operations). An artificial socket, made of a ceramic material (to avoid the spontaneous bonding of very-closely-fitted identical materials) is installed in the pelvis. The two together provide a surprisingly flexible and functional joint.

They had me standing on my new artificial joint the day after each surgery. It felt very strange at first but it only took a few days to get so used to it it was as if they were my naturally-grown hips.

I expected that it would take some time for my hips joints to get stronger and the associated muscles to get used to my new capabilities and deatrophy, but I didn't expect that my hip function would continue to improve for over a decade.

I've continued to see Tibetan doctors periodically (but only once every few years). My hips continue to be pain-free.

For information on Tibetan medicine see the links near the bottom of my page:

<http://www.polymath-systems.com/misc/misclink.html>

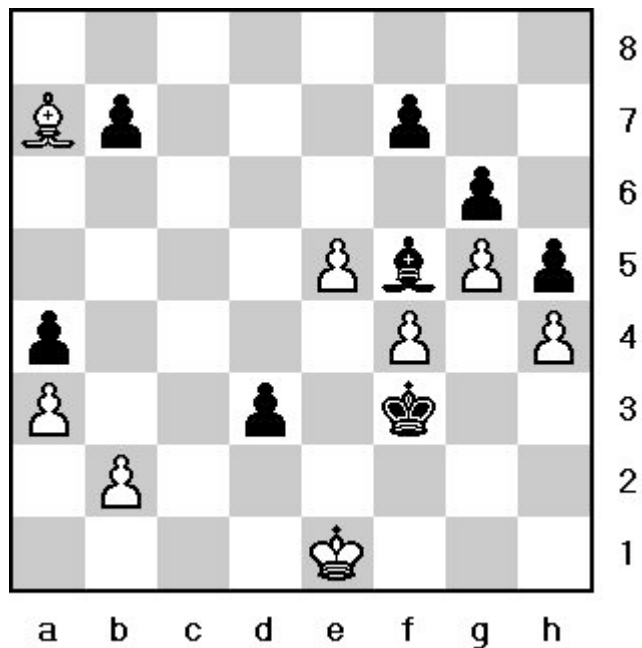
Chess Problem Solution

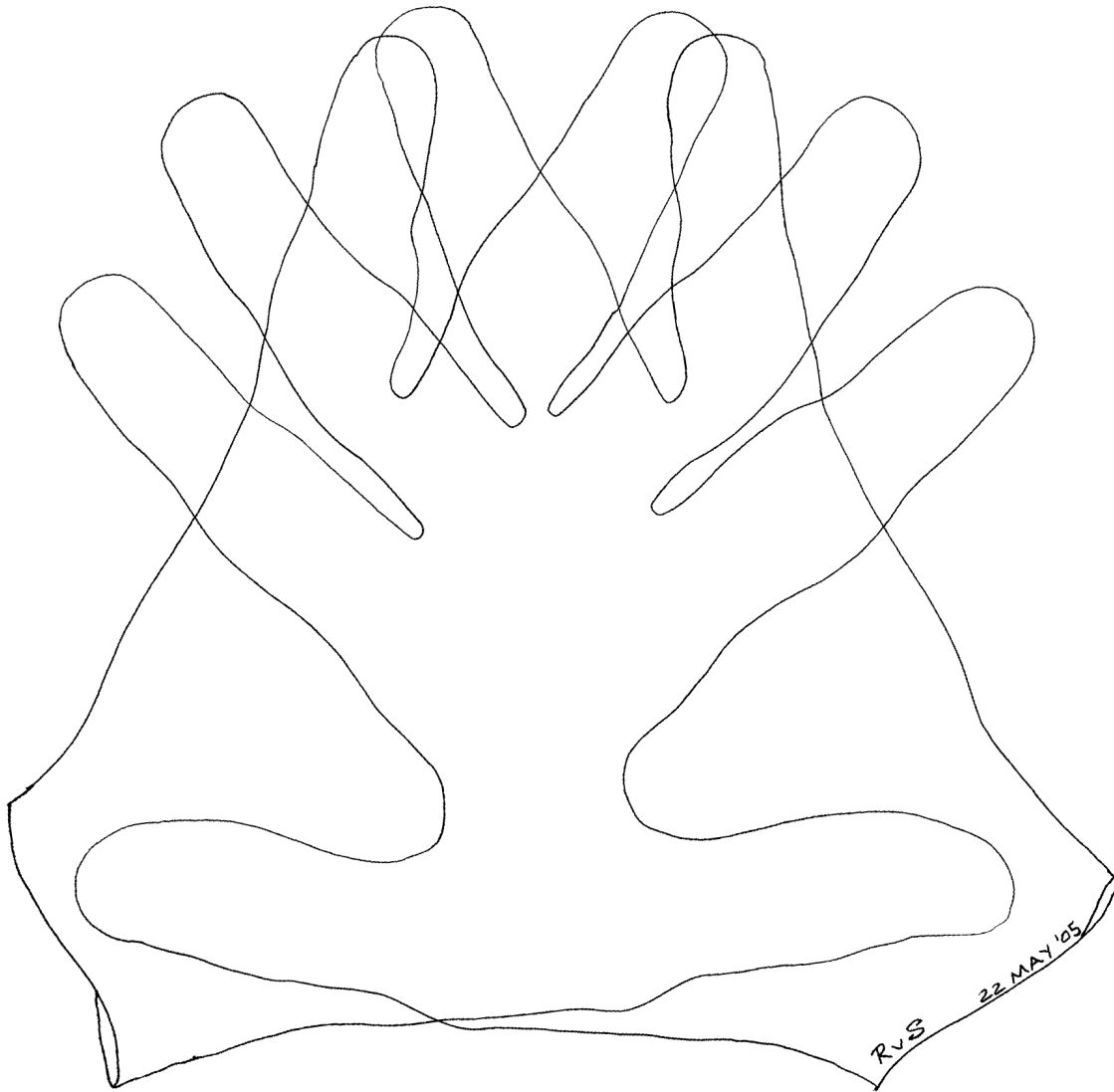
Glenn Morrison

Mengarini - Evans endgame problem: part 2, solution. [For the original problem see: <http://www.megasociety.org/noesis/177.htm#Endgame> .]

Black to move. It appears easy for Black to simply take the e and f pawns immediately, but this allows White time to move his king to d1 and his bishop onto the critical a5-e1 diagonal, defending the pawns at b2 and h4. So a more devious strategy is called for:

1 ...Be6 2 Bc5 Bb3 3 Bb6 Kxf4 4 Kd2 Bc4 (bishops well positioned to prevent eventual white g-pawn promotion) 5 Ke1 Kxe5 6 Be3 f5 7 gxf6 e.p. Kxf6 8 Bg5+ Ke5 9 Kd2 Kd5 10 Ke3 Bb5 11 Bf6 Kc4 12 Kd2 Kb3 13 Kc1 (white's bishop is now severely overworked) Bc4 14 Be7 b5 15 Bf6 b4 16 Be7 bxa3 17 bxa3 g5 18 Bxg5 Kxa3 19 Be3 Bb5 20 Bd4 Kb3 21 Kd2 a3 22 Kc1 Kc4 23 Be5 Ba6 24 Bh8 Kd5 25 Bc3 Ke4 26 Kd2 a2 27 Bf6 Kf5 28 Bg7 Kg4 29 Bf6 a1Q 30 Bxa1 Kxh4 31 Ke3 Kg4 32 Bf6 h4 33 Bc3 h3 34 Be5 (black wants to sac the h pawn for white's bishop, but white has a good blockade here. Can black find a way around it? Yep) Kf5! 35 Bd6 Ke6 36 Bf4 Kd5 37 Bg3 Kc4 38 Be5 Kb3 39 Kd2 Kb4 40 Bh2 Kc4 41 Be5 Kd5 42 Bh2 Ke4! 43 Bd6 Bb5 44 Bh2 Kf3 wins.





Crossing Hands

Ron Yannone

I like to try creative ideas in art that are simple enough that a child of 4 years of age can do them. Some of my letters written to people have been written inside the outline formed by one of my hands. In the photo above, I recently (May 22nd) tried an *overlay* of my two hands at about a 45-degree angle.

Constitutional Amendment Passed

Jeff Ward

From: "Jeff Ward" <ward-jeff@san.rr.com>
To: "Kevin Langdon" <kevin.langdon@polymath-systems.com>
Subject: Re: Election Results?
Date: Fri, 5 Aug 2005 10:44:03 -0700

> From: "Kevin Langdon" <kevin.langdon@polymath-systems.com>
> To: "Jeff Ward" <ward-jeff@san.rr.com>
> Sent: Wednesday, August 03, 2005 11:30 AM
> Subject: Election Results?

> Hi, Jeff.
> Do you have the election results for *Noesis*?

> Kevin

I have six votes yes, none no.

Text of the Amendment

In Article III, Officers, the following sections appear:

2. The Editor(s) shall prepare *Noesis* for publication and send the camera-ready copy to the Publisher. If there is more than one Editor, the Publisher shall schedule which issues of *Noesis* are to be produced by which Editors.

3. The Publisher shall print and mail *Noesis* to members and subscribers, maintain the mailing list of members and subscribers, and collect subscription fees. The Publisher may waive the dues of members who present a claim of indigence.

4. The Administrator shall receive all applications for membership, evaluating them according to the standards enacted by the membership, and notify the Publisher of the admission of each new member. The Publisher shall send one free issue of *Noesis* to each new member. The Administrator shall receive ballots in all elections and handle them as specified in Article IV.

In Section 2, change everything in the first sentence after "publication":

. . . , e-mail copies to members who choose to receive *Noesis* via e-mail, and send each issue's text and graphics files to the Internet Officer.

And in the second sentence change "Publisher" to "Administrator".

Delete Section 3 and renumber all subsequent sections.

In Section 4, first sentence, change "Publisher" to "officers". Delete the second sentence.

Section 6 reads:

6. Dues and subscription fees shall be established and changed by majority vote of the officers. The officers shall be responsible for ensuring that the society remains solvent and that member funds in excess of six months' operating expenses of the Society, at current levels, not be retained.

In the first sentence, change "the officers" to "the membership", making it possible for dues to be reinstated if Mega members agree that conditions warrant it (for example, the society's Web hosting is now being donated by Chris Cole but we may have to pay for it in the future). In the second sentence correct "shall" to "shall".

Article IV, Section 9 reads:

9. All ballots shall be sent to the Administrator, who will tally them and report the results to the Editor for publication in the next issue of *Noesis*. Members must be allowed at least 30 days from the postmark date of one issue before the deadline for receipt of responses. The individual ballots shall be kept secret, except that the Administrator shall retain the ballots for at least one year and make them available to the other officers if asked.

In the second section, change "postmark" to "publication".

Article V, Section 2 reads:

2. All members shall have the right to confidentiality in officers' handling of their postal and e-mail addresses, telephone numbers, test scores, requests for dues waivers, and ballots in society elections. When a roster is published, each member shall have the option of being listed c/o the Publisher, who will forward communications from other members on request.

Change "Publisher" to "Administrator".

These changes have been made to the Constitution on our website:
<http://www.megasociety.org/constitution.html>

Lucid Dream of Out of Paradigm Experience

Richard May

ferdlilac@yahoo.com

The following dream segment occurred after listening to an interview with a South African (originally Jewish) physician who has been initiated into African shamanism, which he now combines with his practice of allopathic medicine. I was having some unmemorable ordinary dream, when suddenly I found myself tightly surrounded by solid substance of some sort, as if encased in cement. I was momentarily surprised and quite annoyed, but then realized within the dream that I was dreaming and was then able to escape. At the point of self-awareness of one's dreaming condition within the dream, it had become by definition a lucid dream.

In my dream I interpreted my condition of being encased in solid matter as meaning that I was having an OBE (out of body experience). Allegedly when people have OBEs in the dream state (I mean if such phenomena actually occur), they often travel in their "dream body" downward through the bed and floor, rather than float above their bodies over the bed. Hence, apparently I incorporated my "knowledge" of this into my dream of an OBE.

I see no reason to believe that I had a genuine OBE, if such OBEs even actually are possible. Apparently I had a lucid dream, which was also an ordinary wish-fulfillment dream, focused upon the possibility of having an OBE while sleeping.

I don't think I've created my "dream body" yet, as the Dalai Lama calls it. Creation of one's "dream body" is supposedly necessary before one's consciousness can leave one's body during sleep. Do you then go to the gym in your dream body to work out?

In Tibetan Buddhism lucid dreaming is considered to be the beginning of the formation of one's dream body. Now if only I could learn to become lucid in the ordinary so-called waking state!

