



# *The North Texas*

# Skeptic

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<http://www.ntskeptics.org>

## Alchemy to Chemistry: Pseudoscience to Science

### Part I

by Kristine Danowski

*(This a continuation of Part I from the June issue. Look for Part II in August. Please refer to June Skeptic for the Bibliography . Ed.)*

Not until Paracelsus (1493-1541 CE) were the Four Elements and the Aristotelian view challenged. Paracelsus was an important figure in both alchemy and chemistry; he will appear in more detail in Part II. To counter Aristotle, Paracelsus proposed Three Principles, or Tria Prima. The First Principle was Exalted Sulfur of the Philosophers ("Sophic Sulfur"), which Paracelsus characterized as male and symbolized the soul. The Second Principle was Exalted Mercury of the Philosophers ("Sophic Mercury") characterized as female and symbolized the spirit. The Third Principle was Exalted Salt of the Philosophers ("Sophic Salt") which symbolized the material body.

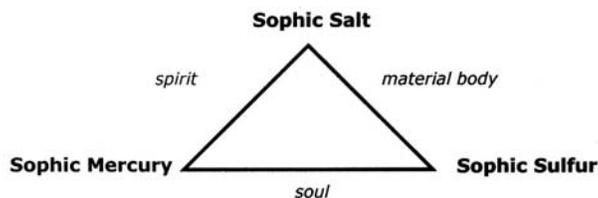


Figure 4. Paracelsus' Tria Prima

These Principles were not synonymous with the real metal mercury, the real non-metal sulfur, or the real substance salt. Instead they were mystical properties that alchemists could somehow access to create gold.

Paracelsus theorized that matter was a combination of the Tria Prima in varying proportions. Figure 4 illustrating the Tria Prima is the second great metaphor in alchemy. Like Aristotle's Four Elements, each of

### EVENTS CALENDAR

#### July Program

Saturday 14 July 2007 at 2 p.m.  
Center for Nonprofit  
Management  
2900 Live Oak Street in Dallas

#### No Free Lunch

John Brandt will give a talk called "No Free Lunch: Why William Dembski Thinks Mathematics Proves ID (And Why He's Wrong)"

#### NTS Social Dinner and Board Meeting

Saturday 21 July 2007 at 7 p.m.  
Macaroni Grill at 75 and Legacy,  
in Plano

Let us know if you are coming.  
We need to reserve a table.

Check the NTS Hotline for more information at 214-335-9248.

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Paracelsus' Tria Prima could be transformed into another by varying the proportions of their Qualities.

Having proposed his Tria Prima, Paracelsus used them in his procedure for obtaining the Philosopher's Stone. The Philosopher's Stone enabled the alchemist to transmute base metals into gold. It also bestowed wealth and longevity to its creator. The Philosopher's Stone had hundreds of names in alchemical literature, including Lapidus Philosophorum, The Red Tincture, The Quintessence, The Panacea, The Elixir of Life, Virgins Milke, Spittle of Lune, Blood of the Salamander, and The Metalline Menstruall. In the Middle Ages, the Philosopher's Stone became identified with Christ and the Holy Grail. Alchemy's Great Work was searching for the Philosopher's Stone. There existed as many methods to attain the Philosopher's Stone as there were alchemists. Of course, the Philosopher's Stone does not exist, so no alchemist ever attained it. However, some modern alchemists dispute this assertion as described in Part II.

Paracelsus' method is diagrammed in Figure 5. Starting with the ordinary metals gold, silver, and quicksilver, the alchemist produced "purified" versions. These Paracelsus called Primitive Materials. Next the alchemist produced the Tria Prima from the purified metals, then mixed them to obtain the Philosopher's Egg, the precursor to the Stone. After more machinations, the alchemist finally attained the Philosopher's Stone. The Stone's actual transmutation mechanism was mysterious. The Stone could transmute metals from a distance, and a glance at it was lethal.

Another method of attaining the Philosopher's Stone was the following. The names of the four steps originated from the color of the material produced from chemical process(es) involved. Step one was Nigredo, a black disordered mass representing a spiritual or metaphorical death. The substances used were heated until they turned black. Step two was Albedo, whitening or cleansing of the mass; albedo represents abstinence. The blackened mass was treated with acid to oxidize it. Step three was Citrinitas, a restarting which represents preparation for the unity of matter and spirit. Steps one and two were repeated. Step four

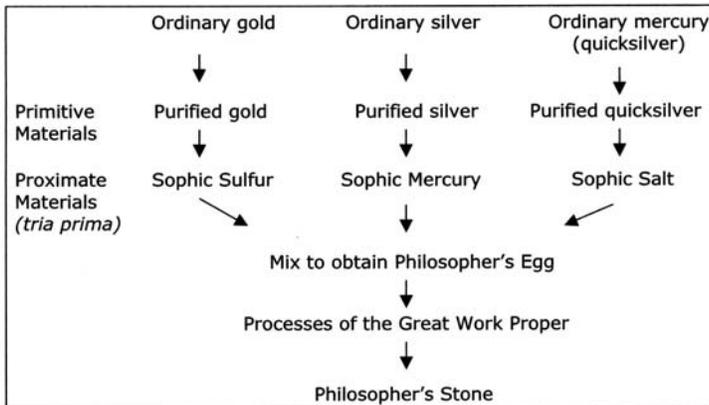


Figure 5. Paracelsus' Method of Attaining the Philosopher's Stone

was Rubedo, achievement of the Stone. Each step in the process had numerous symbols in alchemical literature.

Numerology was important in alchemy. Symbols frequently replaced actual numerals in alchemical literature. Table II lists some numbers and their alchemical symbols. Alchemists conducted each step in the various formulae of the Philosopher's Stone under a specific zodiacal sign and/or planet. Not only did this increase the time necessary to attain the Stone, it also could be used as an excuse when the methods failed, as they inevitably did.

**Table II. Alchemical Numerology**

Number	Symbol
One	God, Allah, Prima Materia
Two	Female and male principles; opposites; Sophic Mercury and Sophic Sulfur
Three	Tria Prima; Christian trinity
Four	Four Elements; four cardinal directions; four seasons,
Five	Four Elements plus Ether; Ether alone; quinta essencia or quintessence
Seven	Seven known planets; seven known metals; seven days of the week
Twelve	Twelve zodiacal signs; twelve months of the year; twelve Keys to the Stone

Throughout the ages, the establishment (state and church) often viewed alchemy as occult, witchcraft or sorcery, heresy, and subversion. Despite this, alchemy has been outlawed only a few recorded times. China criminalized it twice, in 144 BCE and again in 60 BCE. The Roman Emperor Diocletian banned it in 296 CE. The Roman Catholic Pope John XXII banned it in 1317 CE. The English King Henry IV outlawed alchemy in 1403 CE.

Nevertheless, many nation-states had their own Court Alchemists. However, covert independent practitioners vastly outnumbered the official alchemists. Alchemy was a very

expensive enterprise. Setting up a laboratory, making all the required glassware and instruments, and obtaining reagents required considerable sums of money. Thus many alchemists were nobles, independently wealthy, or sponsored by a wealthy patron. They spared no expense in their quest for the Philosopher's Stone, since the elusive Quintessence promised them wealth and immortality.

Not only was alchemy expensive, it was also hazardous to the alchemists' health. They frequently worked with large amounts of hazardous materials with little or no safety precautions. For example, heating mercury produces mercury vapor, which is extremely poisonous. As we will see in Part II, historians have evidence that many prominent alchemists suffered from acute or chronic mercury poisoning. Even worse,

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*Throughout the ages, the establishment (state and church) often viewed alchemy as occult, witchcraft or sorcery, heresy, and subversion.*

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alchemists used their senses of taste and smell as analytical tools, causing them to ingest other toxic substances. Moreover, alchemical texts describe burnt clothing and body parts as par for the course.

Alchemists' secrecy was legendary. They had very good reasons to be so cautious. First, patents and copyright laws did not exist, so anyone could steal their discovery and profit from it. If everyone knew how to make gold, then gold itself would become worthless and the alchemists' work would be for naught. If a king or pope discovered a covert alchemist, the ruler could hold her/him prisoner to make gold exclusively for the ruler. If the Great Work was unsuccessful, the imprisoned alchemist would die a horrible death. If the Great Work was successful, the imprisoned alchemist would remain so for life. Both of these scenarios occurred throughout history. Thus alchemists' symbolism served as protection as well as mysticism. With their symbols and unorthodox notation they "hid a secret openly." Only someone skilled in the Arte could decipher alchemical texts.

Part II will examine some important alchemical texts, some famous alchemists, the development of chemistry, and modern alchemy. □

*Kristine Danowski is Vice-President of The North Texas Skeptics.*

## Challenge activity

by John Blanton

**F**or those who await breathlessly for the next shoe to drop, and for the rest of you, as well, here's what's new on the Challenge front.

Rosemary sent me the following:

Good Morning!

To: skeptic75287@yahoo.com

I am interested in scheduling a preliminary testing date.

God speaks to me through my mind. He is the only one that possess supernatural powers. He has countless supernatural abilities that can be performed on you or any person of your choice. He can intentionally release your bladder, alter your mood, and alter your feelings just to name a few things He can do.

Please reply to this e-mail with more information regarding your process to win this challenge. I live in Cleveland Ohio.

Sincerely,

...

Sometimes the Lord sends Angels to walk upon this earth.

The forms they take are varied, from the moment of their birth.

He sent them here to teach us, in so many different ways, the reason why we're living, and the purpose of our days.

We may not always know them as they pass along the way, but be sure there is a reason for the souls we meet each day.

So be sure your always willing, and be ready with a hand, to help someone who needs it or just listen when you can.

For when we help another, and pass on hope and love our souls are one step closer to our Father up above.

by Donna Spangenberg

God is getting ready to do something that will blow your mind.....

**I especially appreciated** the "Good Morning" part. I seldom get those anymore, unless, maybe from Nigeria.

I responded:

Rosemary,

Thank you for contacting the North Texas Skeptics.

I assume you refer to the NTS Paranormal Challenge. If so, you have contacted the correct person. I am John Blanton, and I am one of the underwriters of the award. I will also assist you in preparing a challenge for the award.

...

We need for you to come up with a testable claim. For example, you wrote that God speaks to you through your mind. This not very testable. We would ask you to prove God speaks to you through your mind, and you could answer that God tells you of the future. You could make specific predictions of the future as proof, but that would not prove that God speaks to you through your mind. We would have no way of knowing that it was God who assisted you in predicted the future.

I advise you to refer to the following page:

<http://www.ntskeptics.org/challenge/challenge.htm>

This source may not tell you everything you need to know to prepare a statement of your claim and a proposal for testing your claim. However, it will provide you information to help prevent wasting your time on wrong approaches.

Additionally, let me give you some advice to help you get started:

1. Be very specific. Don't leave it up to me to guess what you mean and what you intend to demonstrate.
2. Describe what outcomes will disprove your claim. For example, state that if you your prediction of the future fails to come true (Hillary Clinton does not win the presidential election in November 2008) then you will have failed to prove your claim.
3. Restate your claim to ensure it is testable. For example, you state that God speaks to you. You need to tell us which god speaks to you and how you plan to prove it is the god you claim and not some other god. Better still, leave off the claim of any god and just claim that you can make accurate predictions.

4. If you claim you can make predictions of the future (for example), then you need to make a statement of the reliability of your predictions. Again for example, you can state that your predictions are 100% accurate. Then any failed prediction will disprove your claim. If you claim 80% reliability then we will need to run tests to determine whether your predictions are correct 80% (or more) of the time, on average over a long series of tests.

We are in Dallas (actually I am currently sitting in Salt Lake City, Utah). You are in Cleveland, Ohio. We do not need to meet in order to test your claim, so we can get started immediately. Please read the instructions on the Web page (link above) and reply to me with a detailed statement of your claim and how you propose to demonstrate your claim. Else, if you have questions, then contact me again by e-mail, and I will attempt to assist you.

As you can see, all of this is not simple. So far, nobody has gotten past this preliminary stage. All who have engaged us in the last 14 years have failed to advance to the point of signing an agreement to test for the award. Sometimes this has been our fault. We have been unable to meet with the claimant (I am out of town), and sometimes we have conceded we could not obtain the required information to perform the test (could not get accurate birth time information for an astrological reading). If we can't test, we can't proceed, and that's all we can offer. Read more about other challenges by following the links on the Challenge page.

Best regards,

John Blanton

**All right**, I admit my style is a bit stiff, but things loosened up shortly. Rosemary quickly cut to the chase:

Thank you for your reply.

I am sorry that my claim was misinterpreted. My claim is not that God speaks to me. My claim is that I can do many things to your body (which I am not sure is even testable).

As stated, (with my mind) I can release your bladder even after you have released it yourself. I can alter your mood....I can make you cry profusely, make you sad, etc.

I can release your bladder.....is that testable?

If not, please advice me on what is it that I must do the human body that is testable?....besides healing the body.

I am not willing to make any predictions about the future...only performing supernatural abilities to the human body.

**Release my what?** OK. I got the message. Damp my drawers. By then Rosemary had decided she could perform her demonstration at a distance. I swallowed hard and responded:

I am ready. Begin.

**It was a day off** for me, and by the time I got back to my e-mail I had almost forgotten about Rosemary's promise. Eagerly I opened the mail. The moment of truth was at hand.

Okay. Your bladder will be released in a few minutes. You will not be able to move from the position you are in right now.

Rosemary,

**Needless to say**, I was relieved. I responded:

I guess it didn't work, and your demonstration was unsuccessful. You will need a successful demonstration before we will consider entering into a formal test with you.

Thank you very much for your interest in the North Texas Paranormal Challenge.

Best regards,

John Blanton

Skeptical Web Master

**See what we go through** in the interest of rational skepticism. I hope now we get can get a little more respect.



## Future Meeting Dates

July 14, 2007

October 13, 2007

August 11, 2007

November 10, 2007

September 8, 2007

December 8, 2007

## What's New

by Robert Park

*[Robert Park publishes the What's New column at <http://www.bobpark.org/>. Following are some clippings of interest.]*

### **Beliefs: Brownback defends scientific illiteracy by example.**

A month ago at the Republican Presidential debate, there was a show of hands of those who don't believe in evolution. One who raised his hand, Sam Brownback, was moved to explain why in yesterday's New York Times: "I believe wholeheartedly that there cannot be any contradiction between faith and reason." Which faith does he have in mind? Different faiths are often at war with each other, but no wars are fought over science. Science relies on Nature as the sole arbiter. There was much more, all in the language of the intelligent design movement, including the substitution of "materialism" for "naturalism." (WN 06-01-07)

### **Stem cells: Possible new source of embryonic-like cells?**

Nature yesterday described a brilliant gene transfer method of reprogramming fetal mouse cells to be indistinguishable from embryonic stem cells. Many mouse cures haven't carried over to humans. What is sad is that it should be necessary to take this route. A vast trove of embryonic stem cells in fertility clinics will be autoclaved to satisfy superstitious beliefs. (WN 06-07-07)

### **Passage: Stephen E. Straus, 60, died of brain cancer.**

The first director of the National Center of Complementary and Alternative Medicine at NIH, his task was to turn the quack-dominated Office of Alternative Medicine, created by Congress, into a scientific center. He did it with grace, the only way possible, subjecting one quack cure after another to randomized double-blind tests, while enduring attacks from scientists who thought he moved too slowly. One after another all failed. Anything else would have invited interference from Congress. I was fortunate to serve on his Steering Committee. (WN 06-07-07)

### **Population: House reverses ban on contraception aid.**

Before you applaud, it faces a veto, and there are not enough votes for an override. The ban is a key element of Bush foreign policy, though why the U.S. opposes birth control in other countries is beyond comprehension. Uncontrolled population growth will, in time, overtake every advance in human condition. (WN 06-22-07)

### **Mileage: Senate votes to raise fuel economy standards.**

With Detroit howling, the Senate yesterday passed the first substantial increase in fuel mileage requirements in more than two decades. It would raise the combined average mileage of cars and light trucks from 25 mpg to 35 mpg. If we already had that kind of mileage we wouldn't need oil from the Middle East. (WN 06-22-07)

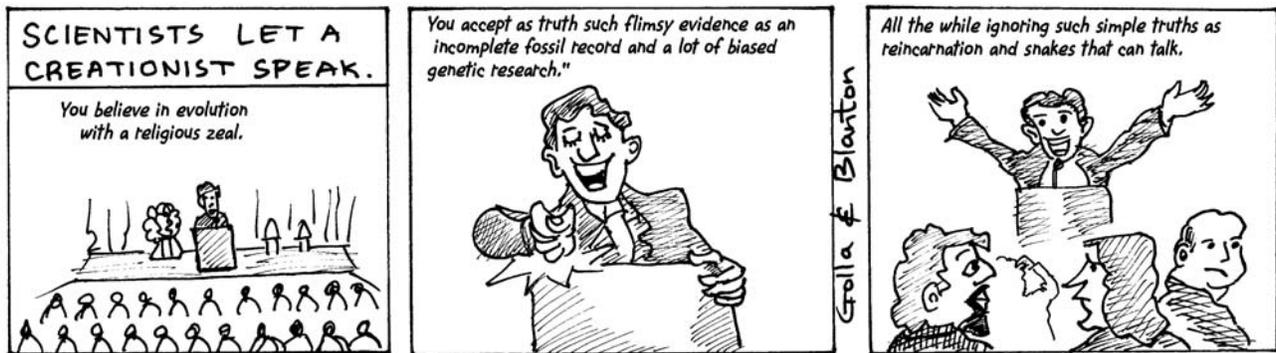
### **Reliable replacement warhead: House says no new nukes.**

In its present form, the appropriations bill eliminates RRW funding and calls for development of a nuclear weapons strategy before any new warheads can be considered. Thomas D'Agostino, the White House choice to head the National Nuclear Security Administration, admits there are no known problems with the W-76 or other warheads in the stockpile, but something might come up so we should develop the RRW. But there might be an unexpected problem with the RRW, so we should develop the More Reliable Replacement Warhead, MRRW, and then the Even More Reli... (WN 06-22-07)

### **1984: What's New was born on this day, 23 years ago.**

WN was in Orwellian peril from the start. My wife asked how long I planned to keep writing this thing. "Not long," I said, "if I tell it like I see it, they'll end it in a year." After I became director of the new Washington Office, the APS Council asked me to make my weekly report public - but not advertise it. Some wanted Big Brother to approve each issue before it went out. If so, someone else would have to write it. Much later I agreed to add a disclaimer - not everyone liked that either. After more than 1,200 issues and growth from 112 subscribers to 15,617, APS finally ended WN. My department chair, however, asked that I continue writing WN, but with the University of Maryland as sponsor. He made it my principal teaching assignment. (WN 06-29-07)

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### Mars: European Space Agency seeks volunteers for a test.

Radiation is a major obstacle to human trips to Mars. The ESA reminds us of a no less serious hazard: human nature. There were serious disputes between cosmonauts on Mir after months in close confinement. ESA is now seeking volunteers for a "simulated human trip to Mars." A crew of six aged 25-50, in good health with high motivation will be sealed for 17 months in an isolation tank here on Earth. In contact only by radio with a realistic delay, they will do stuff a real crew would do (Try to stay alive?), but without microgravity or radiation. Thousands applied. Tuesday, on Al Jazeera English TV, I discussed a Mars mission with officials from ESA and the Royal Astronomical Society. Why use humans rather than

robots? Humans would have faster reactions, they said. Reactions to what, I asked? (WN 06-29-07)

### 2007: WN lives, but this is my last day with the APS.

I am truly grateful to the APS for allowing me to speak my mind, not just in WN, but to the media and in congressional testimony. In a university like Maryland it's expected, but it's unusual in Washington. For those who hope for a gentler WN, I refer you to H.L. Mencken's epitaph: "As he grew older, he grew worse." (WN 06-29-07)

(Robert Park can be reached at [bob@bobpark.org](mailto:bob@bobpark.org))

## The Committee for the Scientific Investigation of Claims of the Paranormal

encourages the critical investigation of paranormal and fringe-science claims from a responsible, scientific point of view and disseminates factual information about the results of such inquiries to the scientific community, the media, and the public. It also promotes science and scientific inquiry, critical thinking, science education, and the use of reason in examining important issues.

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