Revisiting 9/11/2001 --Applying the Scientific Method

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Introduction

In this paper I focus on the application of the scientific method to the study of what really happened on 9/11/2001, particularly in the destruction of the World Trade Center buildings.[1] There is something here to look at in depth: this is serious business. It is not just "nutty fringe science" or "conspiracy theory" that can be rejected without even considering the data. There is need for scientific scrutiny as I hope to demonstrate in this paper. In fact my colleagues and I now feel that we have sufficient data to conclude that the collisions of jets with the two Towers are NOT sufficient to explain the complete and rapid collapses of both Towers and WTC 7. We conclude that the evidence is compelling that the destruction of the WTC buildings involved planted cutter charges (such as explosives and incendiaries). We will consider this evidence.[2]

Background

My first major publication in which I was lead author was a paper on muon-catalyzed fusion.[3] Unlike thermonuclear fusion which occurs on the sun at high temperature, this type of fusion occurs at room temperature. The muon, which is basically a heavy cousin of the electron, pulls hydrogen nuclei of the isotopes of deuterium and tritium closely together so that tunneling occurs through the Coulomb barrier leading to nuclear fusion.

A number of years ago I was on this campus[1] visiting Prof. Louis Alvarez who had observed muon-catalyzed fusion experimentally the first time in a hydrogen bubble chamber. Dr. Alvarez was a Nobel Laureate and very kind to discuss the latest regarding this form of cold fusion. He was a no-nonsense scientist and a very creative fellow. His son and he came up with this idea that the animal population on the early earth underwent a very major change because of an asteroid striking the earth. This theory was very unpopular when it first came out but it has since been verified by means of a number of experimental tests. So it is now widely accepted, but it took a long time to change some scientists' minds – with a lot of data, of course.

Louis Alvarez set that example of not being afraid to voice unpopular hypotheses and then to proceed with experiments and encouraging others to do experiments to get an answer. That's what we do in science, whether it's popular or not. The idea of science is free inquiry, free speech and experiments to determine what is correct, what's true. It is really not a matter of what is popular at any given time.

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[1] This paper is based on a talk I gave at the University of California at Berkeley on November 7, 2006, with important updates.

[2] See http://journalof911studies.com/volume/200609/Why_Indeed_Did_the_WTC_Buildings_Completely_Collapse_Jones_Thermite_World_Trade_Center.pdf . Fortunately, there is now a body of extensive research gathered in the peer-reviewed books cited above and in the Journal of 9/11 Studies. That is the way science proceeds, with observations, hypotheses, experiments and published papers. For a more extensive treatment of the study of 9/11 events than can be provided in one paper, I refer the reader especially to http://journalof911studies.com/. Here you will find an ever-expanding set of papers relating to the study of "What really happened on 9/11/2001?" The issue, however, is not just understanding, but also a quest to seek justice based on the findings.

[3] S.E. Jones, A.N. Anderson, A.J. Caffrey, J.B. Walter, K.D. Watts, J.N. Bradbury, P.A.M. Gram, H.R. Maltrud, M. Leon, M.A. Paciotti, "Experimental investigation of Muon-Catalyzed d-t Fusion**," Physical Review Letters** 51: 1757-1760 (1983).

My next paper on muon-catalyzed fusion, published in Physical Review Letters, was strongly challenged.[4]

I traveled to UC-Berkeley to defend the collaboration's conclusions in that paper, much as I am doing today.[1] We recorded a very small "muon-alpha sticking coefficient," which had a consequence that a much higher fusion energy yield was realized than had been theoretically predicted. One of the physicists at Berkeley said "you can't possibly be right; you are challenging J. David Jackson," which I was! Now those of you who know Jackson know that he was one of the top theoretical physicists of his day. Jackson had looked at this muon-alpha sticking coefficient and predicted that it would be around 1%. Then we did the experiment for the first time and we measured this parameter in a liquid deuterium-tritium mixture, we found a sticking value of about 0.42%, roughly a factor of two smaller than predicted by Jackson. We were told that it couldn't possibly be correct, but we couldn't just back down from our experimental measurements! (History repeats itself as I talk now about the probable use of thermite-analogs in the WTC buildings, unwilling to back down from carefully measured empirical findings.) We repeated and extended the experiments and found that our measurement was correct. But it took a subsequent independent experiment to test our results and verify to many people that we were correct. Now our published value, published in a peer-reviewed journal article, is accepted as correct. And it is the theory which was refined.

Again, I'm setting a background -- that experiments determine what is true and correct, not someone's theoretical notions, even someone famous like J. David Jackson.

My next major paper was in *Nature*, 1986, a British scientific journal.[5] I want to point out that it generally takes several years to go from a conference proceedings or a minor paper to a major paper like this one in *Nature*. By 1986 I was about seven years into the study of muon catalyzed fusion. One cannot realistically demand a major publication in less than two years -- which is about how long I've been studying what's happened with 9/11/2001. Nevertheless we are approaching a major publication already, I maintain. I'm not sure *Nature* would publish it or *Scientific American,* but the research by various scientists and engineers is certainly reaching a point where a major journal must publish the work.

My respected Jewish colleague Professor Johann Rafelski and I published a significant paper in *Scientific American* in 1987.[6] The title was "Cold Nuclear Fusion." We probably couldn't get away with that title today because of the history since then regarding "cold fusion." But this title is referring to muon-catalyzed fusion which by this time was not controversial. It had been verified; the low muon-alpha sticking coefficient which I talked about was verified and so on. Fusion does occur at low temperatures, including room temperature!

Based on the strength of this and other unexpected results in the fusion field, I was invited to speak in Erice, Italy, at a conference attended by top scientists.[7]

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[4] S.E. Jones, A.N. Anderson, J.N. Bradbury, A.J. Caffrey, J.S. Cohen, P.A.M. Gram, M. Leon, R.L. Maltrud, M.A. Paciotti, C.D. Van Siclen, and K.D. Watts, "Observation of Unexpected Density Effects in Muon-Catalyzed d-t Fusion," **Physical Review Letters** 56: 588-591 (1986).

[5] S.E. Jones, "Muon-Catalysed Fusion Revisited," (Invited article) **Nature** 321: 127-133 (1986).

[6] J. Rafelski and S.E. Jones, "Cold Nuclear Fusion," **Scientific American**, 257: 84-89 (July 1987).

[7] S.E. Jones, "Can 250+ fusions per muon be achieved?," Invited talk for Erice School-Workshop, Erice, Italy, April 3-9, 1987, New York: Plenum Press, 1987, pgs. 73-88.

My next major paper was published in ***Nature*** in April, 1989.[8] This paper was even more controversial than the last one. It dealt with our experiments in what is now commonly called "cold fusion" but not the Pons-Fleischman variety. I prefer to call our discovery "metal-catalyzed fusion." We had been studying this approach since 1985, long before we heard of Pons and Fleischmann, looking at nuclear fusion catalyzed in metals. In other words, we hypothesized that somehow metals will enhance fusion yields between light nuclei, and different metals will enhance fusion differently. And then we did the experiments to test this hypothesis.

As we think about "peak oil," the problem that oil is finite and oil production may be peaking, we recall that fusion energy offers a lot of hope. This particular paper received a great deal of criticism because of guilt by association. Some people thought we were supporting the extravagant claims of Pons and Fleishman – cold fusion with lots of heat-energy released (they claimed) but essentially no neutrons. But we were not supporting those claims. We were actually saying and reporting in our scientific papers that there is a real effect which we established totally independently of P&F, an enhanced-fusion effect which produces neutrons commensurate with the amount of energy released. We were showing neutron production, they were not, and that is a huge difference. They were claiming excess heat without neutrons which was one of their big stumbling blocks and in fact proved to be, I would say, the death knell of their claim because it violates the laws of physics. How can one prevent neutrons from coming out of deuteron-deuteron fusion?

Were we wrong? I suppose I wouldn't be telling you this if my colleagues and I were wrong. No we were correct (see Table summarizing experimental results below). It took nine years to get this verified. Finally experiments in Japan and Europe are published now and our hypotheses that metals would catalyze fusion and that different metals would have a larger fusion-enhancement effect than other metals have been verified. These experiments have achieved 100% reproducibility, which eluded our best efforts in the 1980's and early 90's. Relevant data which support this conclusion are provided in the tables below, which I have extracted from several peer-reviewed papers.

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[8] S.E. Jones, E.P. Palmer, J.B. Czirr, D.L. Decker, G.L. Jensen, J.M. Thorne, and S.F. Taylor & J. Rafelski, "Observation of Cold Nuclear Fusion in Condensed Matter," **Nature** 338: 737-740 (April 1989).

Material[4]	U_e (eV)
D_2 gas[1]	25 ± 5
Pd	800±90
Sb	720±70
Pt	670±50
Co	640±70
Au/Pd/PdO[2]	601±23
Tl	550±90
Bi	530±60
Al	520±50
In	520±50
Ba	490±70
V	480±60
Pb	480±50
Zn	480±50
Cu	470±50
Nb	470±60
Fe	460±60
Mg	440±40
Mo	420±50
Mn	390±50
Ni	380±40
Cd	360±40
Ag	330±40
Ta[3,4]	322±15
Cr	320±70
Pd[3]	280±30
Au	280±50
Ta	270±30
W	250±30
Rh	230±40
Re	230±30
Ru	215±30
Sr	210±30
Ir	200±40
Be	180±40
Sn	130±20

Material[5]	U_e (eV)
Pd-Li	**1500**±310
Au-Li	60±150
Li metal	? (large, I expect)

Material[4]	U_e(eV)
Sc	≤30
Al_2O_3	≤30
Y	≤70
Zr	≤40
Lu	≤40
Hf	≤30
La	≤60
Ce	≤30
Pr	≤70
Nd	≤30
Sm	≤30
C	≤60
Si	≤60
Ge	≤80
Eu	≤50
Gd	≤50
Tb	≤30
Dy	≤30
Ho	≤70
Er	≤50
Tm	≤70
Yb	≤40
BeO	≤30
B	≤30
CaO_2	≤50

1. U. Griefe, *et al*., Z. Phys. **A351**:107 (1995).
2. H. Yuki, J. Kasagi, A.G. Lipson, *et al.*, JETP Letters, **68**:823 (1998).
3. K. Czerski, *et al.*, Europhys. Lett. **54**:449 (2001).
4. F. Raiola, *et al.*, Eur. Phys. J. **A19**:283 (2004).
5. J. Kasagi, *et al.*, J. Phys. Soc. Japan, **73**:608 (2004).

The Table above displays a list of metals and effective screening potentials – which provide a measure of the effectiveness of the metal in enhancing fusion. The larger the number, the more enhancement of fusion yields one gets with that metal, and the correlation is much larger than linear. Note that palladium-lithium alloy is the best alloy that has been found so far. The number 1500 eV for the effective electron screening potential in the case of the Pd-Li metal alloy turns out to be very large, incredibly large. I expect that lithium metal alone will provide a large fusion enhancement factor – and we are preparing experiments to test that prediction. Lithium has the additional advantage that, for an impinging deuteron beam, lithium provides both the metallic matrix for enhancing the fusion cross section as well as the fuel (in d-Li reactions). The hope is that if we can understand how the fusion-enhancement effect in metals can be so large, we can further increase the effect leading perhaps to commercial power production based on controlled fusion. That is the hope.

Note this comment from a 2006 paper by K. Czerski et al.:

" **As shown in [Europhys. Lett. 68:363 (2004)], the screening energy of order 300 eV determined in accelerator experiments can explain the neutron production rate observed by Jones et al.** [*Nature* 338:737, 1989[9]] **at room temperature**."
K. Czerski, et al., Eur. Phys. J. A27:S01,83 (2006)

This refers back to our 1989 paper in **Nature**[9] -- Czerski et al. state the fusion enhancements in metals which they observe are consistent with and confirm our earlier metal-catalyzed fusion results reported in 1989. Nice of them to say so. So we finally have confirmation. But it took a long time to get that confirmation, and even today, it is fair to say that most scientists and of course the general population are quite unaware that our 1989 paper in Nature has been corroborated and that the metal-catalyzed fusion (the old "cold fusion") research is now on firm footing. (We certainly don't have a decade to find out the truth of 9/11 and get the word out to the population, if we want to do something about the 9/11 wars!)

Now there's not much funding in the United States for metal-catalyzed fusion at this time, but there is nevertheless work going on. I am pleased to say that our small group of researchers continues on this path doing experiments and some theoretical work also. It is similar with 9/11 research: we are steadfastly pressing forward, but with no direct funding.

It's remarkable isn't it? Metal-catalyzed (cold) fusion is a very unpopular field in the United States because of misunderstandings and guilt by association and so on. Yet there's a lot of hope here at least for understanding nature -- and we may eventually get to an energy source based on fusion. We haven't hit a fundamental barrier yet as we did with muon-catalyzed fusion. We continue studying this approach to fusion as we seek for ever higher fusion energy yields and there are several students working with our team.

The Scientific Method

Consider the scientific method as it applies to the study of the events surrounding September 11, 2001. First we gather observations. Everybody has seen the collapse of the Towers. That's just the first observation: the Towers did not topple over -- they were completely destroyed. And then we add that several hours later, at 5:20 pm the same day, World Trade Center 7 collapsed. This was a 47-

[9] S.E. Jones, E.P. Palmer, J.B. Czirr, D.L. Decker, G.L. Jensen, J.M. Thorne, and S.F. Taylor & J. Rafelski, "Observation of Cold Nuclear Fusion in Condensed Matter," **Nature** 338: 737-740 (April 1989).

story skyscraper that was never hit by a jet, yet it collapsed straight down on the same day. Then we can time how fast the buildings collapse. The total time for the Towers collapse turns out to be around 10-14 seconds; for WTC 7 the fall time of the southwest corner is (6.5 +- 0.2) seconds. Many more interesting observations were witnessed that day and recorded including orange flowing material pouring out of the south tower minutes before the collapse. Dust and debris which were gathered for later analysis contain valuable information which we can observe and analyze. All these observations constitute hard physical facts and evidence.

The next step in the scientific method is to formulate a hypothesis to explain the observations which is consistent with the data as much as possible. The final steps of the scientific method are crucial. The hypothesis is rigorously tested by performing tests and experiments which generate more data. The new observations add to the original observations and the hypothesis may require revision or outright rejection. Sometimes a new hypothesis is needed to describe the growing list of observations. I hope you see that the scientific method involves an iterative process of testing hypotheses against hard physical evidence.

An immensely critical step in the scientific method is publishing the results in a peer-reviewed journal. This has long been a part of the modern scientific method ever since the time of Newton. The entire cycle is repeated with others joining in studying the phenomena. After many experiments, a model explaining the body of acquired facts is established. This is what scientists refer to as a theory.

In everyday vernacular, the word "theory" normally refers to what scientists prefer to call a "hypothesis." A scientific theory is a thoroughly tested model of reality which explains the observations. The synthesis of a scientific model or theory only occurs after all the iterative steps in the scientific method are performed: experimentation, interpretation, analysis, and publications.

The Official Conspiracy Theory

In the case of 9/11, a model of reality was immediately presented without requiring anyone to do much thinking or work. This alone should make scientists skeptical of the official "theory." Everyone was told that nineteen hijackers crashing planes into two towers caused the total collapse of three sky scrapers. Richard Cheney, shortly before the attack on Iraq, laid out the official theory:

All of that [the US military role of the 20th century] changed on September 11th… We saw on 9/11 nineteen men hijack aircraft with airline tickets and box cutters and killed more than 3,000 Americans in a couple of hours.[10]

Is this the full story? Where were the famous US air defenses that day? Why do so many uncritically accept the "9/11 official story" that a few hijackers in each of four planes overpowered well-trained airline pilots using box-cutters who subsequently brought down three World Trade Center skyscrapers and damaged the Pentagon without being intercepted by a single military jet?

Americans and people around the world have been told this story repeatedly ad nauseum. Most seem to blindly accept it without scrutiny. To challenge this story is to risk being smeared with the dreaded conspiracy-theorist label. Accepting the official story without scrutiny is much easier than considering that the official story may be wrong or that our leaders may have known about the

[10] "Cheney Says U.S. in Final Stages of Diplomacy With Iraq," American Forces Press Service, March 16, 2003. http://www.defenselink.mil/news/Mar2003/n03162003_200303162.html

impending attacks beforehand. As scientists, we are not – or at least should not be – so uncritical. We should demand close scrutiny of the facts and perform our own tests. We demand nothing less than the truth, and many responsible citizens of the world demand an end to the 9/11 wars.

Consider Mr. Cheney's explanation of events which I consider a summary of the "official conspiracy theory". Those 19 hijackers surely did not work independently and individually. They conspired. That is itself a conspiracy theory. Contrary to the official conspiracy theory, we will explore the hypothesis that explosives (generally, cutter-charges to include the possibility of incendiaries) were used to help bring the WTC buildings down. Of course, the Towers were hit by planes -- actually, not even everybody accepts that, but the evidence is very strong that real planes hit the towers[11]. All the acquirable evidence must be examined as a necessary part of doing good science. In the remainder of this paper, two models will be compared: 1) two planes and subsequent fires solely caused the collapse of three skyscrapers; and 2) pre-planted cutter-charges were additionally used in the buildings.

A major interim goal that I have, along with other scientists, is to publish the accrued body of evidence and analysis in a reputable mainstream scientific journal. A major publication will, based on my prior experience in other controversial areas, propel the observations, the hard facts, into public view.

The rapid, symmetrical collapse of WTC 7

Consider the collapse of building seven, a 47-story skyscraper in the WTC complex which was never hit by a plane. We can learn a lot by measuring the time for descent of the southwest corner of the roof as it begins its steady drop to the ground. A simple way to perform this measurement yourself is to use a stopwatch and time the descent of the southwest corner of the roof from several different perspectives. Videos can be found at wtc7.net. Some activity in the central area of the building can be seen since a kink appears. Shortly after, the southwest corner of the roof begins a steady fall to the ground. The time has been measured to be (6.5 +- 0.2) seconds. (Below: WTC 7 before 9/11, and on the afternoon of 9/11/2001 after the collapse of the WTC Towers (WTC 7 still standing, right).)

[11] See papers in the **Journalof911Studies.com** by Salter and Legge and Jenkins

Personally, when I first saw these videos at WTC7.net and noticed the straight-down symmetrical collapse of this building, my curiosity was roused as a scientist.[12] Of course, you should observe the collapse yourself and consider if the rapid collapse of the building does not look a bit strange and worth further scrutiny.

Is 6.5 seconds a reasonable collapse time? For comparison, consider how fast a brick dropped from the corner of the roof would fall. How long does it take the brick to hit the ground? The answer is 6.0 seconds (and that's in a vacuum). The roof fell at very nearly free-fall speed!

How is this possible? There's a lot of steel and concrete between the roof and the ground so the rapid fall immediately raises questions. After all, in science, we must consider conservation of momentum, a fundamental law of physics. I do like to teach physics, and conservation of momentum is one of my favorite topics.

Now we're going to apply conservation of momentum as we consider the collapse of Building Seven at 5:20 pm on September 11, 2001 about seven hours after the collapse of the towers.[13]

I have timed a number of controlled demolitions that are done by explosives. The time it takes for the roof to hit the ground is near freefall time, a little over. To find the freefall time of the roof with nothing in the way, find the height of the building (y) and then calculate the time by solving the standard equation for the time of fall ($y = ½ gt^2$). For controlled demolitions, buildings fall close to freefall time, just as the descent of WTC7's roof-corner is close to freefall time. But with no explosives (the "official theory") and the law of conservation of momentum, material below the roof – including intact steel columns – must significantly slow the motion of the roof. What is happening? It is as if something is moving the material out of the way beneath the roof, something like explosives, for example. Furthermore, it appears impossible for this 47-story steel-frame building to collapse rapidly and symmetrically onto its footprint as it did when **random** fires and damage were present; could the support columns fail abruptly, simultaneously?[14]

A FEMA report discusses the collapse of WTC 7. The writers admit that how fires caused the building to collapse is "unknown at this time." FEMA adds: **"The best hypothesis has only a low probability of occurrence."** Now it is to their credit they make that admission, that their best hypothesis "has only a low probability of occurrence." This remember is the official hypothesis, that fires and some damage were followed by complete, straight-down and rapid collapse of WTC 7.

Now if your hypothesis has only a low probability of occurrence, as a scientist what do you do? You think, "We must consider another hypothesis." None of the US government reports seriously consider the hypothesis that cutter-charges could have been used in WTC 7, despite the growing evidence for that hypothesis.[15]

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[12] It is interesting to observe the reaction of a controlled-demolition expert as he views the collapse of WTC 7 for the first time, here: http://www.youtube.com/watch?v=HgoSOQ2xrbI&mode=related&search=

[13] http://911research.wtc7.net/wtc/evidence/videos/index.html#building7

[14] Referring to the Pons-Fleischman cold fusion story again briefly: they theorized that two deuterons would come together in palladium and produce helium-4 and essentially all of the energy (they suggested) gets absorbed somehow in the lattice of the metal. I pointed out that I could not find a way to do that and conserve momentum and I went through the arguments. A professor from MIT listened to my arguments. Although a supporter of Pons and Fleishman at that time, he said as I explained the conservation of momentum argument that he "saw the guillotine blade fall" on Pons and Fleishman's idea. That was correct and the same thing applies here: Conservation of Momentum cannot be neglected.

[15] See articles and letters in the Journal of 9/11 Studies.

From the preliminary NIST report we see that there were 24 steel columns in the core of WTC7 and 57 perimeter columns. Clearly, these columns were not weak; on the contrary, it *was* a very solid building. And it was not hit by a plane at all. According to the reports so far, none of these columns was severed although a few may have been damaged by falling debris from a Tower.[16]

The nearest of the Twin Towers (WTC 1) was about 100 meters from WTC 7. For building 7 to come straight down at nearly freefall speed without explosives frankly strains credulity and leads us to search for a better explanation.

Accordingly, several careful studies were performed regarding the collapse of WTC 7.[17] I wish to call attention to this footnote in a paper by Professor Kenneth Kuttler:

> **"any further analysis of WTC7 should include all floors (not just "floors 8 to 46") and conservation of momentum considerations."** [18]

Now why would he say this about including all the floors in further analysis work, and not "just floors 8 to 46"? Dr. Kuttler's paper points to a NIST solicitation. After the NIST final report on WTC7 was already long overdue, they solicited proposals for someone else to study the collapse of building 7. The grant went to ARA in New Mexico, and here is the solicitation that went out from NIST regarding the collapse of Building 7:

> "Create detailed floor analyses to determine likely modes of **failure for Floors 8 to 46** due to failure of one or more supporting columns (at one or more locations) at the World Trade Center Building Seven." [19]

We want to understand the collapse of this building, yet NIST is asking whoever accepts the contract to put blinders on and only consider "floors 8 to 46." That, to me, is not a very scientific way to proceed. As a scientist, what does this make me want to do? Of course I want to know, "what happened below floor 8? Why should I not consider what happened below floor 8, or above floor 46?"

In the video Loose Change (final cut) there is a tape of a fellow who was trapped in Building 7 before it collapsed, so he's on the radio, he's telling how they got out of there. He explained that they were trapped at floor 8, there was an explosion below them and he and his colleague were trapped. The explosion cut off their escape routes. "There wasn't any way that we could find to get out." Now that implies a major explosion. He said the firefighters were able to get through and get to them and get them out of Building 7 before it collapsed. This is strong evidence for a major explosion below floor 8. As scientists we have to include that evidence and not just limit ourselves to floors 8 to 46 as the NIST solicitation requires.[19]

It's a bit funny but it's very sad, the restriction posed by NIST. Let me be a little bit blunt here. Researchers have complained that there has been suppression by the Bush/Cheney administration on their studies and publications on global warming. Now I'm hoping that with the change that we just had in this election (with Democrats controlling both houses of Congress) that

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[16] See http://journalof911studies.com/volume/200609/Why_Indeed_Did_the_WTC_Buildings_Completely_Collapse_Jones_Thermite_World_Trade_Center.pdf , Section 3.

[17] For example, http://journalof911studies.com/articles/W7Kuttler.pdf and http://journalof911studies.com/volume/200611/911-Acceleration-Study-Proves-Explosive-Demolition.pdf

[18] http://journalof911studies.com/articles/W7Kuttler.pdf

[19] http://wtc.nist.gov/solicitations/wtc_awardQ0186.htm

there will be some opening up and we'll be able to look at ALL the floors in Building 7 and not just floors 8 to 46. That would be one great outcome of this election, freeing up science! And I hope NIST will yield to our requests that they release the photographs and videos which they gathered up regarding WTC 7 (at taxpayer expense) which they have so far refused to release.

We do have some structural engineers who are speaking out about the collapses of these buildings. For example, Joseph Phelps is on the editorial board for the Journal of 9/11 Studies. He said "the airplane couldn't cause this… Something is cutting the columns, it's called controlled demolition." And two structural professors in Switzerland are quoted in the newspaper there. There is the reference Tages-Anzeiger, September 9, 2006 .[20]

Prof. Hugo Bachmann stated: **"In my opinion WTC7 was with the highest probability brought down by controlled demolition done by experts."** I've had people say, "well maybe Al Qaeda ran into WTC7 that morning and planted explosives…" This is unsupportable since this was a highly secure building: WTC 7 housed a secret office of the CIA, as well as a Department of Defense office and so on. (It is worth noting that records of ENRON and other businesses under investigation were destroyed when this building collapsed.) Furthermore, it takes time and considerable skill to do a demolition of a skyscraper in the manner we observed. Structural Prof. Jörg Schneider stated: **"WTC7 was with great probability brought down by explosives."** [22]

Now I'm hoping that NIST will actually go so far as to consider the idea that explosives were used in the destruction of Building 7.

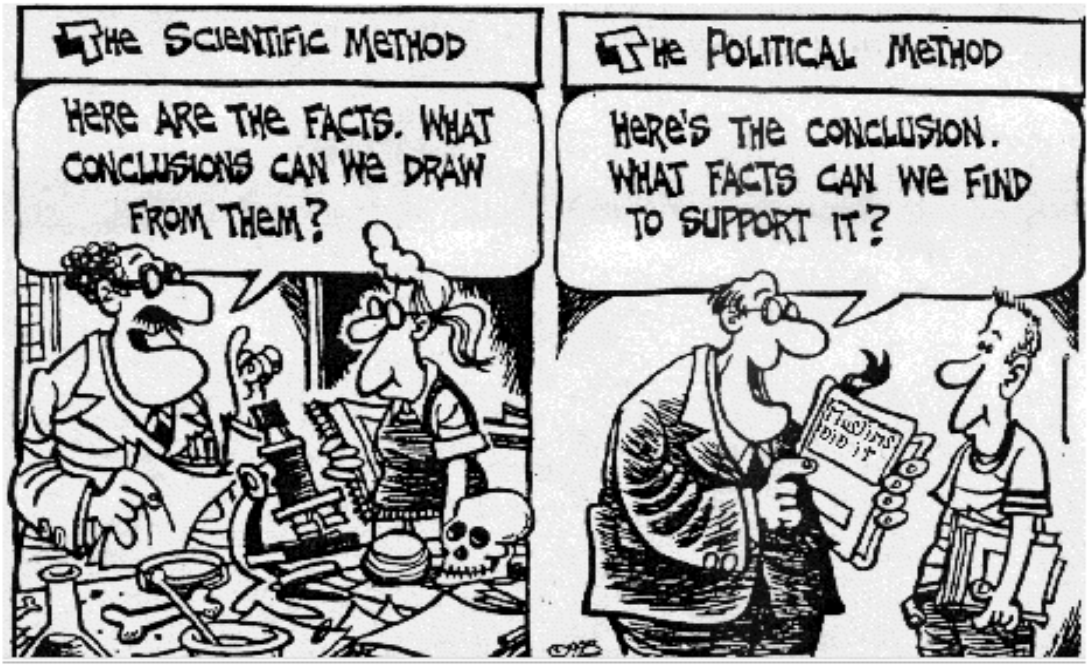
It's important again to watch WTC 7 collapse. There's a video[21] where we see the collapse of Building 7 compared to an implosion in a controlled demolition. The video shows both collapses in slow motion, so you can see how they compare. And this production is from Italian TV and this gives me a chance to remind people that this study of what happened on 9/11 is not just going on in the United States. There is actually quite a bit of opposition, it is fair to say, in the United States to this study, but nevertheless the discussion is going on vigorously around the world. Italians to their credit have had quite a lot of discussion on the study of 9/11 events, and I understand Denmark, Netherlands, Sweden, and other countries have many participants as well. We want to know what happened on 9/11/2001.

People ask me: "But we already know who did it don't we? The Muslims, right?" We were presented with the explanation from Dick Cheney and others very soon after the attack: nineteen Muslim hijackers pulled it off, without anyone in American government knowing about the attack in advance. The utter lack of American air defenses that day is explained away as "incompetence", incompetence raised to an art form perhaps. If one knows the complete explanation in advance without doing much or any research, then why bother with a study?

The same people who sold the official "Muslims alone did it" story supposedly were not competent enough to know about the hijackers plans even after multiple warnings nor to intercept any hijacked aircraft on the morning of 9/11. Yet we are to accept their story without scrutiny? Consider that the very same people were competent enough to deploy a team of hundreds of emergency workers the day ***before*** 9/11, to downtown Manhattan![22] Within a few days, the names of all the hijackers were

[20] http://tagesanzeiger.ch/dyn/news/ausland/663864.html
[21] http://www.youtube.com/watch?v=6_czyNCNhDI
[22] http://tagesanzeiger.ch/dyn/news/ausland/663864.html [See also http://www.danieleganser.ch/e/zeitungsartikel/index.htm and http://journalof911studies.com/articles/Intersecting_Facts_and_Theories_on_911.pdf]

announced and the blame placed on Middle Eastern countries. Detailed war plans (for war in the Middle East) were rolled out in very short order. Does all this sound like incompetence, or pre-planning?



But of course it is an "unscientific method" when one starts with a conclusion and then finds just those facts that support that conclusion while ignoring everything else – that is "pathological science." An obvious example of pathological science is evidently demonstrated by NIST regarding the collapse of WTC7 (which was not hit by a jet): "fires and damage did it, just look at floors 8 to 46 and tell us how fires made it collapse straight down." No! In a scientific method we gather all the facts and look at all the floors and test various hypotheses, and we perform experiments. Only then do we draw conclusions which are solidly based on all the facts and experiments.

Interestingly the 9/11 commission report fails to even mention the collapse of WTC 7. The NIST report on WTC7 is long overdue. NIST does have photos and videos of the collapse of WTC 7 which they have refused to release despite Freedom of Information Act requests. The excuse is that while they are still studying this, they will not release the videos and photos of WTC 7. These videos and photos were obtained mainly from the public at tax payer expense and I strongly suggest the public should have a chance to look at all the data and we can study this ourselves, thank you.

We have a Scholars for 9/11 Truth and Justice group which you can find at stj911.org. In fact you can join us, and I hope you consider doing so. The group now has over 350 members, many of whom are academics and engineers, professionals and scholars. We continue to study these data that I'm describing today.

A group (including me) extended an invitation to NIST to sit down with them and debate, we had a certain time and place. They declined. And we said "you name the time and place and we'll sit down and talk" and they replied, paraphrasing: "a change in venue, a change in time, will not change our decision." Most unfortunate.

Fall times for the WTC Towers

The collapse time of the South Tower was stated to be 10 seconds in the 9/11 Commission Report (p. 322). The free fall time of a brick dropped from the roof of the tower, which is 1368 feet high, would be 9.2 seconds. The NIST final report avoids all issues that occur after the tower is "poised for collapse",[23] including the remarkably short collapse time. By ignoring all observations that occur after the towers are "poised to collapse." [23] NIST inherently ignores molten metal evidence, collapse features which are not well described by the hypothesized failure mode, and most of the forensic evidence contained in the rubble, dust, and aerosols which were collected in the days and months after the collapses. Clearly, NIST is ignoring a lot of data, and that is not good science.

Kevin Ryan, co-editor of the Journal of 9/11 Studies, analyzed the question "were fires sufficient to cause complete failure in the steel columnar supports in the Towers?"[24] He specifically demonstrates that NIST used overreaching assumptions, in some cases blatant assumptions which contradicted physical evidence, in arriving at the conclusion that the towers were "poised to collapse". By the way, Kevin was fired from Underwriters Laboratories when he publicly disclosed that NIST commissioned UL to perform experiments to test the steel. Model replicas of the WTC floor assemblies were subjected to severe fire endurance tests to see what would happen. When Underwriters Laboratories performed the tests, the floor assemblies did not fail. There was some warping, Kevin Ryan notes about three inches vertical sagging, but the floor assemblies did not fail, and certainly did not melt!

This is an example of experimental results contradicting NIST's fire and damage model, a big part of the official conspiracy theory. NIST uses computer models to analyze the response of the WTC towers to fire which is fine if done in accordance with data and physical laws. However, the model disregards much of the data. In the scientific method, experimental data form the cornerstone of a model, not vice versa. In this case, the actual experiments with WTC floor assemblies did not result in collapse or failure. So NIST, in their computerized "black box" simulation allows warping of not just 3 inches which was based on experiments, but over 40 inches! [23] That's a major extrapolation from the data. You see, again, a departure by NIST from the careful scientific method.

The results of Gordon Ross's paper[25] are particularly important to highlight. The north tower was hit about floor 96 and damage extended over a few floors. After the impact, a block of about fourteen floors was sitting over the weakened area.

To conceptualize the arguments made by Ross, consider raising the top block of 14 floors one floor high and dropping the block onto the remaining portion of the WTC tower, about 96 floors. Now what happens?

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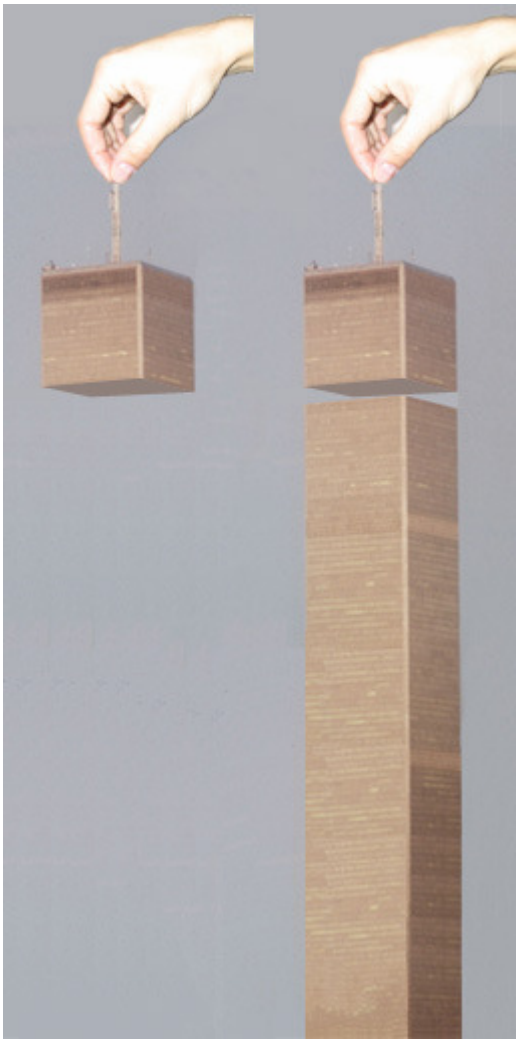
[23] NIST, http://wtc.nist.gov/pubs/NISTNCSTAR1Draft.pdf ("Final Report of the National Construction Safety Team on the Collapses of the World Trade Center Towers (Draft)"), Sept.-Oct. 2005.

[24] Kevin Ryan, "What is 9/11 Truth? The First Steps," http://journalof911studies.com/articles/Article_1_Ryan5.pdf

[25] Here are: http://journalof911studies.com/articles/Journal_5_PTransferRoss.pdf And: http://journalof911studies.com/articles/Article_3_RossReply.pdf



We will answer this question, but first consider taking the same 14 floor block and dropping it where it free falls through air until impacting the ground. The fall time is easy to calculate and would be about nine or ten seconds. Now drop the 14 floor block onto the remaining portion of the WTC tower which is over 300 thousand tons of steel and concrete spread out over 90+ floors (including 47 huge core columns and 240 perimeter columns). That is a tremendous amount of material in the way.

From experience you know that if you hit something stationary (like another car) while driving it will slow you down, right? This slowing from collisions is due to conservation of momentum and energy. Now which one of these blocks is going to fall faster? The one falling in air or the one falling onto the remaining 94 floors? Of course, the block falling in air is going to fall a lot faster!

When you go through the calculation, which Ken Kuttler did, it takes a lot longer just because of conservation of momentum and energy. Ken's calculations show numbers over 25 seconds for the complete collapse of Tower 1.[26] That is a lot longer than free fall, and longer than the observed destruction of either Tower. If you add into the calculation a reasonable safety factor, Kuttler then concludes that WTC 1 would not have continued to complete collapse at all. This result agrees with Gordon Ross who says the initial collapse will actually STOP.[24] There will be damage, of course, but the support columns will flex and absorb the kinetic energy of the upper block of floors. Plus you have concrete breaking and pulverization going on which removes kinetic energy from the system. And as

[26] http://journalof911studies.com/letters/ProfKuttlerWTC1CollapseTimeCalculations.pdf

he looks at conservation of energy and momentum he finds that the destruction actually stops, the collapse is arrested, and it doesn't go to complete collapse (without the use of explosives, that is).

Why would we suppose that this structure would just give up? All the columns and material below are designed to stand, these buildings are designed continue to bear weight, and so it might not have collapsed at all if there had not been something weakening the building below like explosives. And it certainly wouldn't collapse as fast as free fall speed or nearly free fall speed without moving material out of the way. In a controlled demolition which uses explosives, the material is effectively moved out of the way resulting in near free fall speeds of buildings. A critical look at the data casts doubt on the NIST/official theory in favor of the controlled demolition hypothesis.

If you will look at a photograph of inside one of the towers during construction (e.g., above), you will see the steel core columns. These buildings were not hollow tubes, contrary to some notions I've heard from engineers who should look at the actual construction of the Towers. After the tower has collapsed, you see some of the perimeter walls standing but oddly enough you see most of these enormous core columns are gone (see photos below). Certainly there are no stacked up floors. 'Pancaking', the collapse hypothesis issued in the FEMA report, is not a viable hypothesis which even NIST explicitly states in their report.[23] The 'pancake-collapse' hypothesis has been flatly rejected.

I want to emphasize that the NIST report[23] could be called the official "pre-collapse theory." Unbelievably, they explicitly state, "it does not actually include the structural behavior of the tower after the conditions for collapse initiation were reached.", and "the results were a simulation of the structural deterioration of each tower from the time of aircraft impact to the time at which the building became unstable, i.e., was poised for collapse." [23] For twenty million dollars, one would think that NIST could have carried the collapse analysis 15 seconds further.

Think about the magnitude of this problem! There exist all these data which are completely ignored -- the speed of the collapses, the molten metal, the horizontal ejection of steel beams for hundreds of meters, the eye witnesses seeing flashes and hearing sounds of explosions, the short times required for the skyscrapers to **completely** collapse -- and in their final report, they consider and analyze only up to the point where the building is "poised for collapse!"[23]

Now in science we teach that all the data needs to be considered so that we can come up with an explanation that conforms with all the data. Civil engineers complained about the NIST report, too

-- I'm not the only one who complained about the NIST report. New Civil Engineer has an article that says:

> **"World Trade Center disaster investigators [at NIST] are refusing to show computer visualizations of the collapse of the Twin Towers despite calls from leading structural and fire engineers,** NCE has learned.
>
> "**Visualisations of collapse mechanisms are routinely used to validate the type of finite element analysis model used by the [NIST] investigators."**
>
> A leading structural engineer said about NIST: "**the software used by NIST has been pushed to new limits. There have been a lot of simplifications, extrapolations and judgment calls**," which means we don't have a lot of confidence in computer simulations, like the three inches observed extrapolated to forty inches in the warping of the floor assemblies.[27]

The FEMA report on the Towers' destruction also received strong criticism from the engineering community:

> "Respected members of the fire protection engineering community are beginning to raise red flags, and a resonating [result] has emerged: **The structural damage from the planes and the explosive ignition of jet fuel in themselves were not enough to bring down the towers.**
>
> **"Fire Engineering has good reason to believe that the "official investigation" blessed by FEMA… is a half-baked farce that may already have been commandeered by political forces whose primary interests, to put it mildly, lie far afield of full disclosure**. Except for the marginal benefit obtained from a three-day, visual walk-through of evidence sites conducted by ASCE investigation committee members- described by one close source as a "tourist trip"-no one's checking the evidence for anything.
>
> "Some citizens are taking to the streets to protest the investigation sellout. **Sally Regenhard, for one, wants to know why and how the building fell as it did upon her unfortunate son Christian, an FDNY probationary firefighter.** And so do we.
>
> **"Clearly, there are burning questions that need answers. Based on the incident's magnitude alone, a full-throttle, fully resourced, forensic investigation is imperative.** More important, from a moral standpoint, [are considerations] for the… present and future generations…"[28]

Nearly all WTC steel was shipped out to Asia and melted down for recycling.[27] This destruction of evidence is pathological science in the extreme, especially considering the protests of scientists and engineers who tried to stop the destruction of this evidence.

Molten Material Pouring out of the South Tower

Now we'll move on to the subject of molten material pouring out of the south tower before the collapse. If you look at this, you see yellow and orange material coming out of floor 80; you can see

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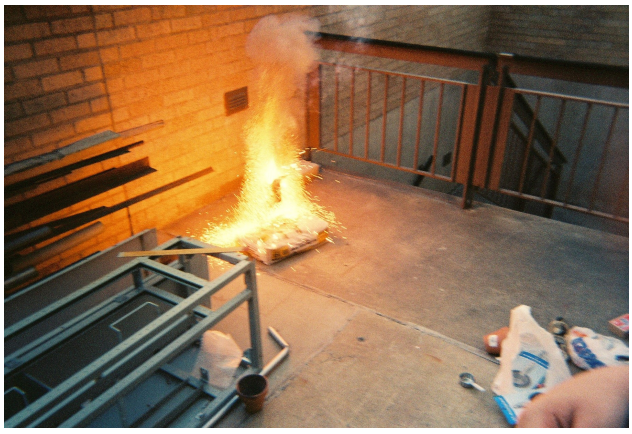
[27] Parker, Dave (2005). "WTC investigators resist call for collapse visualisation," New Civil Engineer, October 6, 2005.
[28] Manning, William (2002). "Selling out the investigation," Editorial, *Fire Engineering*, Janvier 2002. See also: Manning, William (2004). "The Tainted Brush of 9/11 Politics," Editorial, *Fire Engineering*, Septembre 2004.

metal flowing out of the third and fourth windows over, of the North face, the north east corner or Tower 2.[29]

Note the white ash floating away from time to time, from this flowing material. It is not the darker gray smoke which comes from the fires in the building. Could this white ash provide a valuable clue to something significant?

> At this corner is where the flow is, NIST displays a photo of an unusual flame and they note:
> "An unusual flame is visible within this fire. In the upper photograph {Fig 9-44} **a very bright flame**, as opposed to the typical yellow or orange surrounding flames, **which is generating a plume of white smoke**, stands out." [30]

Thus, an unusual reaction region is visible in this photo generating a plume of white smoke. Keep that in mind as we look at thermite demonstrations later. NIST reported just before 9:52, a few minutes before collapse, a bright spot appeared at the window, followed by a glowing liquid. This is significant: a bright flash, white plumes of smoke, and then molten metal flowing out of nearby windows. What could it be? What kind of experiments can we do to produce these same phenomena? (Top photos WTC 2 Tower; lower left: molten iron/thermite reaction; lower right, molten aluminum.)



[29] http://video.google.com/videoplay?docid=-8035154485220976139&q And: http://video.google.com/videoplay?docid=545886459853896774

[30] Source: NISTNCSTAR 1-5A Chapter 9 Appendix C NIST Fig. 9-44. p. 344 (PDF, p. 48)

I suggest four possibilities for these observations:

1. Perhaps the structural steel in the buildings melted and is flowing out.
2. Perhaps it is molten aluminum from the aircraft that melted and is flowing out, perhaps with added organics from burning office materials.
3. A mix of the two (above) including office materials, etc.
4. Molten metals (e.g., molten iron) produced by highly exothermic chemical reactions (e.g., aluminothermic/thermite reactions)

The first hypothesis to explore is molten steel from the buildings; however:

> **"The temperature of the fire at the WTC was not unusual, and it was most definitely not capable of melting steel."[31]**
> **"Your gut reaction would be the jet fuel is what made the fire so very intense, a lot of people figured that's what melted the [WTC] steel. *Indeed it did not, the steel did not melt*."[32]**

NIST found no steel which exceeded about 600 °C, according to the NIST report.[23] Steel does not melt until it reaches temperatures over 1500 °C. There is no way the fires of building materials were hot enough to melt any structural steel. (If someone claims THAT, let them do a careful experiment to test their claim.)

To test the second hypothesis, we performed experiments with molten aluminum. We melted aluminum alloy in a steel pan and poured out the aluminum. It appeared silvery, not glowing orange as observed at the South Tower. We then heated the steel pan until it was glowing yellow-hot and poured out the aluminum, and the flowing aluminum was still observably silvery. How do you get aluminum to 1000 °C (orange-hot temperature) if the aluminum is liquid and free to flow, unless there's a big pan in the building to hold the aluminum while you heat it past its melting point?

The reason why hot flowing aluminum appears silvery is very understandable. Simple metals incandesce when you heat them up, and orange hot represents a temperature of about 1000 °C. Aluminum alloy melts at roughly 600 °C. We heated the steel pan and saw the pan glow yellow-orange. However, the melted aluminum contains many free electrons and will therefore reflect more light. Aluminum also has a low emissivity, meaning that the aluminum is glowing/incandescing but only very faintly. In daylight conditions, the liquid appears silvery due to the high reflectivity particularly when poured out. The glowing liquid flowing from the South Tower could not be aluminum because it does not appear silvery -- rather, it has an "orange glow" (in NIST's words and by observation also).

Also, aluminum is very difficult to ignite. We found that out by directing an oxyacetylene torch onto molten aluminum – and it oxidized but did not ignite with an "unusual flame" – no flame from the aluminum was seen at all.

NIST in a fact sheet in August 2006 stated:

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[31] Eagar, T. W. and Musso, C. (2001). "Why Did the World Trade Center Collapse? Science, Engineering, and Speculation", *Journal of the Minerals, Metals and Materials Society*, 53/12:8-11 (2001).
[32] Quoted in http://cms.firehouse.com/content/article/article.jsp?sectionId=46&id=25807

"NIST concluded that the source of the molten material [observed flowing out of WTC2 before its collapse] was aluminum alloys from the aircraft, since these are known to melt between 475 °C and 640 °C (depending on the particular alloy), well below the expected temperatures (about 1,000 °C) in the vicinity of the fires.

"Aluminum is not expected to ignite at normal fire temperatures and there is no visual indication that the material flowing from the tower was burning.

"Pure liquid aluminum would be expected to appear silvery."

"However, the molten metal was very likely mixed with large amounts of hot, partially burned, solid organic materials (e.g., furniture, carpets, partitions and computers) which **can display an orange glow**, much like logs burning in a fireplace. The apparent color also would have been affected by slag formation on the surface." [33]

I read the word "can" in the NIST report and as a scientist wanted to perform experiments. Why didn't NIST do the experiments before making that statement (or did they)? Did they even try to mix aluminum with organics and pour the mixture out (like the flowing material at the South Tower) to show that it not only "can" but "will" emit an "orange glow"? We decided to perform the experiment ourselves.

The very next day after reading the NIST fact sheet in August 2006, a colleague and I performed experiments with aluminum mixed with organic materials, mostly wood chips. The flow was silvery and simply did not resemble the orange liquid which poured from the south tower. The organics burned quickly when added to the molten aluminum. The ash floated on top of the aluminum liquid.

A young physics professor told me that he couldn't believe NIST would not have done the experiment to see if this worked – that one "can" get an "orange glow" by adding organic ash to aluminum. So we did another set of experiments and he joined the effort. This time we used wood ash from my wood-burning stove, pieces of carpet, plastic chips, later glass, and melted it all together with molten aluminum. [By the way, my wood-burning stove is made of steel and I don't worry a bit that it will melt!] The young physicist doggedly stirred and stirred the mix with a long-bladed screwdriver. He tried to mix the organics in with the molten aluminum, but they would not mix in! It's like oil and water, the organics tend to float and separate from the molten aluminum. And then in the end we poured the concoction out and the flow still looked silvery. He agreed with that because he saw it. Silvery, not orange. So much for the NIST Fact Sheet[30] which states that "the molten metal was very likely mixed with large amounts of hot, partially burned, solid organic materials (e.g., furniture, carpets, partitions and computers) which **can display an orange glow."**

If NIST can tell us how to do this trick, we will do the experiment again to test their suggestion. Meanwhile, we have observed that the organics float to the surface but do not make a uniform orange glow. Conclusion: poured out molten aluminum looks silvery (even if heated to the point where iron glows yellow/orange) and does not give the orange glow seen at the South Tower in the flowing material (even when mixed with organic materials).

We've ruled out molten structural steel and molten aluminum even with organics as the source of the orange-glowing matter seen flowing out in large quantities of the South Tower. Other

[33] http://wtc.nist.gov/pubs/factsheets/faqs_8_2006.htm . Correct per our experiments as reported in my first paper on 9/11, http://journalof911studies.com/volume/200609/Why_Indeed_Did_the_WTC_Buildings_Completely_Collapse_Jones_Thermite_World_Trade_Center.pdf We do seem to have a little dialog going here as NIST answers the question posed in that paper.

explanations for the observations are sought, of course. For example, Frank Greening has suggested that aluminum from the planes which struck the Towers could melt, and that this aluminum might fall on "rusted steel surfaces inducing violent thermite explosions." [34]

So a few students and I did straightforward experiments by melting aluminum and dropping molten aluminum onto pre-heated rusted steel surfaces. There were in fact no "violent thermite" reactions seen at all. We observed that the temperature of the molten aluminum in contact with the rusty iron simply cooled at about 25 °C per minute (measured with an infrared probe) until the aluminum solidified, so that any thermite reactions between the aluminum and iron oxide must have been minimal, since the heat released from any possibly short-lived exothermic did not even compete with radiative and conductive cooling, thus NOT supporting predictions made by Greening. There was no observable damage or even warping of the steel. Nor were violent reactions observed when we dropped molten aluminum onto crushed gypsum and concrete (wet or dry) and rusty steel. These experiments lend no support whatever to the notion that molten aluminum in the WTC Towers could have destroyed the enormous steel columns in the cores of the buildings, even if those columns were rusty and somehow subjected to direct contact with liquid aluminum.

So we come to the possibility (our #4 above) of highly exothermic energy releasing reactions such as thermite (used here to include any aluminothermic reaction). Basic thermite is simply a mixture of aluminum powder and iron oxide. It's important to have it all in powder form so the iron oxide and aluminum particles will be in contact and react quickly. If you mix the powders thoroughly, and ignite them, the result is molten, white hot iron and a cloud of gray-white aluminum-oxide dust!

Other metal oxides can be used, such as copper oxide, and oxidizers – potassium permanganate is a favorite -- to increase the energy yield of the thermite mixture. Another important additive is SULFUR. Sulfur forms a eutectic with iron so that it will stay liquid at much lower temperatures. Iron melts at around 1538 °C, but with sufficient sulfur added, the melting temperature drops to less than 1000 °C (orange hot). Thus, as the liquid iron plus sulfur pours in the air we expect it will be orange, and we will see white ash which is the aluminum oxide coming off. Projected droplets of the hot molten metal stew (some are expected) will form into spheres in the air due to surface tension. These products carry information regarding the chemical reactions which generated them – very important information.

[34] Greening, Frank (2006), unpublished. Available at: http://8real.proboards104.com/index.cgi?board=phony&action=display&thread=1155285629]

I decided some time ago to do experiments with thermite mixtures. My colleagues and I observed the liquid iron-sulfur mix (including some entrained aluminum oxide) glowing orange as it was poured from the reaction vessel, a simple clay pot. Also, droplets thrown into the air were found to solidify into tiny spheres, which I collected in a pan. EDS analysis showed that the microspheres thus produced were predominately iron, aluminum, sulfur and oxygen.

So what's happening in this reaction is that oxygen is transferred from the metal oxide to the aluminum:

$$2Al + Fe_2O_3 = Al_2O_3 + 2Fe\ ,\quad \Delta H = -\ 853.5kJ/mole.$$

The aluminum "wants" oxygen a lot more than does iron, and there's a huge energy release which results in molten iron and aluminum oxide. The molten iron (especially when mixed with sulfur) is hot enough to cut through steel!

For example, there's a video showing a thermite "torch" which produces a blast of molten metal which cuts through a metal rod, at any orientation.[35] Spectre corporation sells these **"focused jet torches for penetrating or cutting,"** including for demolition purposes.[35]

In an instructive video clip[36], the "Brainiac" team places thermite in a clay pot with a hole in the bottom to allow the molten iron to escape. Notice the color of the molten-iron product and the aluminum oxide plume coming off. We see the flowing orange-yellow hot metal as it quickly melts its way through the engine of this car. The characteristics of this demonstration are of course to be compared with the molten material seen flowing from the South Tower along with a white-ash plume just before its destruction.[37]

We also did this experiment: we cut through a steel cup with thermate. Thermate is defined here as thermite with sulfur added, and in this case we also added potassium permanganate because $KMnO_4$ is such a good oxidizer. The evidence of high temperature corrosion was evident.

[35] http://www.youtube.com/watch?v=Wn-MCCZ3O1M

[36] Here's a very graphic example of the ability of thermite to burn through metal, this time through an engine of a car: http://www.youtube.com/watch?v=sjLgzgflCk8&mode=related&search=

[37] http://video.google.com/videoplay?docid=-8035154485220976139&q

For a while now I have been pointing out that there were about 1000 cars near the World Trade Center that were corroded very strangely on 9/11/2001 – additional data. This corrosion occurred often on the car tops, yet the car interiors showed no signs of fire damage in some cases.[38]

Some of the vehicles evidently burst into flames which could account for damage seen, but remember the steel cup corrosion? When you put sulfur into thermite it makes the steel melt at a much lower temperature, so instead of melting at about 1538 °C it melts at approximately 988 °C, and you get sulfidation and oxidation in the attacked steel and you expect this type of pattern. These corroded vehicles provide still more data from the WTC that are consistent with our experiments with thermate, and with the growing body of evidence that aluminothermics helped bring down the Towers and WTC 7. We are seeking samples of the corrosion/residues on these vehicles, to test for thermite residues to check our hypothesis. Unfortunately, it appears that these vehicles (like nearly all of the WTC steel) have already been destroyed/re-cycled making this analysis impossible.

An independent laboratory reported high-temperature sulfidation and oxidation – consistent with if not indicative of thermate-caused corrosion – in steel samples taken from the rubble at WTC 7 and the WTC Towers:

> Evidence of a severe high temperature corrosion attack on the steel, including oxidation and sulfidation with subsequent intergranular melting, was readily visible…The severe corrosion and subsequent erosion of Samples 1 [WTC7] and 2 [Towers] are a very unusual event. No clear explanation for the source of the sulfur has been identified.[39]

> The significance of the work on a [steel] sample from Building 7 and a structural column from one of the twin towers becomes apparent only when one sees these heavy chunks of damaged metal. A one-inch [steel] column has been reduced to half-inch thickness. Its edges--which are curled like a paper scroll--have been thinned to almost razor sharpness. Gaping holes--some larger than a silver dollar--let light shine through a formerly solid steel flange. This Swiss cheese appearance shocked all of the fire-wise professors, who expected to see distortion and bending--but not holes.[40]

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[38] See James Gourley, http://journalof911studies.com/letters/b/scientific-critique-of-judy-woods-paper-star-wars-beam-weapons-by-james-gourley.pdf , especially pages 11-14.
[39] http://www.fema.gov/library/wtcstudy.shtm FEMA, Appendix C, http://www.fema.gov/pdf/library/fema403_apc.pdf
[40] ("The "Deep Mystery" of Melted Steel," WPI Transformations, Spring 2002, http://www.wpi.edu/News/Transformations/2002Spring/steel.html)

The "fire-wise professors" had evidently not seen such effects on steel due to fires in buildings before, since they were "shocked" by the thinning and holes in the steel members from WTC 7 and from the Towers. Now we can point to a source for the high-temperature attack on the steel including sulfur/sulfidation (sulfur added to thermite to make thermate) AND the oxidation (metal oxides, $KMnO_4$, etc.) AND the high temperatures observed (thermate reactions take place at around 2500 ^oC or so). The confluence of WTC data and thermate data provides a very compelling case that thermite variants were used in the destruction of the World Trade Center. And the use of thermite in this way requires pre-positioning of the thermite (and probably other) cutter-charges over time, which in turn implies that at least some of the 9/11 events were orchestrated and intentional. A serious investigation will now be required to determine the persons involved.

But there is still more that supports this startling conclusion…

The World Trade Center Dust and the Message of its Iron-rich Microspheres

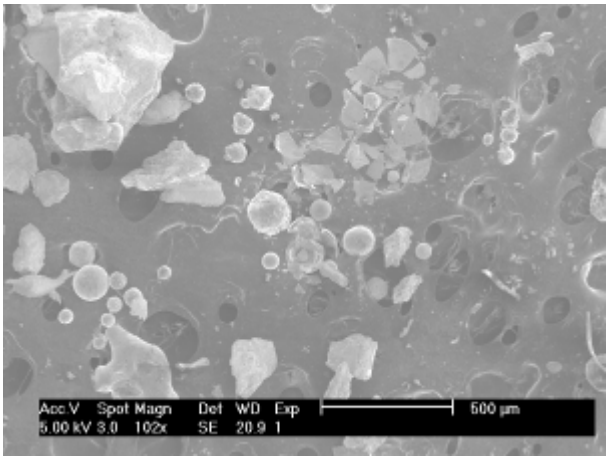
The provenience of the dust sample used in my study is from an apartment at 113 Cedar St. in New York City. This fourth-floor apartment was the residence of Janette MacKinlay, and was approximately 100 meters or so from the closest Tower, the South Tower. During the collapse of the South Tower on 9/11/2001, the windows of this apartment broke and the apartment was flooded with dust. About a week later, she re-entered the apartment and began clean-up and preserved some of the dust in her apartment.

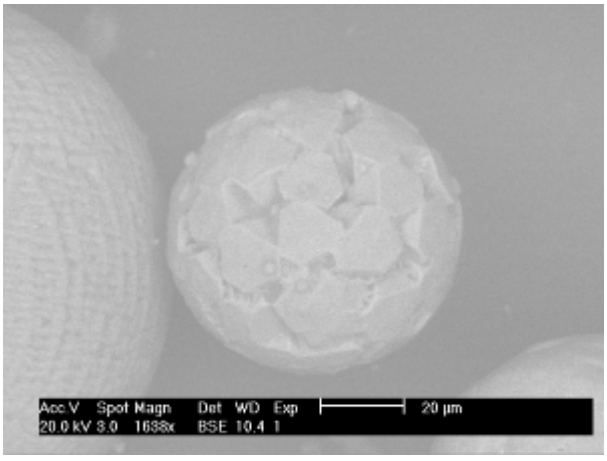
In this way, the dust represents a snapshot of the WTC collapse, for the dust came from the collapsing Towers and was collected before much clean-up began. Even though the Towers were some distance away, too far for any significant debris from the clean-up operations which were just beginning to accidentally contaminate the apartment, yet they were close enough for the windows to break due to the debris of the South Tower collapse and for the apartment to be filled with collapse-generated dust.

Janette told me that she had a sense, almost a spiritual or reverential feeling (knowing the origin of the dust) to preserve some of it, which she did, placing dust from her apartment into a plastic bag. My first 9/11-related paper appeared on-line in November 2005, and Janette MacKinlay soon learned from it that I was seeking WTC dust and other samples for study. She contacted me and sent me a small sample by mail. Later, I traveled to her new residence in California and obtained a second small sample in the presence of other scientists. These samples have been analyzed using electron

microprobe methods, both WDS and X-EDS. The analysis continues to the date of this writing. The dust contains a great deal of information regarding its origin and is proving extremely useful as we puzzle out the meaning of 9/11.

I collected iron-rich particles in the dust by pulling a magnet across the outside of a plastic bag containing the dust, pulling upwards to the top the magnetic material and pulling this aside for further analysis. These magnetic particles were, as one might expect, rich in iron. There was a surprising amount of this iron-rich material. Although others have reported the presence of iron-rich particles in the dust[41], I was surprised to find the abundance of spherical particles in this iron-rich component some of which were considerably larger than previously reported. It was exciting to me to find for the first time iron-rich spheres up to about 1.5 mm in diameter in a 32.1-gram sample of dust.





The iron-rich component of the WTC dust sample was analyzed in some detail by scanning electron microscopy (SEM) and x-ray energy dispersive spectroscopy (X-EDS). Using the scanning electron microscope, we found that much of the iron-rich dust was in fact composed of roughly spherical particles – microspheres. The presence of metallic microspheres implies that these metals were once molten, so that surface tension pulled the droplets into a roughly spherical shape. Then the molten droplets solidified in air, preserving the information that they were once molten in the spherical shape as well as chemical information.

Iron melts at 1538 ^{o}C, so the presence of these numerous iron-rich spheres implies a very high temperature. Too hot in fact for the fires in the WTC buildings since jet fuel (kerosene), paper and wood furniture – and other office materials – cannot reach the temperatures needed to melt iron or steel. (Remember the wood-burning stove…) Of course, elemental sulfur as found in thermate can lower the melting point of steel as discussed above.

As usual, we search for possible prosaic explanations for these metallic spherules in the WTC dust. The most obvious possible source is the melting of large quantities of steel in the buildings followed somehow by formation of tiny droplets of molten steel. As discussed above, however, steel melts at about 1538 ^{o}C (2800 ^{o}F) – and the temperatures in the buildings were no where near hot enough to melt steel, and certainly not in large quantities required for the amounts seen in the dust (and pouring out of the South Tower before collapse). Furthermore, we have looked at the chemical compositions of a number iron-rich spherules as well as that of steel, and the compositions are not the same at all. It should not be surprising, however, as we analyze more spherules to find some that are

[41] E.g., http://pubs.usgs.gov/of/2005/1165/508OF05-1165.htm

steel-like in composition, assuming that thermite cutter-charges were in fact used to cut through steel. We should then find both steel- and thermite-residue spherules.

Could these droplets be due to molten aluminum alloy (from the jets) striking rusty steel and/or other office materials to somehow generate the iron-rich spheres? We performed experiments with molten aluminum poured onto rusty steel, then onto crushed gypsum and concrete (on the rusty steel) – and observed no formation of iron-rich droplets at all nor any sign of vigorous chemical reactions.[42]

It has also been suggested that thermate may have been used at ground zero (GZ) during steel-cutting operations for clean-up there. However, no documentation whatsoever that thermate was so used has been provided, and so for this suggestion to be seriously considered, the proponents will need to provide documentation for the use of thermate and disclosure of the composition – including $KMnO_4$, S, etc. In this way, we can compare the alleged thermate use with what is observed in the dust. What is thoroughly documented is the use of oxyacetylene torches in the cutting of the steel at ground zero.

Furthermore, Janette MacKinlay collected the dust inside her apartment just about a week after the buildings collapsed, so there was very little time for any molten-metal spheres created somehow by the clean-up itself to have made its way into her 4th-floor to be mingled in with the dust up there. This is a compelling argument against "accidental" contamination of the dust she collected in her apartment even if thermate had been used during clean-up (which is highly unlikely due to safety/liability issues.)

In addition, the distance to the apartment from the clean-up operation is about 100 meters (about a football-field length), while in our experiments with thermite/thermate, the glowing sparks (metallic droplets) are seen to travel only a few meters or yards. The holes formed in the two broken windows of this apartment were about two feet by three feet, increasing the unlikelihood that any metallic spheres from the (improbable) use of thermate at GZ could have entered the apartment during the few days before the dust was collected. (On the other hand, the fast-moving dust clouds on 9/11/2001 traveled for many blocks and certainly would have carried small residues with them, for example, residues from thermite cutter-charges used to help destroy the Towers.) Furthermore, iron-rich spheres were found in the WTC dust several blocks away from GZ[43] in large numbers which essentially eliminates the possibility that these spherules could be due to thermite used at ground zero.

One can estimate the implied amount of thermite needed to generate so many iron-rich spheres in the WTC dust. In a sample of 32.1 grams of WTC dust, I observed with the unaided eye two metallic-looking spheres, in addition to the micron-sized spherules collected using a magnet. The mm-size spheres proved to be iron-aluminum rich. The mass of these two larger spheres (0.012g) found in this sample can be used to provide a crude estimate of the fraction of iron-rich spheres in the dust: 0.012g/32.1g = 0.04%. If the mass of the WTC dust was about 30,000 tons,[44] then the iron-rich spherule content would be of the order of ten tons. This is a very rough estimate based on one small sample, and is only provided to give an idea of the amount of thermite-type reactants and products which may be involved here. An investigation well beyond the scope of this paper would look for purchases of aluminum and iron-oxide powders (and sulfur) in multi-ton-quantities prior to 9/11/2001.

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[42] For more information on these experiments, see: http://journalof911studies.com/volume/200703/Molten_Aluminum_Poured_onto_Rusty_Steel_by_Wes_Lifferth.pdf and http://journalof911studies.com/volume/200609/Why_Indeed_Did_the_WTC_Buildings_Completely_Collapse_Jones_Thermite_World_Trade_Center.pdf .

[43] http://pubs.usgs.gov/of/2005/1165/508OF05-1165.html and private communication with Dr. Greg Meeker

[44] http://journalof911studies.com/letters/wtc_mass_and_energy.pdf

An earlier study notes the presence in the WTC dust of significant **"metallic particles (mostly Ti and Fe [iron], although Zn, lead (Pb), Ba, and Cu were also found)."**[45] The USGS "Particle Atlas of World Trade Center Dust" shows micrographs of a few metallic spherules which they also observed in the dust (see especially Iron-03 and Iron-04.)[46]

Micrograph from USGS report confirms presence of iron-rich spheres in the dust produced during destruction of theWorld Trade Center.[43, 46] How were the required high temperatures produced?

In the thermite/thermate reaction, many molten droplets are typically produced, which form spheres upon cooling in air. They are mostly metallic iron mixed with such other elements which were present in the thermite-analog used. For example, using a mixture of aluminum powder, iron and sulfur, we find small spheres are produced in the thermate reaction. **The spheres from the thermite reaction are observed (using X-EDS methods) to contain strong peaks for aluminum and iron, and for "thermate"; sulfur is also prominent**. (Note that the iron-aluminum-sulfur spheres from MacKinlay's apartment contained very low calcium, so the sulfur is evidently not from gypsum, a common building material). Thus we have chemical signatures for thermite variants, and we will compare the composition of the thermite-generated spheres with the spheres found abundantly in the WTC dust.

In addition, if one adds other oxidizers to the mix such as copper oxide, potassium permanganate, zinc nitrate, and/or barium nitrate, then copper, potassium, manganese, zinc and/or barium will show strong peaks in the thermite-produced metallic spherules. Thus, one can determine by X-EDS analysis just what elements were used in the originating aluminothermic mixture. It is quite possible that different formulations of thermite analogs were used in the destruction of the WTC Towers and WTC 7, so that some spherules would show – for example -- Fe, Al, S while others would show Fe, Al, S, K and Mn, and still others Al, Cu, Fe – and so forth. Aluminum (oxidized) and another metal (whose oxide has been reduced) provide the fundamental signature, with sulfur added to

[45] John K. McGee, et al., "Chemical Analysis of World Trade Center Fine Particulate Matter for Use in Toxicologic Assessment," Envir. Health Persp. 111:973, June 2003.
[46] http://pubs.usgs.gov/of/2005/1165/images/

facilitate cutting through steel and other oxidizers added to vary the speed of the reaction and so forth. Many variations are possible.

Some details are of course hard to sort out from the EDS spectra, such as the exact species of oxidizer used. (E.g., zinc oxide or zinc nitrate?). Ammonium nitrate as an oxidizer may be difficult to detect in thermite-analog residues. Since I presented much of my own research on possible thermite-residues found in the WTC dust, Frank Greening has commented on the possibility of ammonium perchlorate contributing somehow to the destruction of the WTC Towers and the formation of iron-rich spheres in the dust (private communication). His explanation does not, however, take into consideration the detailed chemical content (including significant aluminum) of these iron-rich microspheres which has been discovered in our current EDS measurements of actual samples from the WTC dust.

The metallic element ingredients along with sulfur can be determined with considerable certainty. Of course, owing to the nature of the thermite reaction and the high-temperatures during spherule formation, the content of the various metals varies somewhat from sphere to sphere and even from one spot to another on a single sphere. Done carefully, the presence of the aluminothermic reaction signature is quite unambiguous; as stated by Materials Engineering, Inc. (MEi):

- **"When thermite reaction compounds are used to ignite a fire, they produce a characteristic burn pattern and leave behind evidence. These compounds are rather unique in their chemical composition, containing common elements such as copper, iron, calcium, silicon and aluminum, but also contain more unusual elements, such as vanadium, titanium, tin, fluorine and manganese. While some of these elements are consumed in the fire, many are also left behind in the residue…**
- MEi has conducted Energy Dispersive Spectroscopy (EDS) on minute traces of residue, identifying the presence of these chemical elements. The results, coupled with visual evidence at the scene, provide absolute certainty that thermite reaction compounds were present, indicating the fire was deliberately set, and not of natural causes."[47]

Note that the **NFPA 921*Guide for Fire and Explosion Investigations*** clearly states:

> **"Unusual residues might remain from the initial fuel. Those residues could arise from thermite, magnesium, or other pyrotechnic materials."[48]**

This is the standard procedure for fire and explosion investigations – looking for thermite residues. Was it applied to the WTC "crime scene"? NIST was asked:

- Question: "**"Was the steel tested for explosives or thermite residues? The combination of thermite and sulfur (called thermate) "slices through steel like a hot knife through butter."**
- Answer; **"NIST did *not test for the residue* of these compounds in the steel."** [49]

NIST is remiss in not testing for thermite residues as required by the NFPA 921 code. We are testing for these residues and invite other serious researchers to join us. The EDS methods are well established.

[47] http://www.materials-engr.com/ns96.html
[48] NFPA 921 http://www.interfire.org/res_file/92112m.asp
[49] http://wtc.nist.gov/pubs/factsheets/faqs_8_2006.htm

Other studies of the WTC dust, such as the USGS survey of and the R. J. Lee study also noted the presence of metallic spheres in the WTC dust, even iron-rich spherules.[50] However, the origin of these iron-rich microspheres remained a mystery in earlier studies, which did not present any interpretation that includes the hypothesis that thermite-analogs might have been used in the destruction of the WTC skyscrapers and in the concomitant production of iron-rich spheres, nor did they report the iron-aluminum-sulfur combination in the spheres which our team has observed.

Thermate-TH3 is an analog of thermite containing sulfur and barium nitrate, developed by the military for destroying enemy vehicles[51]. In general, thermate (as defined here) combines aluminum powder and iron or other metal oxides with sulfur. The thermate reaction proceeds rapidly and is in general faster than basic thermite in cutting through steel due to the presence of sulfur. (Elemental sulfur forms a low-melting-temperature eutectic with iron). Given the mix of trace metals present in anomalously high concentrations in the WTC dust such as zinc, copper and manganese and barium, and the formation of iron-aluminum-rich spherules, I have argued that significant aluminothermic reactions occurred, with likely ingredients to include powders of aluminum, iron oxide, copper oxide, zinc nitrate, sulfur, and potassium permanganate. We are learning more by studying the iron-rich spheres found in the WTC dust.

I will simply say in this paper that iron-aluminum rich spheres are seen in both the WTC dust and in spherules produced in thermite-control reactions. Details of the spherules and comparisons are beyond the scope of this paper but are available to me and our team of researchers, and will appear in a forthcoming paper. We consider the information borne by these previously-molten microspheres found in large numbers in the WTC dust, for they tell us much about what took place that remarkable day in history.

Conclusion

In closing, I wish to emphasize that there are now many capable individuals who are contributing to the quest for the truth about what happened on 9/11/01 and the possibility of insider involvement. For example, there are already over thirty-five peer-reviewed papers at the Journalof911Studies.com.

I wish to add my conviction that 9/11 researchers must not assume a defensive posture, supposing that we are just victims in a brutal chess game. Rather, we can increase awareness of the many lines of evidence that together imply that the 9/11 events involve much more than we have been told by the US government or by the media.[52] Many of us sense a higher Source guiding our research and peace efforts.
I am confident that by working together and seeking the facts with determination, we will succeed in finding out the truth about 9/11. If we act before the next series of restrictions on our liberties, we should be able to achieve justice and peace as well.[53]

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[50] http://pubs.usgs.gov/of/2005/1165/508OF05-1165.html, http://journals.cambridge.org/download.php?file=%2FMAM%2FMAM10_S02%2FS1431927604887452a.pdf&code=ffa53402439362c1a22b52fd9ff5084a

[51] See http://www.dodtechmatch.com/DOD/Patent/PatentDetail.aspx?type=description&id=6766744&HL=ON

[52] Let us be active and proactive – we can reduce our dependence on the globalized system, get out of debt and put reserves into local credit unions and in our own homes. We can reduce credit-card consumerism and build home reserves of food, cash and water. We need to look to our inner values; instead of fearing terrorists (foreign and domestic). We can build cooperation, sharing, and caring as we build the local infrastructure in our communities. We can rally around the Constitution in the United States, and the Geneva Conventions, and other standards of civility and human liberty throughout the world. I advocate only peaceful methods and a respect for all religious and ethnic groups, including Muslims, Jews, Christians, Hindus and all others.

[53] See: http://journalof911studies.com/letters/c/what-are-the-goals-of-the-911-community-by-steven-jones.pdf

Errata:
This paper was based in the first instance on a transcript of a talk given by Dr. Jones at the University of California at Berkeley, and some errors as well as typos occurred and of course will be corrected as they are found.
p. 57 "As we think about "peak oil," the problem that oil is finite and oil production may be peaking" in lieu of "As we think about "peak oil," the problem that oil is finite and oil production is peaking." The author is not drawing conclusions here about the veracity of arguments for "peak oil."
p. 63 "about 100 meters" is correct, in lieu of "about 300 meters."
p. 65 "A group (including me)" was inserted to avoid apparent confusion; the point seemed clear in the original talk.
p. 78 "just a few days" to "just about a week" to clarify based on communications with J. MacKinlay.
p. 64 "utmost probability" as translated from the German ("mit grosser Wahrscheinlichkeit") should be "great probability" or "highest probability" based on a personal communication from German-speaking Professor Daniele Ganser -- and George corrected to Jörg for ETH Prof. Jörg Schneider. The original newspaper article in the German as well as a translation into English can be found here: http://www.danieleganser.ch/e/zeitungsartikel/index.htm
p. 78 "We performed experiments with molten iron poured onto rusty steel," corrected to "We performed experiments with molten aluminum poured onto rusty steel," – typo corrected.