

April 2014

## Freefall and Building 7 on 9/11 *by David Chandler*

Galileo was the first to describe the amazing fact that, apart from air resistance, all objects fall at the same "rate." If you have not experienced this fact directly, try dropping a large rock and a pebble side by side. The rate we are referring to is not a "speed," because for a falling object the speed is constantly changing. The rate we are talking about is actually the "rate of increase of speed," how quickly the speed builds up, called acceleration. The acceleration achieved by all falling bodies, apart from air resistance, is called the "acceleration of gravity."

Gravity causes freely falling objects to increase their speed by about 32 ft/s per second. (The awkward unit, feet per second per second is commonly abbreviated ft/s<sup>2</sup>.) When an object is dropped, the speed is initially zero, but it immediately starts speeding up. After 1 second its speed will be 32 ft/s. After 2 seconds its speed will be 64 ft/s. Etc. 32 ft/s<sup>2</sup> is an approximation. The "acceleration of gravity" actually varies slightly from place to place. In New York City it is 32.159 ft/s<sup>2</sup>.

Isaac Newton showed that the acceleration of an object is governed by its mass and the net force acting on it. (If several forces are acting at once they are combined to give a "net" force.) If the downward acceleration of a falling object equals

the acceleration of gravity, then the net force is the gravitational force alone; any other forces must add up to zero.

What if a heavy object falls through other objects, breaking them as it goes? Newton's third law says that when objects interact, they always exert equal and opposite forces on each other. Therefore, while an object is falling, if it exerts any force on objects in its path, those objects must push back, slowing the fall. If an object is observed to be in freefall, we can conclude that nothing in the path exerts a force to slow it down, and by Newton's third law, the falling object cannot be pushing on anything else either.



Figure 1: Freefall of WTC 7

When the top section of a building collapses one would expect the falling section to crash into the lower section and exert a large force on it, like dropping an anvil on your toe. A typical controlled demolition exploits this fact: the crushing force of the falling section of the building contributes to



the demolition, and reduces the amount of explosives that are needed. However, amazingly, this is not what happened when Building 7 "collapsed" on 9/11.

We know that the falling section of Building 7 did not crush the lower section of the building because the top section of Building 7 fell at freefall. It didn't just fall at something close to freefall. It fell for about 2.5 seconds at a rate that was *indistinguishable* from freefall. If the falling section of the building had crushed the lower section, the lower section would have pushed back with an equal but opposite force. But that would have slowed the fall. Since the fall was not slowed in the slightest, we can conclude that the force of interaction was zero... in both directions. How can this be?

There were explosions in Building 7 heard by many witnesses throughout the day. One such explosion is recorded in a [video clip](#) where several fire fighters are gathered around a pay phone calling home to assure their families they are alright. Suddenly they are startled by a very loud, unmistakable explosion. This is one of the Building 7 explosions that occurred long before it fell.

Shortly before the ultimate collapse of the building the east penthouse and the columns beneath it suddenly gave way. NIST (the government agency assigned to investigate the building collapses) attributes the collapse of the east penthouse to the failure of a single column, in a complex scenario involving thermal expansion of beams supporting the column. But it is much more likely that at least two and possibly three supporting columns were "taken out" simultaneously. Three columns supported the east penthouse. One of our German colleagues

has pointed to evidence that the east penthouse fell through the interior of the building at close to freefall, evidenced by a ripple of reflections in the windows as it fell. Yet the exterior of the building retained its integrity.

NIST claims that the collapse of their one key column led to a progressive collapse of the entire interior of the building leaving only a hollow shell. The collapse of the building, seen in numerous videos, is described by NIST as the collapse of the "facade," the hollow shell. They have no evidence for this scenario, however, and a great deal of evidence contradicts it. After the collapse of the east penthouse there is no visible distortion of the walls and only a few windows are broken at this time. Had the failure of interior columns propagated throughout the interior of the building, as asserted by NIST, it would surely have propagated to the much closer exterior walls and distorted or collapsed them. (Major crumpling of the exterior walls, by the way, is exactly what is shown in the animations produced by NIST's computer simulation of the collapse.) But the actual videos of the building show that the exterior remained rigid during this early period. At the onset of collapse you can see in the videos that the building suddenly goes limp, like a dying person giving up the ghost. The limpness of the freefalling structure highlights by contrast the earlier rigidity.

Furthermore, there are huge pyroclastic flows of dust, resembling a volcanic eruption, that poured into the streets following the final collapse of the building. If what we saw was only the collapse of the facade, why was the pyroclastic flow not triggered earlier when NIST claims the collapse of the much more voluminous interior occurred? And why did the west penthouse remain to fall with the visible exterior of the building? Its



supporting structure clearly remained to the very end and was "taken out" along with the rest of the building support all at once. NIST is scrambling to find a plausible scenario that will allow it to escape the consequences of what is plainly visible. (If you have not seen the collapse of Building 7, find it on YouTube and watch for yourself. For most people simply watching it collapse is all it takes. Most people are not stupid. Most people can recognize the difference between a demolition and a natural building collapse with nothing more being said. If you have never seen the collapse of Building 7 you might also stop and ask yourself why the mainstream media did not repeatedly show you this most bizarre event as it did the Twin Towers.)

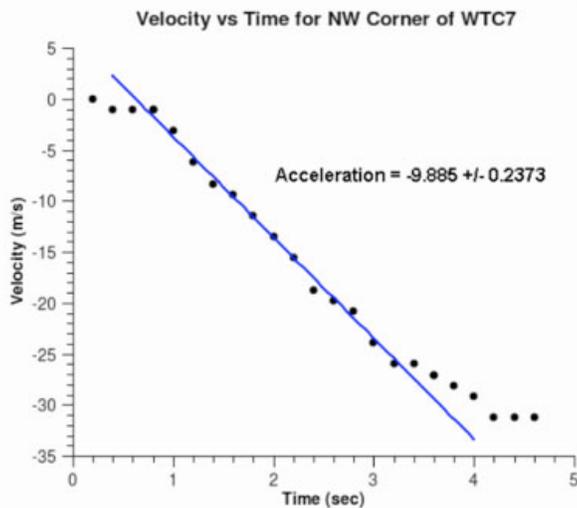


Figure 2: Velocity vs. Time for NW Corner of WTC 7

After the east penthouse collapsed, several seconds elapsed, then the west penthouse began to collapse, at nearly the same time the roofline of the building developed a kink near the center, then all support across the entire width of the building was suddenly removed, a vertical swath of windows under the west penthouse were simultaneously blown out, the building suddenly went limp, and (within a fraction of a second) it

transitioned from full support to freefall. I am not using the term "freefall" loosely here. I used a video analysis tool to carefully measure the velocity profile of the falling building using CBS video footage from a fixed camera aimed almost squarely at the north wall. A video detailing this measurement is available at YouTube/user/ae911truth. I calibrated my measurements with the heights of two points in the building provided in the NIST Building 7 report released in August 2008, so I know the picture scale is good. My measurements indicate that with sudden onset the building underwent approximately 2.5 seconds of literal freefall. This is equivalent to approximately 8 stories of fall in which the falling section of the building encountered zero resistance. For an additional 8 stories it encountered minimal resistance, during which it continued to accelerate, but at a rate less than freefall. Only beyond those 16 stories of drop did the falling section of the building interact significantly with the underlying structure and decelerate.

Freefall is an embarrassment to the official story, because freefall is impossible for a naturally collapsing building. In a natural collapse there would be an interaction between the falling and the stationary sections of the building. This interaction would cause crushing of both sections and slowing of the falling section. I have done measurements on several known demolitions, using similar software tools, and found that they typically fall with accelerations considerably less than freefall. Building 7 was not only demolished, it was demolished with tremendous overkill. Freefall was so embarrassing to NIST that in the August 2008 draft release for public comment of their final report, the fact of freefall was denied and crudely covered up with the assertion that the collapse took 40% longer than "freefall time."



They asserted that the actual collapse, down to the level of the 29th floor, took 5.4 seconds whereas freefall would have taken only 3.9 seconds. They arrived at their figures with only two data points: the time when the roofline reached the level of the 29th floor and an artificially early start time several seconds prior to the beginning of the obvious, sudden onset of freefall. They started their clock at a time between the collapses of the east and west penthouses when the building was not moving. They claimed they saw a change in a "single pixel" triggering what they asserted was the onset of collapse, but anyone who has worked with the actual videos will recognize that the edge artifacts in the image of the building make this an unrealistic standard. Furthermore, even if there was a tiny motion of the building at that point, it continued to stand essentially motionless for several more seconds before the dramatic onset of freefall collapse. The fact of a cover up in NIST's measurement is underlined in that the formula they point to as the basis for their calculation of "freefall time" is valid only under conditions of constant acceleration. They applied that equation to a situation that was far from uniform acceleration. Instead, the building remained essentially at rest for several seconds, then plunged into freefall, then slowed to a lesser acceleration. Their analysis demonstrates either gross incompetence or a crude attempt at a cover up. The scientists at NIST are clearly not incompetent, so the only reasonable conclusion is to interpret this as part of a cover up. (It is important to stand back occasionally and recognize the context of these events. This was not just a cover-up of an embarrassing fact. It was a cover-up of facts in the murder of nearly 3000 people and part of a justification for a war in which well over a million people have since been killed.)

I had an opportunity to confront NIST about the easily demonstrated fact of freefall at the technical briefing on August 26, 2008. I and several other scientists and engineers also filed official "requests for correction" in the days that followed. When they released their final report in November 2008, much to the surprise of the 9/11 Truth community, they had revised their measurements of the collapse of the building, including an admission of 2.25 seconds of absolute freefall. However, they couched the period of freefall in a framework of a supposed "three phase collapse sequence" that still occupies exactly 5.4 seconds. The recurrence of 5.4 seconds, even in a completely revised analysis, is very puzzling until you realize its context. NIST lead investigator Shyam Sunder told the audience in the August 26, 2008 Technical Briefing that their computerized collapse model had predicted the collapse down to the 29th floor level would take 5.4 seconds, well beyond the 3.9 seconds required for freefall. From the events at the Technical Briefing it appears that a team headed by structural engineer John Gross dutifully fabricated a 5.4 second observation to exactly match the prediction. Anyone with any experience in laboratory measurement would have expected some amount of uncertainty between the prediction and the measurement. They would have been doing extremely well to come up with a computer model that would predict the collapse time within 10%. But no...their measurement exactly matched the prediction to the tenth of a second. Keep in mind that their computer model was constructed in the absence of the actual steel, which had long since been hauled away and destroyed. According to NIST's records, none of the steel from Building 7 remains. (Pause and ponder that fact for a moment. Anyone who has



watched CSI knows the importance of preserving the physical evidence in a crime scene.

Destroying a crime scene is in itself a crime, yet that is exactly what happened in the aftermath of 9/11, and it happened over the loud protests of the firefighters and others who had a stake in really finding out the truth.) Back to our story. NIST's computer model predicted 5.4 seconds for the building to collapse down to the level of the 29th floor. John Gross and his team found the time the roofline reached the 29th floor, then picked a start time exactly 5.4 seconds earlier to give a measurement that matched the model to the nearest tenth of a second. They took their start time several seconds prior to the actual start of freefall when nothing was happening. The building was just sitting there, with the clock running, for several seconds. Then it dropped, with sudden onset, and continued for 2.5 seconds of absolute freefall.

So, NIST now acknowledges that freefall did occur. How do they explain that? They don't. They simply state, without elaboration, that their three-phase collapse analysis is consistent with their fire induced collapse hypothesis. The only thing about the three-phase analysis that is consistent with their collapse hypothesis is the 5.4 second total duration, measuring from their artificially chosen starting time. In other words, they make no attempt to explain the 2.25 second period of freefall. They just walked away from it without further comment.

The fact remains that freefall is not consistent with any natural scenario involving weakening, buckling, or crushing because in any such a scenario there would be large forces of interaction with the underlying structure that would have slowed the fall. Given that even

known controlled demolitions do not remove sufficient structure to allow for actual freefall, how could a natural fire-induced process be more destructive? Add to that the synchronicity of the removal of support across the whole width of the building, evidenced by the levelness of the roofline as it came down, and the suddenness of onset of collapse, and the immediate transition from full support to total freefall. Natural collapse resulting in freefall is simply not plausible. It did not happen. It could not happen. Yet freefall did in fact happen. This means it was not a natural collapse. Forces other than the falling upper section of the building suddenly destroyed and removed the supporting columns for at least eight stories across the entire length and width of the building.

The freefall of Building 7 is one of the clearest of many "smoking guns" that proves explosives were planted in the World Trade Center buildings prior to September 11, 2001.

---

*David Chandler received a BS degree in a hybrid physics and engineering program at Harvey Mudd College, Claremont CA and a MS degree in mathematics from Cal Poly University, Pomona CA. He has taught physics, mathematics, and astronomy since 1972 at both the high school and college levels.*

