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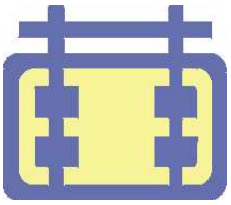
Non-animated Visualization Aids to Assist in Understanding the Demolitions of the World Trade Center Twin Towers - Part 2



Part 2

3.2 Compressive stresses in the columns - less than 1/3 of the yield stress

The mass above the walls at floors 94-98 is thus about 19 800 tons supported by 236 wall columns (total cross area 3.54 m²). Therefore each wall column on average supports 84 tons.

The compressive stress in the wall column at floors 94-98 with cross area 150 cm² is thus abt 560 kgs/cm² or 56 MPa or 22.5% of the yield stress (abt 248 MPa) of the steel.

NIST suggests that the static loads will be increased 35% in the East wall and 30% in the West wall (all 100% intact) due to load transfers just prior collapse, i.e. the compressive stresses in columns there becomes 75.6 and 72.8 MPa, which is still only 30.5% and 29.4% if the yield stress. Actually these are the increased stresses you would expect due to wind under hurricane conditions.

The mass above the core is only13 200 tons supported by the 47 core columns with total area 2.1 m². On average each core column carries abt 280 tons so the average compression is 629 kgs/cm² or 63 MPa. However the outer core columns carry more mass and the outer corner core columns the most load, e.g. no. 501 with cross area 950 cm². It may carry as much as 700 tons.

The compressive stress in the no. 501 core column at floors 94-98 is thus abt 736 kgs/cm² or 74 MPa or 30% of the yield stress of the steel. It is assumed that the compressive stress in the other core columns is abt the same.

NIST suggests that the load in the core is reduced 20% just prior collapse, i.e. the stresses are reduced. However, some core columns may have been damaged in the initiation zone so in all probability the stresses in the remaining columns may have remained at 30% yield stress.

The reason why original the static stresses are higher in the core than in the perimeter walls is that the wall columns are also designed to absorb dynamic wind loads.

4. The Towers were built very strong in the 1960's

The above is a clear indication how the Towers were originally built by serious architects and engineers in the 1960's. Compressive static stresses in the columns were less than 1/3 of the yield stress of the steel before (obviously) ... and ***after*** serious damage (not so obvious but shown here)! The buckling stress of the column is virtually the same as the yield stress as the columns were arranged with spandrels. One reason why the static stresses were so low was that the designers had no access to computers to optimize (slender down) the construction. Manual calculations were done and to be on the safe side you added steel and built strong! And steel was quite cheap at that time. And US steel was good quality. The assumed yield stress 248 MPa was probably much higher in reality. NIST never checked the yield stress of the steel from the initiation zone in the rubble!

There was therefore plenty redundancy. A plane may crash into the bird cage and nothing happens. A big fire may break out and nothing happens. Why? Because the normal compressive stress in the supporting vertical structure is so low and if any column breaks or buckles, its load is transmitted to adjacent columns via the spandrels and the stress in adjacent columns increase a little. No global collapse is possible under any circumstances.

Evidently the columns got stronger (thicker plates, steel with higher yield stress) further down when the 'mass above' increases, but it is certain that the compressive stresses in the Towers never exceed 1/3 of the yield stress. Same applies for the buckling stresses.

5. No release of potential energy due to downward movement - influence of heat

The mass/load above a column evidently compresses it. The column acts as a spring. As long as the compressive stress is less than yield stress, the compression is elastic and hardly noticeable. As seen above the actual compressive stresses were

only <30% of yield stress and I assume this was common practice in steel tower construction in US and elsewhere in the 60's.

How is the yield stress of steel affected by heat? In the writer's opinion it is not affected very much at about 500°C. This is confirmed by any fire test - the test chamber and what's in it never collapses due to the heat inside up to 1000°C. The heat inside is normally by kerosene set on fire.

English authorities concur: *"Although the formulae cannot provide perfect fitting with the test data at all temperatures, the correlation at temperatures above 400°C is in good agreement. Generally, the lack of accuracy at low temperatures below 400°C will not hinder the accurate prediction of fire resistance of steel structures in practice. This is because the actual loads applied to most buildings are* ***commonly below 60% of the ultimate loads*** *they are designed for at ambient temperature. That means* ***the structures will generally have a minimum inherent fire resistance of 500°C.****"*

As noted above the stresses in the WTCs were less than 30% of the yield stress. But let's assume the yield stress is reduced 20% due to heat. The compressive stress in the allegedly heated core columns is still then less than 40% of the yield stress. The wall columns are lesser stressed.

The purpose of fire proofing of steel is not to prevent collapse or melting (!) of the steel. The purpose is only the delay transmission of heat and to allow the heat to dissipate to adjacent structure. In the WTCs no structure was heated >500°C at any time according NIST even if the fire proofing were missing.

It is very easy to check in a fire test chamber how a steel column under compression at 30% the yield stress resists collapse due to heat at 500°C allegedly existing in the Towers. The answer is that it does not collapse. You can verify this yourself - see 6. below.

Applied to WTC1 what you would expect due to a fire around the core columns is that they only compress and that their cross areas expand due to heat and the downward movement of the core is a few centimeters! It may put some extra tension in the floor trusses and their bolted connections pulling the perimeter walls inwards a few centimeters - and that is all! The wall perimeter columns, 80% of them are intact and free of soot and marks of fire as shown on many videos and subject to little heat as they are cooled by fresh air, will then further stabilize the core.

5.1 The columns cannot bend 180°, twist or crumple up

Remember that the outer core columns are extremely solid, e.g. no. 501. It is an H-beam with two flanges 17x3.5 inch connected by a 2.2x12.6 inch web. In metric terms the flanges are 430x90 mm and the web is 56x320 mm. Such thick plates, 56 and 90 mm cannot buckle under any circumstance when the compressive stress is only 30% of yield stress even if the temperature is 500°C. The (smallest) moment of inertia I of this section is about 120 000 cm^4 and its radius of gyration is thus of the order 35 cms. With a free length of 350 cms the slenderness ration is 10! Removing three floors as support and the free length is 1 400 cms and the slenderness ratio is still only 40! Such a column will not buckle! Same for the wall columns that have a radius of gyration of abt 15 cms and a slenderness ratio of 24 when supported by spandrels and floors.

Therefore there will be no downward movement.

5.2 There is no release of potential energy

NIST does not calculate the amount of ***potential energy released due to downward movement*** in their report, which is therefore incomplete. The reason simply is that no potential energy is released. In fact, no downward movement of a mass above is even possible due to heat inside the cage and there should be no sudden release of potential energy.

This is easily verified at any fire test laboratory. NIST has never done such tests! NIST should be encouraged to do such tests.

The 236 off wall columns are, e.g. never seen to deflect at all prior to the sudden, explosive initial collapse of the core columns. If the core columns collapse, as alleged, by release of potential energy above, the wall columns should remain intact as no release of potential energy is acting on them! Weakening is inherently a GRADUAL process and CANNOT BE SIMULTANEOUS EVERYWHERE throughout a given 4 000 m² large floor area! It will always be local and topple the mass above in the direction of the local collapse.

5.3 Possible release of potential energy due to downward movement - 340 kWh

But let's assume that potential energy is released vertically as all low stressed columns collapse simultaneously.

When 33 000 tons of mass above in WTC1 falls down 3.7 metres due to gravity and crushes all the columns abt 340 kWh of energy is produced by gravity and a fair part of that energy is consumed to crush the columns. Let's assume that this event by gravity takes 5-6 seconds based on video clips and that there is a certain velocity at the collision. In reverse - to first stop and second pull the mass back up again you need a very big engine with power 204 000 kW that pulls up the mass above. Let's assume this engine is very effective and that you require 120 grams of diesel oil to produce 1 kWh. It means that 40 800 grams or 40.8 kgs of diesel oil is required to stop and pull the mass up again! It takes 6 seconds! It can be done. It shows how much energy was released when the top fell. 40.8 kgs of diesel oil.

But is this what we see on this **video** or this **video** of the fall of the mass above? That all the columns at the initiation zone crumple up during 6 seconds? Evidently not! We can see the roof of the top of the mass above *starting* to move and that *nothing happens* at the initiation zone = no crumbling of columns there (look, e.g. at the right side). After 2-3 seconds the mass above seems to disintegrate and after 4-5 seconds smoke and dust spew out through the windows at the initiation zone,

where **the wall columns are still intact. They have not crumbled!**

5.4 The wall columns didn't buckle synchronized with the mass above - the speed of impact

It is in fact a very strange release of potential energy due to alleged downward movement of a mass above! **The wall columns at the initiation zone did not buckle, deform or crumple up, when the mass above has allegedly been falling down for 4-5 seconds.**

Evidently the wall columns in the initiation zone should buckle, deform and collapse synchronized - at the same time and speed - as the movement of the mass above. But it never happens and is not recorded on any video!

Official cause of global collapse according NIST

*"The **release of potential energy due to downward movement of the building mass above** the buckled columns exceeded the strain energy that could be absorbed by the structure. Global collapse ensued."*

And then the structure below apparently collapses but we cannot see anything as that collapse takes place behind a screen of dust and smoke. An obvious question is - did the columns at floors 94-98 actually crumble simultaneously due to heat in the first place?

But let's again assume that the mass above drops down 3.7 meters due to gravity acceleration 9.8 m/s². It means that the speed after 3.7 meters displacement is abt 3 m/s or 10 kms/h. It is not a significant speed. A collision at such low speed is not an impact! It is a bump.

5.5 The timetable - time for cause and time for effect

In order to establish what happened to WTC1 we need to know two times for two events that allegedly occurred: the time $\mathbf{T}_{cause}$, when the potential energy was released due to all columns in the initiation zone collapsing simultaneously, i.e. the time of the **cause** of the disaster, and the time $\mathbf{T}_{effect}$ when this energy was applied to the structure below, i.e. the time of the **effect**. NIST and Z P Bazant do not advise these times. Nothing should evidently happen to the WTC1 before $\mathbf{T}_{cause}$. If **anything strange happens** before $\mathbf{T}_{cause}$, e.g. the roof is moving or smoke suddenly erupts, it cannot be due to the columns in the initiation zone collapsing releasing potential energy. Also the time difference ($\mathbf{T}_{cause}$ - $\mathbf{T}_{effect}$) cannot be more than 0.5 seconds, because that is the time for the potential energy to reach and impact the tower below if we assume that the distance of fall is one floor level = 3.7 m. During this time also nothing strange can happen. The global collapse that ensued after $\mathbf{T}_{effect}$ according NIST has still not started. The lack of a proper time table in both the NIST report and the Bazant report is very disturbing. The times are evidently available from all videos of the incident.

5.6 The rigid block above goes missing

NIST and Bazant talk about an upper solid, rigid block above the initiation zone that suddenly falls down as a hammer and causes global collapse! There are many videos of the WTC1 incident but NIST and Bazant never show us the famous block above at times $\mathbf{T}_{cause}$ (hammer starts to fall) and $\mathbf{T}_{effect}$ (hammer hits)!

It is evidently quite easy to sketch in the rigid block above at time $\mathbf{T}_{cause}$, when it starts to drop, on any video or photo, so that we know what they talk about, and then to do the same at time $\mathbf{T}_{effect}$, when the same block impacts the structure below, to show that the block above actually remains intact and unchanged all the time, while the columns are deformed below it. In below pictures of the initial collapse the assumed initiation zone at around floor 98 is indicated with a **blue line**. The **upper red line** is the original roof level. The **lower red line** is around floor 94. A **green vertical line** has been added beside the right wall.

Picture above is at $\mathbf{T}_{cause}$. The **upper block,** width 63 meters and height abt 63 meters, between the **upper red** and **blue** lines is assumed to start dropping down because all columns fail in the **initiation zone** between the **blue line** and the **lower red line**. It is

Picture above is at $\mathbf{T}_{cause}$ + 1 second. The **upper block** has telescoped down 1 or 2 meters. No columns are seen buckling in the **initiation zone** at the right wall! On the other hand smoke is seen pouring out through windows in the initiation zone where the wall

now the potential energy of the mass above is allegedly released or actually the upper block starts telescoping; sliding down inside itself.

columns are intact.

Picture above is at $\mathbf{T}_{cause}$ + 2 seconds. This time could maybe be $\mathbf{T}_{effect}$ when the **upper block** is assumed to impact the top of the **initiation zone** - **blue line** - after a slow (!) drop of 3.7 meters - one floor level (2 m/s or 7 kms/h) but still no columns are seen deformed at the right wall! Now you would expect a little jolt - the upper block bottom is in contact with the lower structure top floor and all steel columns in the **initiation zone** should have crumpled and acted as fenders to stop further downward movement or disappeared to allow further downward movement. But they are still there!

Picture above is at $\mathbf{T}_{effect}$ + 1 or 2 seconds. The roof of the **upper block** - indicated by a **yellow line** - has telescoped down about 20 meters (free fall?) and you really wonder where the **bottom of the upper block** is. It should be a little above the **lower red line**. If the **upper block** was solid and rigid, 20 meters of the structure in the **initiation zone** - below the **blue line** - should now have collapsed due to lack of alleged strain energy and 4 or 5 floors should have dropped, but **no such damages are seen**! Just smoke pouring out. The **initiation zone is still intact**! T

20 meters of the upper block has disappeared 4 seconds after $\mathbf{T}_{cause}$! No collapse has started below the initiation zone the **lower red line**.

In Bazant's theory the **upper block** is supposed to be intact until the end of global collapse about 12-14 seconds after $\mathbf{T}_{effect}$.

You wonder why NIST and Bazant cannot show us in their reports a time table for the upper block and its potential energy initiating global collapse. This writer sees the block disintegrating between times $\mathbf{T}_{cause}$ and $\mathbf{T}_{effect}$ and a little later. While reflecting about this lack of easy to understand photo evidence in the official reports and university papers,

6. Let's do a model test!

You need:

4 off steel pipes, length 750 mm, dia 20 mm wall thickness 1 mm (each cross area 62.83 mm²). Yield stress 23.5 kgs/mm²

1 off 1000 x 1000 x 5 mm steel plate (weight about 40 kgs)

4 off 1000 x 1500 x 5 mm steel plates (each weight about 60 kgs)

4 off 960 x 4 x 3 mm steel flat bars (spandrels)

4 off plywood sheets 995 x 920 x 5 mm. Make some holes in them to allow air to enter and smoke to escape! One hole can look like as if a model air plane has made it.

You weld the pipes to the corners of the square steel plate and you get a table with four legs. Each leg has slenderness ratio abt. 75. Weld the spandrels between the legs at about half height.

Put table on firm ground, e.g. cement floor.

Then weld the four other plates on the top of this table to form a '*water tank*'.

Fix the four plywood sheets between the legs of the table as a skirt.

Decorations: The '*water tank*' on the table is the '*upper mass*' of WTC1. You can paint it to look like it. The four plywood sheets - the skirt - are the walls of the initiation zone of WTC1. You can paint that too to look like it. It is in fact a 1/20 model of part of WTC1 'mass above' and 'initiation zone'. The legs are four of the columns!

Load on table: In order to compress the table legs in the WTC1 model initiation zone at say 30% yield we need abt 1 500 kgs of weight on the table top! Thus you fill the water tank to level about 1.5 meters and there you are: 1 500 kgs of water + 280 kgs of steel plates = 1 780 kgs are carried by four legs each cross area 63 mm². Stress in columns = 7.06 kgs/mm² = 30% of yield stress.

Table, 0.755, m and tank, 1.5 m, make a 2.255 m high model of WTC1 mass above and initiation zone! .

Then you fit a suitable thermometer to record the temperature inside the initiation zone.

The volume of the initiation zone is only 0.75 m^3 and it is quite easy to heat it up to 500°C!

Cost of model is not too much: 7 m² of 5 mm steel plate (280 kgs) - say $400:- Pipes $20:-, Skirt $80:- welding rods, paint and misc. $100:- . Labour $ 0:-, if you ask daddy to assemble it.

Now the fun starts! We are going to put this model of WTC1 on fire! Or at least the initiation zone.

Put a tray of one gallon diesel oil on the cement floor between the legs of the model and fill the rest of the initiation zone with paper, rugs and similar.

Now put the diesel oil on fire! See how the initiation zone heats up, air is drawn in and smoke escapes through the holes. Very soon the temperature is 500°C uniformly inside the initiation zone and the table legs are heated up to same temperature. The plywood will burn very slowly.

The purpose of the model test is of course to establish the stiffness of the table leg pipes (the columns of the initiation zone) under heat and to see if suddenly, at, e.g. temperature 500° C, the mass above (luckily most water in this test for children) drops down, at a significant speed and with an enormous kinetic energy, and impacts on the cement floor with an enormous dynamic load.

Or does nothing of that sort happen? Maybe the table legs will just bulge. You will find out (the latter)!

7. Strain energy absorbed by structure *below* and its compression

It should thus be clear that the only structure below our wall cage bars are the wall cage bars and it is very easy to calculate what strain energy they can absorb before rupture when any of them is compressed above 30% of yield stress.

The strain energy our wall and core columns can absorb is evidently the energy required to first deform them to 100% yield and second to rip them apart in a compressive buckling mode. In order to rip a column apart the stresses in the structure must exceed the rupture/break stress of the steel that is much higher than the yield or buckling stress. And such high stresses will never occur!

Official cause of global collapse according NIST

"The release of potential energy due to downward movement of the building mass above the buckled columns ***exceeded the strain energy that could be absorbed by the structure****. Global collapse ensued."*

It is quite simple to calculate the strain energy that could be absorbed by the structure. It is a function of distance **d** of compression of the structure below after $\mathbf{T}_{effect}$ due to energy input from above starting at $\mathbf{T}_{cause}$. Let's assume that the structure below with actual cross area 4 000 m² and 280+ columns spread around (with cross area 5.64 m²) behaves like a *'spring'* with average stiffness or spring constant **C** = 2 GN/m. Note that only 0.141% of the total cross area of the *'spring'* consists of steel (the columns) - the rest is air. It is like a mattress. And this compression also takes time!
As shown above the theoretical energy **E** input to compress the *'spring'* is only 340 kWh or 1.22 GNm, when the top part hits the *'spring'* at $\mathbf{T}_{effect}$. Let's assume only half this energy is used to compress the *'spring'* and that the other half was lost destroying the columns in the initiation zone and sweeping them out of the way and that the upper part breaks up at impact absorbing energy. Let's assume the *'spring'* below is suddenly compressed by E = 0.61 GNm at time $\mathbf{T}_{effect}$.

The maximum compression **d** of the *'spring'* due to energy E then becomes 78 centimeters (because $\mathbf{d}^2 = 2\ \mathbf{E}/\mathbf{C}$) and after that all the 0.61 GNm or 170 kWh of energy is absorbed as compression! This is a good indication of the strain energy that could be absorbed by the structure. The total length (or depth) of the *'spring'* is abt 370 meters all the way down to the basement and it is thus temporarily compressed 0.21%.

To compress the *'spring'* **d** = 78 centimeters you need a force **F** corresponding to 1.56 GN (because **F** = **d C**) and as the spring cross area at the top is 5.64 m², the compressive stress in the spring becomes temporarily 277 MPa which is above yield stress (248 MPa) but below the rupture stress. So maybe the *'spring'* (the tower below) deforms plastically a little at the top just below the initiation zone but hardly lower down, where the spring cross area is 20 - 35 m² and the yield stress is higher and thus the force in the spring will produce much smaller stresses.

NIST does not calculate the ***strain energy that can be absorbed in the structure*** after $\mathbf{T}_{effect}$ below the initiation zone and the time of such compression in their report, which is therefore incomplete.

In reality the impact energy is not loaded instantaneously - there is no real sudden impact, only a bump over a some time after $\mathbf{T}_{effect}$ - so the compression force never becomes 1.56 GN or the max compression 78 centimeters and no breakage of

the *'spring'* should take place. The compression takes time and should be associated with a jolt - sudden bump - of the mass above. No such jolt is recorded on any video.

This compression is evidently in the elastic range of the *'spring'* and takes place when it is completely *unloaded*! Or is it?

7.1 Children - don't jump in my bed

Unloaded? Was the tower unloaded before impact? It is like children jumping in a bed! The child is in the bed and compresses the springs in the mattress. That is WTC1 under static load. The child is the top part. The mattress is the bottom part. Then the child jumps up a little - the columns are suddenly removed - the mattress is not under load then - and then the child falls down at $\mathbf{T}_{cause}$ on the mattress that compresses at $\mathbf{T}_{effect}$. Very funny! The child bumps.

Because the spring unloads and pushes the weight above up again. Nothing should break!

Some *'experts'* suggest that the potential energy released by the mass above causes a shock wave at impact that transmits the structure - *'spring'* - below and shakes it into pieces because the spring constant **C** is much bigger - the structure below is very rigid, but we know it is only a cage full of air - so it is not likely. Regardless, the *'spring'* can only break in one place, if it breaks. Not in 1 000's of parts.

8. Strain energy of the mass/structure *above*

NIST does not even consider the strain energy of the structure or mass above. It is in fact another *'spring'*! Evidently only the steel columns (10% of the mass above) and floor steel trusses (another 10% of the mass above) contribute to the strain energy of the structure above. The weakest steel parts are the bolted connections of the floors to the columns.

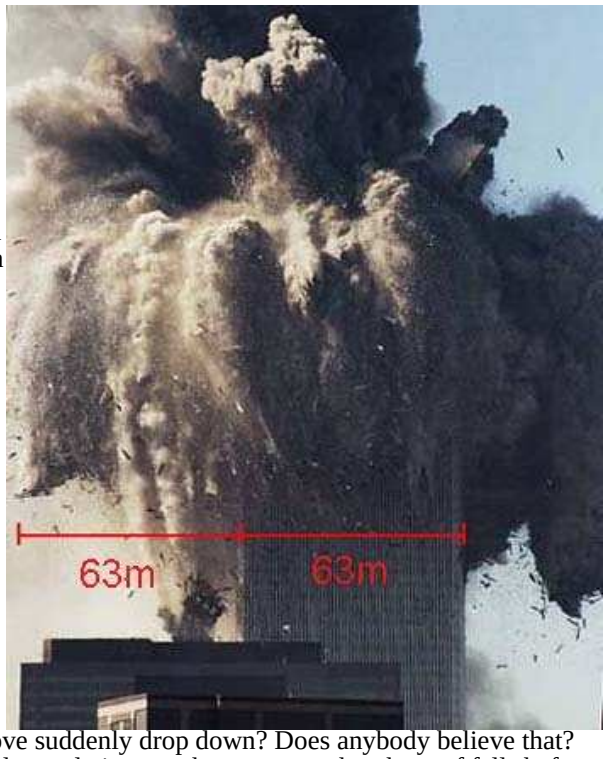
If the structure above is deformed, e.g. the core columns move downwards relative the wall columns, you would expect the floor bolts to shear off and the floors to sag

As soon as a floor sags, its concrete will break up in small pieces. There is no strain energy to resist bending and tension in concrete.

The result is then that most of the mass above - when it starts to slowly fall down at time $\mathbf{T}_{cause}$ - consists of broken concrete (70%) and glass and miscellaneous (10%) in small parts. It is a broken *'spring'*. Evidently these small parts cannot destroy the steel structure below particularly when the final speed is only 10 km/h. The mass above is not rigid at all and the potential energy released is split into 1000 000's of small pieces - mostly concrete - that will just become …dust!

It is thus very unlikely that 1.22 GNm energy suddenly impacts the top at time $\mathbf{T}_{effect}$. It is in fact only a small, broken spring hitting a bigger intact spring. What you would expect is that the mass above would remain attached the structure below after any heat deformation - no collapse, so that the NYFD could extinguish the fires in the normal manner.

9. The hammer and the nail



NIST suggests that the mass above acts as a rigid, solid hammer (and not a spring) that hits the structure below - the nail - even if it is not evident from the video above. It must also be recalled that the hammer is not really a hammer - it is more like a spring or a bale of cotton (!) and you evidently do not use a bale of cotton as a hammer. Or like a child jumping in a bed! And it is not certain that the hammer even hits the nail. It is more likely that it misses the nail because the mass above is misaligned with the structure below when the connecting columns in the initiation zone allegedly are broken. And who has heard of nail that breaks up in 1000's of pieces when it is hit by a hammer? Normally the nail just bends ... and the hammer hits something else! A thumb? And does the picture right look like a hammer hitting a nail? Or the result of some children jumping on a bed? It is taken a few seconds after the hammer hit!

9.1 The floors falling down

NIST has been informed about the above and suggests in its **FAQ Update December 2007** that no hammer hit a nail. Instead 6 or 11 floors hanging on the walls and core columns above the initiation zone fell down and caused the global collapse that ensued. All the connecting bolts of the floors above suddenly gave way!

But how and why would 6 or 11 floors in the initiation zone and above suddenly drop down? Does anybody believe that? Does the picture right look like some floors falling down? On the video and pictures above we see that the roof falls before any floors.

Jim Hoffman has an explanation what actually happened and why you should not believe that some floors fell down (You have to click on the sub-links to see his video presentation).

In the writer's view the picture above looks as if a bomb has hit the tower and mass murder is committed (but that is beside the topic of this article).

This means that we can conclude the following:

10. Conclusions

The Twin Towers structure was very simple and its wall and core columns can be likened to steel bars in a bird cage full of air ... and humans. The compressive stress in the bird cage bars due to mass incl. floor loads is very small (<30% of yield stress). The Towers' structure was very strong!

You can heat up the bars under compression in the cage to, say 500°C, and nothing dramatic happens and particularly not that the bird cage suddenly collapses in 1000's of pieces. The stress in a 500° C heated column may increase to 40% of yield. It will not buckle due to that. As soon as the fire moves away to another area the column cools again. But in this article we assume that the top part falls down on the bottom part.

NIST has not produced any ***"buckled"*** columns of the initiation zones, be it bent 180° or crumpled up, that would have produced downward motion. We are talking about 566 columns that must have ***"buckled"*** for the effect ... and none is presented as evidence that potential energy was released for that cause. But it is assumed here anyway.

Impossible cause of global collapse according NIST

"The release of potential energy due to downward movement of the building mass above the buckled columns exceeded the strain energy that could be absorbed by the structure. Global collapse ensued."

The suggestion that the Tower cages collapsed due to release of potential energy at the top at an unknown time $\mathbf{T}_{cause}$ exceeding the strain energy of the cage structure in the initiation zone and later below after an impact at time $\mathbf{T}_{effect}$ is not demonstrated by NIST and Z P Bazant and not supported by any evidence what so ever or any serious structural analysis. The pictures above do not show a global collapse due to floors falling down or a hammer hitting a nail ... or a child jumping on a mattress in a bed!
The mass *above* - 80% concrete and glass and lose furniture, etc - immediately breaks up in small pieces and cannot put any big load on the steel structure *below* as the velocity is too small and should be arrested or just fall straight down outside the building. Live videos, *forensic evidence*, show furthermore that the mass above actually disintegrates (!) when the wall columns at the initiation zone are still intact. The total energy actually applied to the structure below is then very small and the strain energy of the structure is sufficient to absorb that energy.

It is kindly recommended that NIST and Z P Bazant correct their reports and make an improved timetable, analysis and explanation why global collapse as shown in the forensic evidence actually ensued as the proposed sequences of events and causes do not tally. Do this for the sake of your children.

Anders Björkman, M.Sc. Heiwa Co, Beausoleil, France - January 28, 2008

(The above article is still being developed, corrected and improved and comments are always welcome)

A more detailed analysis of same sort is by **Mark H Gaffney** and recommended for the advanced reader.

If you ask what started the fire in WTC1 you should look **here**! And another video of the end of WTC1 is in the end of this **video**!

Heiwa Co home page

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