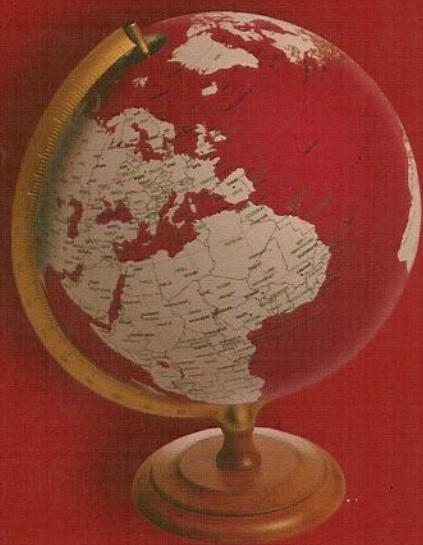


首届中国城市防灾减灾国际论坛

The 1st International Forum: China City's Disaster Prevention & Mitigation

论文集



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中国疾病预防控制中心

中国灾害防御协会

中国消防协会

时间：2005年5月25--26日

地点：北京二十一世纪饭店

How to Survive Building Collapse

May 13, 2005

Prepared by Doug Copp

Pre introduction

I want to quote an MSN internet conversation I had with our ARTI webmaster, John Mc Intosh, about this speech. His internet name is cybersurfer.

"cybersurfer says:

Duck and cover is valid for snow ball fights, among children, not for building collapse

Doug says:

That is good. I might use that.

cybersurfer says:

Hey use this one, too, duck and cover is useful for locating the children when its all over..

Just look under the desks

cybersurfer says:

That wet spot under the desk is "Little Bobbie"

Doug says:

no kidding

Doug says:

I remember"

I remembered crawling up and down the aisles of a collapsed school and seeing every child squashed. Only a little hand or foot escaped. This was in Mexico City, in 1985. I learned that 'duck and cover' was death and people survive in spaces next to desks. I discovered the 'triangle of life' or 'it discovered me'.

Introduction

The purpose of this speech is to provide the information; that will take survivability, in collapsed buildings, from the current 98% dead to 90% living. You can help me save many thousands of lives in China. Maybe even your own or members of your family. Currently, 98% of people trapped inside of collapsed buildings are squashed. My experience, of surviving, crawling 'on my hands and knees' throughout collapsed buildings has taught me how to enable 90% of trapped victims, to avoid being squashed.

My name is Doug Copp. I am Canadian. I am the Rescue Chief and Disaster Manager of the American Rescue Team International (ARTI), the world's most experienced rescue team. The information in this article will save lives in an earthquake.

My physical health prevents me from doing rescue again. The level of lead, mercury, arsenic, cadmium, thallium, antimony and many other intellectually debilitating poisons prevented me from 'knowing my own name', most of the time, until less than 1 year ago. My cognitive abilities have resumed to the point where I can give my first lecture; since, being injured.

Before becoming permanently disabled at the World Trade center due to poisoning .I had crawled inside of 894 collapsed buildings, worked with rescue teams from 60 countries, founded rescue teams in several countries, and I am a member of many rescue teams from many countries. I am going to teach you what I learned as I crawled through 894 collapsed buildings so that you and your families will not be killed.

My present abilities are reduced because of injury. I am disabled from being poisoned, from the toxic clouds, Below Ground Zero, at the World Trade Center, in New York City. I don't regret any sacrifice I made. I want to point out that I was not crushed, like expected for rescuers. My knowledge of structures and their post-collapse-stability-interdependency was not diminished. Breathing poisons have harmed me; not lack of structural knowledge. Concerning disasters, I am an experienced man. *The fact that I am alive is a testament to the importance of the information which I have for you.*

Before, hearing my lecture you will see a video. If you watch the Learning Channel, the Discovery Channel, the History Channel, the Travel Channel then you have most likely seen one of the Documentaries featuring me saving lives. My efforts saving a little girl; buried underneath hundreds of tons of rubble was a '15 minute TV segment'. This 'rescue' has been rebroadcast, hundreds of times. Often, viewers 'cry for joy; when the surrounding crowd cheers; as I place the stretcher, of this brave little girl, safely, in an ambulance. It is touching and special when she kissed me, on the cheek, for saving her life. Extricating her from 'ever present death' was a very special part, of my life. Viewing, different segments of that program, sensitive people 'cry from sadness', watching a father collapse, sobbing, in my arms. He had just discovered that his entire family had been crushed.

During the film, you will see the same happy girl turned sad. She had been told that her brother was dead. You are not told that the little girl's brother had been crushed. He was squashed under the kitchen table. I expect that 'you and your staff' would do the same. 'Duck and cover', is the worst thing you can do. This is why a survivor becomes a media celebrity. 'Duck and cover' is death and it is what children are taught to do, in China, today.

During part of the video, you will see a film, from 1996, which proved my survival methodology to be correct. The Turkish Federal Government, City of Istanbul, University of Istanbul, Case Productions and ARTI cooperated to film this practical, scientific test. We collapsed a school and a home with 20 mannequins inside. Ten mannequins did "duck and cover," and 10 mannequins used in my "triangle of life" survival method. After the simulated earthquake collapse we crawled

through the rubble and entered the building to film and document the results.

This film, in which I practiced my survival techniques under directly observable, scientific conditions, relevant to building collapse, proved a zero percent survival for those doing 'duck and cover' and 100 percent survivability for people using the "triangle of life." This film has been seen by millions of viewers on television in Turkey and the rest of Europe, and it was seen in the USA, Canada and Latin America on the TV program Real TV. You can see more clips from this and 26 other videos, on our web site www.amerrescue.org.

If you are in bed during the night and an earthquake occurs, simply roll off the bed. A safe void will exist around the bed. Hotels, like **this one**, can achieve a 90% survival rate in earthquakes; simply by posting a sign on the back of the door of every room, telling occupants to lie down on the floor, next to the bottom of the bed during an earthquake.

Cats, dogs and babies, naturally, curl up in the fetal position. You should too, in an earthquake. It is a natural safety/survival instinct. You can survive in a smaller void.

Get next to an object, next to a sofa, next to a large bulky object that will compress slightly but leave a void next to it.

Enjoy the video and pay particular attention to the picture of the desk with the broken leg. My experience has been that the legs are always broken and the people are crushed underneath.

As a man, who loves History, I love and respect China. China is history.

I am so pleased, to be here, at the center of ancient and wise culture.

Video Played for audience

Lecture commences:

Problem Identified:

'Duck and cover is a process; whereby, the population is told to 'hide' to protect themselves. In an earthquake, populations are told to hide under a desk or a table. The problem is that people are crushed to death when the building actually collapses and squashes the desks upon impact. 98% of victims die who do 'duck and cover'. Survival is so rare that survivors become media celebrities. It is common for a disaster to kill thousands of individuals with none or only one 'victim' to be removed from the rubble still alive. This current status is a tragedy. Do NOT duck and cover. Millions of lives are at stake so I want to be very plain, obvious and completely understood.

History:

'Duck and cover' was created as a political, and propaganda tool during the cold war. The problem is that In the United States it started as part of an advertising campaign to calm the populations from fear of nuclear warfare. TV commercials were made to promote 'duck and cover' with 'cute' jingles sung to the theme of 'duck and cover'. This had very little basis in logic or reason; for example, one of the commercials had a 'cartoon', 'animated' family in a clearing of the forest. The father, mother, son, daughter and pet dog were having a picnic. They had a blanket spread out on the ground with sandwiches and other picnic treats set upon it. They were happy. All of a sudden, a flash of brilliant light appeared in the distance. They all new it was an atomic explosion. They all continued to smile because they knew how to be safe. The boy led the way by lifting the blanket and sticking his head underneath. The father smiled approvingly and put his head underneath the blanket. The rest of the family did the same. The dog even stuck his head underneath, next to the boy. The scene changed to a view of them all under the blanket smiling at each other, in complete safety. The musical jingle continued to singing the words that 'duck and cover' would make you safe. The Dept of Civil Defense adopted 'duck and cover' in their publications concerning Urban heavy rescue (this manual was essentially a 'grown -up' adaptation of the boy scout manual on tying knots and using walking sticks; however, it told you to 'duck and cover'). This was 1952.

In 1952 Television had not yet been tarnished. Everything that appeared on Television was taken as absolute fact. The propaganda was set. Mission accomplished. Duck and Cover was not created as a means to save lives during building collapse. It is not being challenged by the 'triangle of life' as a new and improved means of surviving building collapse. It was created by a marketing Dept as a propaganda tool to calm the population during a time of potential political unrest. Duck and cover was never meant to save lives. Duck and Cover as a safety procedure is statistically a complete failure. This is why 98% of the population die during building collapse

Things have changed 'Duck and cover' has been 'burned' into the minds of the populations from mandatory teaching and drills, in schools. The children are taught to drop to their knees and crawl under their desks. During structural failure this results in almost 100% death. A survivor becomes a Television celebrity because it so rare for a survivor to exist.

In the United States, the 'duck and cover' propaganda is perpetuated by bureaucratic intransigence. Everyone knows how difficult it is to change something that is 'burned' into the minds of a population. Initially, the American bureaucracy had an objective of convincing a population for political purposes and then became its own 'victim' as the children themselves grew up to become the bureaucrats.

Galileo had this same problem in convincing people that the earth was not the center of the

universe. The bureaucracy, at the time, being the 'Catholic Church' thought it would lose credibility if it admitted that God had not made man and man's home the Center of the Universe.

Again, Columbus had the same problem convincing 'the establishment' that the world was not flat and you would not sail-off or fall-off the edge of the world if you traveled to China. Columbus was right. When I came to China I did not fall off the edge of the world. It was the promise of wealth that convinced the King and Queen of Spain to finance Columbus' quest not truth or science. .

The Response to perpetuate duck and cover:

'Duck and cover' is further perpetuated, in Capitalist countries because it has become commercial, in nature. The Major Commercial Interest (name and details available, on request), which perpetrates 'Duck and Cover' has an annual budget of 6 billion to 12 billion dollars. It is prohibited, by law, from 'doing any rescue'; however, it is adamant in perpetuating 'duck and cover'. Through propaganda and false advertising, it has convinced the American Public that they are experts in safety. This behemoth is afraid that a change in policy would make the American Public stop giving them money or it would negatively impact their revenue flow. Understand that I have been a member of the Mexican Version of this organization, for 15 years. Understand that I have worked with other countries versions of this organization, during many disasters. I am only referring to the American Version of this Organization. Not the version of this Organization, in any other country. The American Version of this Organization is profit oriented they are not. In the United States this organization does harm NOT good.

The published response of the Major Commercial Interests is to attack me personally, and publish their response. The response is to concede, at this point, that the 'triangle of life' is appropriate for third world countries but not for the United States (their financial base). They claim that it is not appropriate for the American Public to practice the 'triangle of life' because America does NOT have earthquakes and American buildings do NOT collapse. Obviously, this is utter nonsense and arrogance on an incredible scale; however, it is their published and official position. The logical and reasonable mind reflects upon 2 quotes of philosophy: "If you can not destroy the message then destroy the messenger". and "The path of truth has 3 stages. First it is ridiculed. Secondly, it is violently opposed and thirdly it is accepted as self evident."

The question is how many people will lose their lives before this organization and those that are like them will find the way to capitalize on the 'triangle of life'. They will adopt 'the triangle of life'; as being, self evident. I expect, at that point, in time, they will take credit for creating the 'triangle of life' and after time, deny they ever told the public about 'duck and cover'.

It has been as difficult to change policy from the 'brainwashed' belief in 'duck and cover' as it had been for Galileo and Columbus to teach people that the earth is not the center of the Universe and you will not fall off the end of the earth if you go to China..

Simply stated, when buildings collapse, the weight of the ceilings falling upon the objects or furniture inside crushes these objects. Leaving a space or void next to them. This space is what I call 'the triangle of life'. The larger the object, the stronger the object, the less it will compact. The less the object compacts, the larger the void, the greater the probability that the person who is using this void for safety will not be injured.

The next time you watch collapsed buildings, on television, count the "triangles" you see formed. They are everywhere. It is the most common shape, you will see, in a collapsed building.

The concept of the triangle, of life is spreading more every day around the world. It is just a matter of time before duck and cover enters the same category as bleeding to cure disease, and the idea that you will fall off the end of the earth" if you sail to far.

A logical understanding to survive building collapse:

I am going to explain something so simple to you that will wonder why you ever thought anything different.

People who die in building collapse die because they are crushed. When the building falls down they are crushed by the building's walls, ceilings and structural components. They are also, crushed when they hide under objects that are crushed.

People who survive building collapse survive because they were not crushed. They found themselves in a void or open space which was bigger than their body so they avoided getting crushed.

People who get under things that are crushed are also crushed. The human body is flesh and bone when great forces are placed upon it is squashed.

In collapsed buildings voids or spaces which are large enough to contain an intact human body are found next to big, bulky and strong objects. Objects like beds, cars, sofas, refrigerators, washing machines have voids next to them. Objects like desks and tables are not made to support heavy buildings. They are made to support very little weight before the legs break. These flimsy and weak objects are crushed and people who hide under them are crushed.

The same spaces that the rescuer crawls through are the same spaces that are big enough for people to survive in. When rescuers crawl through collapsed buildings searching for survivors they crawl through the connecting spaces which are large enough for their body to get through. They look for spaces which are found next to large bulky objects or spaces that are found next to a series

of objects with large surface areas to absorb the weight. Beds have a large surface area so the weight per square cm is less. Beds, statistically, have voids around them.

Again, people survive in voids next to large, bulky objects. People die who get under crushed objects.

If you get under something that is crushed then you will be crushed. If you get next to an object that was strong enough to leave a void next to it bigger than your body then you will survive.

Continuing with more details:

Rows of desks absorb a lot of pressure when buildings collapse. The legs snap or break easily; however, they leave a space next to them high enough from the floor for a child to remain unhurt.

When ceilings fall down the entire ceiling falls down at the same time. Light fixtures which are bolted to the ceiling stay attached to the ceiling while the entire ceiling falls down. People are seldom if ever hurt by these objects.

Never go to the stairs. The stairs have a different "moment of frequency" (they swing separately from the main part of the building). The stairs and remainder of the building continuously bump into each other until structural failure of the stairs takes place. The people who get on stairs before they fail are chopped up by the stair treads. They are horribly mutilated. Even if the building doesn't collapse. Stay way from the stairs. The stairs are of the building to be damaged. Even if the stairs are not collapsed by the earthquake, they may collapse later when overloaded by screaming, fleeing people. They should always be checked for safety, even when the rest of the building is not damaged.

Never be on the bottom floor. My team members in Turkey moved to the top floor of our hotel when I told them the following story: During the earthquake in Kallammattaa, Greece in 1986, I had been working without sleep for the first four days. I needed to have some sleep. The fire chief of Athens, who was in charge of the Greek rescue team, took me to the hotel where the high government officials were staying. We were standing in the outside terrace restaurant. He introduced me to the manager and told him that all of my expenses would be paid by the Federal Government of Greece.

My first words were: "I want a room on the top floor." He said: "No, that is not possible." I repeated several times that I wanted a room on the top floor. He repeated several times that it was not possible. Finally, he told me that his family lived on the top floor, that it was his private home. I replied: "OK. I want a room on the next floor down." He said: "OK."

Never stay on the bottom floor of a building. Everyone, on this bottom floor was crushed, says the author. Typically, the higher you are in the building the safer you will be, he adds.

A man got up from a table and approached me. He introduced himself as the chief seismologist for Greece and said: "Why do you want a room on the top floor? We all have rooms on the bottom floor."

I informed him that the top floors have less weight above them, are usually not collapsed in earthquakes, and that the bottom floors have the combined weight of the entire building pressing upon you and the objects inside." You will be crushed to death and I will be untouched."

At first, I did not realize how seriously they all took me. The family of the owner slept on the beach, in a tent. All the scientists and even the federal government's minister of civil defense slept in their cars. I was the only person sleeping or even going inside of this heavily damaged 5-story hotel. I slept like a baby. The lesson to be learned: the higher you are in a building the less weight will be crushing down upon you and the safer you will be.

Columns always provide a safe void next to them for tunnelers who crawl inside of collapsed buildings to save trapped victims and recover bodies; however, when the building actually comes down or collapses, you are gambling big time!

In the Turkish, collapsed building survival test video, you watched: the mannequin between the beds was untouched. The mannequin under the bed was squashed with its head chopped off. The mannequin on top of the bed cannot be seen from inside of the collapsed room.

Next to columns have a high survivability rate but can be absolutely brutal. Why? The columns will have a large void around them but if they fall directly on top of you, in your quadrant, you will be crushed to the size of a penny placed on top of a railroad track after a train has run over it. After seeing victims under columns and carrying beams, I was finally convinced that the human body is 70 percent water.

During my last mission to Peru, in December 1999, we delivered \$80,000 in donated rescue equipment to the National Fire Department of Peru. I trained the Fire Department of Trujillo (population 750,000) in how to survive, take care of their families, and to rescue others in earthquakes.

The chief of rescue in the Trujillo Fire Department is a professor at Trujillo University. He accompanied me everywhere. He had many reasons. I trained his elite team and we went to the university to train the scientists and students, went to several city halls for the mayors and city councils to change school survival policy, and most importantly for me, to allow him to give testimony. I explained about surviving in voids, next to objects.

He gave personal testimony: "My name is Dr. Heber Rosales. I am Chief of Rescue in Trujillo. When I was 11 years old, I was trapped inside of a collapsed building. My entrapment occurred during the earthquake of 1972 that killed 70,000 people. I survived in the 'triangle of life' that existed next to my brother's motorcycle. My friends who got under the bed and under desks were crushed to death [he gives more details, names, addresses etc.]...I am the living example of the 'triangle of life.' My dead friends are the example of 'duck and cover.'"

What more can I say? They got the point. He is the rescue chief for their city. In San Francisco, I asked a representative of the Governor's Office of Emergency Services, in front of witnesses: "Why don't you tell people not to get under doorways?" He replied, "We don't tell people to get under doorways, anymore" It went back and forth and I asked him the same question and he replied with the same answer. Those of you in California, please notice that The State of California, Governor's Office of Emergency Services, doesn't tell people to get under doorways during earthquakes anymore.

Why? Everybody who gets under a doorway when buildings collapse is killed. How? If you stand under a doorway and the doorjamb falls forward or backward you will be crushed by the ceiling above. If the door jam falls sideways you will be cut in half by the doorway. In either case, you will be killed! But they won't tell you not to do it. I guess they think people will eventually forget that they told people to do it in the first place. If they have stopped publishing instructional pictures of people under doorways they should tell people why and save some lives.

Parking garages are like highway overpasses. I still have a copy of the TV program, AM San Francisco, where I publicly stated that a minor earthquake, such as the Loma Prieta earthquake in San Francisco in 1989, would collapse the Nimitz Freeway, a double-deck freeway in nearby Oakland. I said it would and it did. Only I said it two years before it happened. People inside of their vehicles are crushed when the road above falls in an earthquake and crushes their vehicles; which is exactly what happened with the slabs between the decks of the Nimitz Freeway. Everyone killed would have survived if they had been able to get out of their cars and sit or lie next to them. All the crushed cars had voids 3 feet high next to them, except for the cars that had columns fall directly across them. We already discussed what happens to you or a car when a column falls on you. You are squashed! These victims didn't get next to their vehicles. They stayed in the "line of force" and were all crushed.

If an earthquake happens while you are watching television and you cannot easily escape by getting out the door or window, then lie down and curl up in the fetal position next to a sofa, large chair. Any large bulky object that will support the weight of the floors above you and still leave a space next to it large enough for you to survive.

People who get under objects, like desks or cars, are always crushed. The victims of the San

Francisco earthquake all stayed inside of their vehicles. They were all killed. They could have easily survived by getting out and sitting or lying next to their vehicles, says the author.

Gas mains and electrical connections are broken in many thousands of places during earthquakes. Don't risk your life to turn off a "dead" electrical line.

Get Near the Outer Walls Of Buildings Or Outside Of Them If Possible - It is much better to be near the outside of the building rather than the interior. The farther inside you are from the outside perimeter of the building the greater the probability that your escape route will be blocked; or the other way of looking at it is that the route for a rescuer to reach you will be blocked from the side. This means that the entire structure above you must be removed by heavy equipment before you can be rescued.

If you are next to the outside wall of a building while still inside of it, you can expect the glass not to be a problem. As the building collapses and the consequential volume is decreased the air pressure inside actually increases. It is like bursting a paper bag filled with air. The glass is blown away from the structure, not inward.

Wooden buildings are the safest type of construction to be in during an earthquake. The reason is simple: the wood is flexible and moves with the force of the earthquake. If the wooden building does collapse, large survival voids are created. Also, the wooden building has less concentrated, crushing weight. Wooden structures perform best in earthquakes. Their flexibility and lightweight leave many voids or survival "triangles of life."

Brick buildings will break into individual bricks. Bricks will cause many injuries but less squashed bodies than concrete slabs.

The best place to be in an earthquake is outside. It is rare for the ground to open up and swallow you, though I was once at a place where the ground opened up and swallowed a whole street of homes, people, cats, dogs and cars, and then closed shut again without a trace. This had a great humbling effect upon me. Nature impressed me.

I discovered, while crawling inside of collapsed newspaper offices and other offices with a lot of paper that paper does not compact. Large voids are found surrounding stacks of paper. I instituted a program in many embassies, offices and schools around the world to increase survivability. Simply put, the janitor in the school constructs a plywood box with unfolded newspapers inside. After filling the box with newspapers, a plywood top is nailed on. The resultant box, with a low center of gravity (so it doesn't fall over during the shaking of the earthquake) is placed next to a desk (so it doesn't crush), or in a school several are strategically placed. The ceiling will come down, rest on top of the boxes, and create voids equal to the height of the paper filled boxes. If you place four of these boxes on the ground and use a crane to lift a Sherman tank in the air and place

it on the boxes, they will support it. I came to discover this by witnessing boxes of newspaper holding up entire buildings. The children use lie down next to these safe islands. They survive. The first building I ever crawled inside of was a school in Mexico City during the 1985 earthquake. Every child was under their desk. Every child was crushed to the thickness of their bones. They could have survived by lying down next to their desks in the aisles. It was obscene, unnecessary and I wondered why the children where not in the aisles. I didn't at the time know that the children were told to hide under something. . **You can use stacks of newspaper in plywood boxes to prevent collapsed buildings from crushing you.**

Go to www.amerrescue.org for videos, docs, scientific reports, power point presentations and hundreds of pages concerning the triangle of life and ARTI.

At the beginning of this speech I informed you of a conversation I had with my webmaster. Now you know, why, during the conversation with the ARTI webmaster I said: "I remember." I do remember crawling up and down the aisles with every child squashed to liquid. Only a little hand or foot sticking out. This nightmare of horror was completely unnecessary. Do not duck and cover. It is death. A horribly mutilated death.

I have no commercial interests. ARTI members are all unpaid volunteers. I took money from my own pocket which I need for medical treatment, to come here. That is how important your children's lives are to me.

Thank you. Please save the children.

Summation: TEN TIPS FOR EARTHQUAKE SAFETY

- > 1) Most everyone who simply "ducks and covers" WHEN BUILDINGS COLLAPSE are >crushed to death. People who get under objects, like desks or cars, are crushed.
- >
- > 2) Cats, dogs and babies often naturally curl up in the fetal position.
- > You should too in an earthquake. It is a natural safety/survival instinct.
- > You can survive in a smaller void. Get next to an object, next to a sofa,
- > next to a large bulky object that will compress slightly but leave a void
- > next to it.
- >
- > 3) Wooden buildings are the safest type of construction to be in during an
- > earthquake. Wood is flexible and moves with the force of the earthquake.
- > If the wooden building does collapse, large survival voids are created.
- > Also, the wooden building has less concentrated, crushing weight. Brick
- > buildings will break into individual bricks. Bricks will cause many

- > injuries but less squashed bodies than concrete slabs.
- >
- > 4) If you are in bed during the night and an earthquake occurs, simply
- > roll off the bed. A safe void will exist around the bed. Hotels can
- > achieve a much greater survival rate in earthquakes, simply by posting a
- > sign on the back of the door of every room telling occupants to lie down
- > on the floor, next to the bottom of the bed during an earthquake.
- >
- > 5) If an earthquake happens and you cannot easily escape by getting out
- > the door or window, then lie down and curl up in the fetal position next
- > to a sofa, or large chair.
- >
- > 6) Most everyone who gets under a doorway when buildings collapse is
- > killed. How? If you stand under a doorway and the doorjamb falls forward
- > or backward you will be crushed by the ceiling above. If the door jam
- > falls sideways you will be cut in half by the doorway. In either case, you
- > will be killed!
- >
- > 7) Never go to the stairs. The stairs have a different "moment of
- > frequency" (they swing separately from the main part of the building). The
- > stairs and remainder of the building continuously bump into each other
- > until structural failure of the stairs takes place. The people who get on
- > stairs before they fail are chopped up by the stair treads - horribly
- > mutilated. Even if the building doesn't collapse, stay away from the
- > stairs. The stairs are a likely part of the building to be damaged. Even
- > if the stairs are not collapsed by the earthquake, they may collapse later
- > when overloaded by fleeing people. They should always be checked for
- > safety, even when the rest of the building is not damaged.
- >
- > 8) Get Near the Outer Walls Of Buildings Or Outside Of Them If Possible -
- > It is much better to be near the outside of the building rather than the
- > interior. The farther inside you are from the outside perimeter of the
- > building the greater the probability that your escape route will be
- > blocked;
- >
- > 9) People inside of their vehicles are crushed when the road above falls
- > in an earthquake and crushes their vehicles; which is exactly what
- > happened with the slabs between the decks of the Nimitz Freeway. The
- > victims of the San Francisco earthquake all stayed inside of their
- > vehicles. They were all killed. They could have easily survived by getting
- > out and sitting or lying next to their vehicles. Everyone killed would

- > have survived if they had been able to get out of their cars and sit or
- > lie next to them. All the crushed cars had voids 3 feet high next to them,
- > except for the cars that had columns fall directly across them.
- >
- > 10) I discovered, while crawling inside of collapsed newspaper offices and
- > other offices with a lot of paper, that paper does not compact. Large
- > voids are found surrounding stacks of paper. **You can use stacks of newspaper in plywood boxes to prevent collapsed buildings from crushing you.**

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如何在坍塌的建筑物中自救（概要）

道格 库普

我想要引用在 MSN 上与美国国际救援组织网站管理员的一段对话

cybersurfer says:

躲在下面，在孩子们打雪仗时是有用的，但不能用于在坍塌的建筑物中逃生

Doug says:

说得好，我可以用这句话。

cybersurfer says:

还有这句，游戏开始了，“躲在下面”可以用来找到孩子们，只要看看桌子底下

cybersurfer says:

桌子底下有一片湿迹，小保比就藏在里面

Doug says:

别开玩笑

Doug says:

我记下了

我演讲的目的是为了说明如何在坍塌的建筑物将现在的 98%死亡率改变为 98%的生还率。

我叫道格·库普，是世界上经验最为丰富的救援组织，美国国际救援组织 (ARTI) 的救援队长和灾害经理。下面的内容将提供一些关于在地震中拯救生命的信息。

因为在世界贸易中心的拯救活动中吸入了大量的有毒气质，我成了永久性瘫痪。在这之前，作为多个不同国家的救援组织的成员，我曾经与来自 60 个国家的救援组织一起协力工作，为了挽救生命爬行于 894 座坍塌的建筑物中。这里，我将用我从 894 座建筑物废墟中爬行过所得来的经验和知识告诉中国的人们，如何在坍塌的建筑物中求得生存。

问题：

“躲在下面”是人们被告知的一种保护自己的手段，例如在地震发生时，躲在桌子下面。实际上，当建筑物倒塌，并落在桌子上时，躲在下面的人会被压死。98%遇难者的死因是因为他们“躲在下面”，在这种情况下，能够幸存下来的几率很少，因此幸存者便成为媒体大力宣传的名人。现在，数千人遇难而废墟中无人生是常有的，这是一场悲剧。

目标：在坍塌的建筑物中提高生还率。

解决方案：“生命的三角空间”是一种在坍塌的建筑物中求生存的更为理性和基于现实的方法。

历史：

冷战时期，由于美国大众对核武器的恐惧，为了稳定人心，“躲在下面”产生了。作为一种政治手段，为了传播“躲在下面”这个概念，美国开展了一系列包括电视广告在内的宣传活动。然而，这个概念并没有任何逻辑性和理论基础。

与最新提出的“生命的三角空间”这个以从建筑物废墟中拯救生命为目标的概念来比较，“躲在下面”是不堪一击的，因为它并不服务于相同的目的，它是由市场部门提供的为了在潜在的政治不安定期稳定人心的一种宣传手段。从安全角度看，“躲在下面”是完全失败的，这也就解释了为什么建筑物倒塌时，死亡率高达 98%。

由于学校中的强制教育和演练，“躲在下面”已经被深深的烙在了人们的心里。孩子们被教育跪到地上，爬到桌子下面。这种体制的失败导致了儿近于 100% 的死亡率。幸存下来是如此之难，因此幸存者成为了电视上的焦点人物。

对于“躲在下面”概念的推广

在资本主义国家，本质上作为商业活动的“躲在下面”概念被广泛的推广。

美国主要的商业利益做出了让步，承认“生命的三角空间”是适合于第三世界国家，但却不适合美国（由于金融原因）。他们声称因为美国没有地震，而且美国的建筑物从不倒塌，所以“生命的三角空间”并不适合美国大众。

想要改变对于“躲在下面”的信仰就像伽利略和哥伦布想要揭示给人们地球不是宇宙的中心和地球是圆的事实一样困难。

1996 年，我们曾制作了一个电影，用以证明我的求生方法是正确的。土耳其伊斯坦布尔大学和我们一起合作录制了这个科学试验。

在这部电影中，在可直接观测的科学的环境下，我演示了在倒塌的建筑物中求生的技巧。通过此电影，人们可以看出如果依照“躲在下面”的话，是 0% 的生还率，而使用我的“生命的三角空间”方法，则有近 100% 的生还率。

简单的说，当建筑物倒塌时，屋顶落在物件或家具上的重量将其压垮，并在其周围留下了一些空间。这些空间就是“生命的三角空间”。物体越大，越坚固，被挤压的越少，这样留下的空间越大，一个人利用这个空间免于受伤的可能性就越大。下一次当你在电视上看到倒塌的建筑物时，数一下里面有多少“三角空间”。到处都有三角空间，它们是你会在坍塌的建筑物中看到的最普遍的形状。

“生命的三角空间”概念在世界上传播开来。总有一天，“躲在下面”将会和放血治病以及如果走的太远将会掉下地球这样的思想一样被人们摒弃。

对于从倒塌的建筑物中逃生的理解

死于倒塌的建筑物中的人们大都是被压死的。建筑物倒塌时，他们被建筑物的墙，屋顶和其他构筑物压死，也可能是被他们选择躲藏在其下面的物体压死的。

没有被压着的人得以生还，事后他们发现自己处于一个大的足以容纳身体的空间内。

人们躲在一个物体下面，当物体被压跨时，人也就被压死了，毕竟人是血肉之躯，哪能承受太大的重量呢。

在倒塌的建筑物之中，体积大又坚固的物体周围会有足以容纳人身体的空间，像床、汽车、沙发、冰箱和洗衣机的周围就会有空间。而像桌子却只是被用来承受轻量物体的，因此一旦超载就会被压垮，当人们选择躲在这些不牢固的物体下面时，很有可能会被压死。

救援人员在营救时所爬过的空间就是人们可以借以求生的空间。当救援人员在倒塌的建筑物中爬行，寻找生还者时，他们会在相连的足够大的生存空间中穿行。他们寻找大的物体周围或一堆物体周围的空间。床有很大的面积，每平方米所承受的重量相应会小一些，因此床的周围也会有空间。

幸免于体积大物体周围的空隙中，死于被压碎的物体的下面

如果你躲在物体的下面，那么物体压碎了，你也就会被压死。如果你躲在一个大且坚固的物体的周围，建筑物坍塌时，它可以支撑出足够大的空隙，那么你会活下来。

总结：

建筑物倒塌时，一排桌子能够吸收很多的压力，桌腿很容易就会被压断，然而，它们会留出空间，这样的空间距离地面有一定的距离，足够一个孩子呆在里面而免于受伤。

当屋顶掉下来时，屋顶上的灯会一同落下。人们很少被这些设备伤到。

地震中逃生的诀窍：

- 1) 大多数情况下，建筑物倒塌时，躲在像桌子，汽车等物体下面的人们会被压死。
- 2) 猫、狗和婴儿的身体一般会自然的弯曲成胎儿的姿势。地震发生时，你也应该如此。这是一种自然的求生本能。这样，你可以在一个更小的空间中生存下来。体积大的物体不容易被压垮，因此它的周围会留下较大的空隙，靠近这些物体。
- 3) 地震时，木制的建筑物是最安全的。木头有弹性，可以随着地震的力量而晃动。木制的建筑物倒塌会产生大的生存空间，而且它们的密度低，倒塌重量也就小。砖制建筑物倒塌时会散落成零碎的砖块，这往往会造成很多伤害，但是却不会像混凝土建筑那样压碎人的身体。
- 4) 如果地震发生时你正躺在床上，只要滚到床下就可以了，因为床的周围会存在安全的生存空间。地震时宾馆的生存率会很高，这是因为宾馆在每个房间的门后都贴了一个提示，告诉住户地震发生时，躺在靠近床的地板上。
- 5) 如果地震发生时，你无法从门或窗户中逃脱，那么在靠近沙发或大椅子的地方躺下并将身体弯曲成胎

儿的姿势。

6) 大多数情况下, 建筑物倒塌时, 躲在门下面的人们都会遇难。为什么呢? 如果你站在门的下面, 当门的旁柱向前或向后倒下时, 你会被落下的屋顶压到; 如果旁柱向侧面倒下的话, 你会被砍伤, 无论哪种方式, 都会必死无疑!

7) 千万不要靠近楼梯。楼梯有不同的频率(它们悬挂在建筑物主体)。楼梯和建筑物的主体互相碰撞, 直到楼梯倒塌。走到楼梯上的人会被掉落的楼梯阶严重砍伤。即使建筑物不倒塌, 也不要靠近楼梯, 因为它们是建筑物中最易毁坏的部分。即使楼梯并没有在地震中毁坏, 它们还是很有可能因人们逃脱时负荷过多而塌毁。如果建筑物没有损坏, 决不能省略对楼梯的检查。

8) 可能的话, 要尽量靠近建筑物的外墙或外墙的外面。待在建筑物的外面比在里面要好。你在屋里距离建筑物的外围越远, 你逃脱路线被堵住的可能性就越大。

9) 地震中, 当位于高层的公路倒塌时, 下面的汽车中的人们会被压到, 就像 Nimitz 高速公路混凝土路面倒塌时的情形一样。旧金山地震的遇难者都是在汽车中被压死的。那些死去的人, 本可以存活下来, 如果他们能够从汽车中出来, 坐在或躺在靠近他们汽车的地方。除了被柱子直接砸在上面的汽车外, 其他的汽车周围都有 3 英尺高的生存空间。

10) 当在报社或者是其它存在很多纸张的办公室中爬行时, 我发现纸是不会被挤压变形的。所以在纸堆周围存在很大的生存空间。在倒塌的建筑物中, 你可以利用纸堆来保护自己不被压伤。