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102 Minutes

Fighting to Live as the Towers Died

By **THE NEW YORK TIMES**

This article was reported and written by Jim Dwyer, Eric Lipton, Kevin Flynn, James Glanz and Ford Fessenden.

They began as calls for help, information, guidance. They quickly turned into soundings of desperation, and anger, and love. Now they are the remembered voices of the men and women who were trapped on the high floors of the twin towers.

From their last words, a haunting chronicle of the final 102 minutes at the World Trade Center has emerged, built on scores of phone conversations and e-mail and voice messages. These accounts, along with the testimony of the handful of people who escaped, provide the first sweeping views from the floors directly hit by the airplanes and above.

Collected by reporters for The New York Times, these last words give human form to an all but invisible strand of this stark, public catastrophe: the advancing destruction across the top 19 floors of the north tower and the top 33 of the south, where loss of life was most severe on Sept. 11. Of the 2,823 believed dead in the attack on New York, at least 1,946, or 69 percent, were killed on those upper floors, an analysis by The Times has found.

Rescue workers did not get near them. Photographers could not record their faces. If they were seen at all, it was in glimpses at windows, nearly a quarter-mile up.

Yet like messages in an electronic bottle from people marooned in some distant sky, their last words narrate a world that was coming undone. A man sends an e-mail message asking, "Any news from the outside?" before perching on a ledge at Windows on the World. A woman reports a colleague is smacking useless sprinkler heads with his shoe. A husband calmly reminds his wife about their insurance policies, then says that the floor is groaning beneath him, and tells her that she and their children meant the world to him.

No single call can describe scenes that were unfolding at terrible velocities in many places. Taken together though, the words from the upper floors offer not only a broad and chilling view of the devastated zones, but the only window onto acts of bravery, decency and grace at a brutal time.

Eight months after the attacks, many survivors and friends and relatives of those lost are pooling their recollections, tapes and phone records, and 157 have shared accounts of their contacts for this article. At least 353 of those lost were able to reach people outside the towers. Spoken or written at the hour of death, these are intimate, lasting words. The steep emotional cost of making them public is worth paying, their families say, for a clearer picture of those final minutes.

Many also hope the history of the day is enlarged beyond memorials to the unquestioned valor of 343 firefighters and 78 other uniformed rescuers. It is time, they say, to account for the experiences of the 2,400 civilians who also died that day. Iliana McGinnis, whose husband, Tom, called her from the 92nd floor of the north tower, said, "If they can uncover even one more piece of information about what happened during those last minutes, I want it."

Some details remain unknowable. Working phones were scarce. The physical evidence was destroyed. Conversations were held under grave stress, and are recalled through grief, time and longing. Even so, as one

fragile bit of information elaborates on the next, they illuminate conditions on the top floors.

The evidence strongly suggests that 1,100 or more people in or above the impact zones survived the initial crashes, roughly 300 in the south tower and 800 in the north. Many of those lived until their building collapsed.

Even after the second airplane struck, an open staircase connected the upper reaches of the south tower to the street. The Times has identified 18 men and women who used it to escape from the impact zone or above. At the same time they were evacuating, at least 200 other people were climbing toward the roof in that tower, unaware that a passable stairway down was available, and assuming — incorrectly — that they could open the roof door. "The belief that they had a rooftop option cost them their lives," said Beverly Eckert, whose husband, Sean Rooney, called after his futile trek up.

Hundreds were trapped on floors untouched by the airplanes. Even though the buildings survived the initial impacts, the twisting and bending of the towers caused fatal havoc. Stairwells were plugged by broken wallboard. Doors were jammed in twisted frames. With more time and simple tools like crowbars, rescue workers might have freed people who simply could not get to stairways. In the north tower, at least 28 people were freed on the 86th and 89th floors by a small group of Port Authority office workers who pried open jammed doors. Those self-assigned rescuers died.

In both towers, scores of people lost chances to escape. Some paused to make one more phone call; others, to pick up a forgotten purse; still others, to perform tasks like freeing people from elevators, tending the injured or comforting the distraught.

The crises had identical beginnings and endings in each tower, but ran different courses. At least 37 people, and probably well over 50, can be seen jumping or falling from the north tower, while no one is visible falling from the south tower, in a collection of 20 videotapes shot by amateurs and professionals from nearby streets and buildings. Both towers had similar volumes of smoke and heat, but in the north tower, about three times as many people were trapped in roughly half the space. Scores were driven to the windows of the north tower in search of relief. In the south tower, people had more opportunities to move between floors.

The impact zones formed pitiless boundaries between those who were spared and those who were doomed. Even at the margins, the collisions were devastating: the wingtip of the second plane grazed the 78th floor sky lobby in the south tower, instantly killing dozens of people waiting for elevators. In all, about 600 civilians died in the south tower at or above the plane's impact. In the north tower, every person believed to be above the 91st floor died: 1,344.

The farther from the impact, the more calls people made. In the north tower, pockets of near-silence extended four floors above and one floor below the impact zone. Yet remarkably, in both towers, even on floors squarely hit by the jets, a few people lived long enough to make calls.

To place these fragmentary messages in context, The Times interviewed family members, friends and colleagues of those who died, obtained times of calls from cellphone bills and 911 records, analyzed 20 videotapes and listened to 15 hours of police and fire radio tapes.

The Times also interviewed 25 people who saw firsthand the destruction wreaked by the planes, because they escaped from the impact zone or above it in the south tower, or from just below it in the north.

8:00

North Tower, 107th Floor, Windows on the World, 2 hours 28 minutes to collapse

"Good morning, Ms. Thompson."

Doris Eng's greeting was particularly sunny, like the day, as Liz Thompson arrived for breakfast atop the tallest building in the city, Ms. Thompson remembers thinking. Perhaps Ms. Eng had matched her mood to the glorious weather, the rich blue September sky that filled every window. Or perhaps it was the company.

Familiar faces occupied many of the tables in Wild Blue, the intimate aerie to Windows that Ms. Eng helped manage, according to two people who ate there that morning. As much as any one place, that single room captured the sweep of humanity who worked and played at the trade center.

Ms. Thompson, executive director of the Lower Manhattan Cultural Council, was eating with Geoffrey Wharton, an executive with Silverstein Properties, which had just leased the towers. At the next table sat Michael Nestor, the deputy inspector general of the Port Authority of New York and New Jersey, and one of his investigators, Richard Tierney.

At a third table were six stockbrokers, several of whom came every Tuesday. Ms. Eng had a treat for one of them, Emeric Harvey. The night before, one of the restaurant's managers, Jules Roannel, gave Ms. Eng two impossibly-hard-to-get tickets to "The Producers." Mr. Roannel says he asked Ms. Eng to give them to Mr. Harvey.

Sitting by himself at a window table overlooking the Statue of Liberty was a relative newcomer, Neil D. Levin, the executive director of the Port Authority. He had never joined them for breakfast before. But his secretary requested a table days earlier and now he sat waiting for a banker friend, said Mr. Levin's wife, Christy Ferer.

Every other minute or so, a waiter, Jan Maciejewski, swept through the room, refilling coffee cups and taking orders, Mr. Nestor recalls. Mr. Maciejewski was one of several restaurant workers on the 107th floor. Most of the 72 Windows employees were on the 106th floor, where Risk Waters Group was holding a conference on information technology.

Already 87 people had arrived, including top executives from Merrill Lynch and UBS Warburg, according to the conference sponsors. Many were enjoying coffee and sliced smoked salmon in the restaurant's ballroom. Some exhibitors were already tending to their booths, set up in the Horizon Suite just across the hallway.

A picture taken that morning showed two exhibitors, Peter Alderman and William Kelly, salesmen for Bloomberg L.P., chatting with a colleague beside a table filled with a multi-screened computer display. Stuart Lee and Garth Feeny, two vice presidents of Data Synapse, ran displays of their company's software.

Down in the lobby, 107 floors below, an assistant to Mr. Levin waited for his breakfast guest. But when the guest arrived, he and Mr. Levin's aide luckily boarded the wrong elevator, Ms. Ferer would learn, and so they had to return to the lobby to wait for another one.

Upstairs, Mr. Levin read his newspaper, Mr. Nestor recalled. He and Mr. Tierney were a little curious to see whom Mr. Levin, their boss, was meeting for breakfast. But Mr. Nestor had a meeting downstairs, so they headed for the elevators, stopping at Mr. Levin's table to say goodbye. Behind them came Ms. Thompson and Mr. Wharton. Mr. Nestor held the elevator, so they hopped in quickly, Ms. Thompson recalled.

Then the doors closed and the last people ever to leave Windows on the World began their descent. It was 8:44 a.m.

8:46

North Tower, 91st Floor, American Bureau of Shipping, 1 hour 42 minutes to collapse

The impact came at 8:46:26 a.m. American Airlines Flight 11, a Boeing 767 measuring 156 feet from wingtip to wingtip and carrying 10,000 gallons of fuel, was moving at 470 miles an hour, federal investigators

estimated. At that speed, it covered the final two blocks to the north tower in 1.2 seconds.

The plane ripped a path across floors 94 to 98, directly into the office of Marsh & McLennan Companies, shredding steel columns, wallboard, filing cabinets and computer-laden desks. Its fuel ignited and incinerated everything in its way. The plane's landing gear hurtled through the south side of the building, winding up on Rector Street, five blocks away.

Just three floors below the impact zone, not a thing budged in Steve McIntyre's office. Not the slate paperweight shaped like a sailing ship. Not the family snapshots propped up on a bookcase. Mr. McIntyre found himself in front of a computer that was still on.

Then came the whiplash.

A powerful shock wave quickly radiated up and down from the impact zone. The wave bounced from the top to the bottom of the tower, three or four seconds one way and then back, rocking the building like a huge boat in a storm.

"We got to get the hell out of here," yelled Greg Shark, an American Bureau of Shipping engineer and architect, who was bracing himself in the swaying while he stood outside Mr. McIntyre's office.

Somehow, they were alive. Only later would the two men realize the slender margin of their escape. In their accounts of hunting for a way out, they provide a survey of a border territory, an impregnable zone through which the people imprisoned above would never pass.

Mr. McIntyre, Mr. Shark and nine other employees, all uninjured, hustled out of the A.B.S. reception area in the northwest corner and turned left toward the elevators and stairways in the tower's core.

Mr. McIntyre recalls peering into a dim, shattered stairwell, billowing with smoke. He heard nothing but water cascading down the stairs, as if he had encountered a babbling brook on a mountain hike. The water almost certainly came from severed sprinkler pipes. Seeing and hearing no one else in the stinking gloom, he looked up.

The stairwell was blocked from above — not by fire or structural steel, but by huge pieces of the light gypsum drywall, often called Sheetrock, that had enclosed the stairwell to protect it. In huge hunks, the Sheetrock formed a great plug in the stairwell, sealing the passage from 92, the floor above. Going down the stairs, it made a slightly less formidable obstruction.

"This is no good," Mr. McIntyre would remember saying.

Mr. McIntyre could hardly have known it, but he stood at a critical boundary. Above him, across 19 floors, were 1,344 people, many of them alive, stunned, unhurt, calling for help. Not one would survive.

Below, across 90 floors, thousands of others were also alive, stunned, unhurt, calling for help. Nearly all of them lived.

Bad as this staircase was, the two other emergency exits were worse, Mr. McIntyre later said. So he went back to that first staircase, northwest of the building's center. He stepped inside and immediately slipped down two flights of grimy gypsum. Unhurt, he stood and noticed lights below. He remembers calling: "This way!" His A.B.S. colleagues joined the exodus from 91.

One floor above them, on the 92nd floor, employees of Carr Futures were doing exactly what the A.B.S. people had done: hunting for a way out.

They did not realize they were on the wrong side of the rubble.

On the 92nd floor, Damian Meehan scrambled to a phone at Carr Futures and dialed his brother Eugene, a firefighter in the Bronx. "It's really bad here — the elevators are gone," Mr. Meehan told him.

"Get to the front door, see if there's smoke there," Eugene Meehan recalled urging him. He heard his brother put the phone down, then followed the sounds drifting into his ear. Yelling. Commotion, but not panic.

A few minutes later, Damian Meehan returned and reported that the front entrance was filled with smoke.

"Get to the stairs," Eugene remembered advising him. "See where the smoke is coming from. Go the other way."

Then he heard Damian for the last time.

"He said, 'We've got to go.' Or he said, 'We're going,'" Eugene Meehan said. "I've been racking my brains to remember.

"I know he said, 'We.'"

9:00

North Tower, 106th Floor, Windows on the World, 1 hour 28 minutes to collapse

"What do we do? What do we do?"

Doris Eng, the restaurant manager, called the Fire Command Center in the lobby repeatedly with that question, according to officials and co-workers. Just minutes after the plane hit, the restaurant was filling with smoke and she was struggling to direct the 170 people in her charge.

Many in the crowd made their living providing information or the equipment that carried it, communications experts taking part in the morning's conference in the ballroom. But with thickening smoke, no power and little sense of what was going on, the restaurant was fast becoming an isolation zone, where people scrambled for bits of news.

"Watch CNN," Stephen Tompsett, a computer scientist at the conference, e-mailed his wife, Dorry, using his BlackBerry communicator. "Need updates."

Videos from two amateur photographers show that the smoke built with terrifying speed at the top of the building, cascading thicker from seams in windows there than from floors closer to the plane. Early on, Rajesh Mirpuri called his company, Data Synapse, coughing, and said he could not see more than 10 feet, his boss, Peter Lee, would remember. Peter Alderman, the Bloomberg salesman, also told his sister about the smoke, using his BlackBerry to send an e-mail message: "I'm scared."

Ms. Eng and the Windows staff, following their emergency training, herded people from the 107th floor down to a corridor on the 106th near the stairs, where they used a special phone to call the Fire Command Center. The building's policy was to immediately evacuate the floor on fire and the one above it. People farther away, like those in Windows on the World, were to leave only when directed by the command center "or when conditions dictate such actions."

Conditions were quickly deteriorating, though. Glenn Vogt, the restaurant's general manager, said that 20 minutes after the plane hit, his assistant, Christine Olender, called him at home. She got his wife instead, Mr. Vogt said, because he was on the street outside the trade center. Ms. Olender told Mrs. Vogt that they had heard nothing on how to leave. "The ceilings are falling," she said. "The floors are buckling."

Within 20 minutes of the crash, a police helicopter reported to its base that it could not land on the roof. Still, many put their hopes on a rescue by someone, some way.

"I can't go anywhere because they told us not to move," Ivhan Carpio, a Windows worker, said in a message he left on his cousin's answering machine. "I have to wait for the firefighters."

The firefighters, however, were struggling to respond. No one in New York had ever seen a fire of this size — four and five floors blazing within seconds. Commanders in the lobby had no way of knowing if any stairwells were passable. With most elevators ruined, firefighters were toting heavy gear up stairwells against a tide of evacuees. An hour after the plane crash, they would still be 50 floors below Windows.

Downstairs, the authorities fielded calls from the upper floors. "There's not much you could do other than tell them to go wet a towel and keep it over your face," said Alan Reiss, the former director of the world trade department of the Port Authority. But the plane had severed the water line to the upper floors. Mr. Maciejewski, the waiter, told his wife in a cellphone call that he could not find enough to wet a rag, she recalled. He said he would check the flower vases.

The room had almost no water and not much air, but there was no shortage of cellphones or BlackBerries. Using them and a few intact phone lines, at least 41 people in the restaurant reached someone outside the building. Peter Mardikian of Imagine Software told his wife, Corine, that he was headed for the roof and that he could not talk long, she recalled. Others were waiting for one of the few working phones.

Garth Feeney called his mother, Judy, in Florida. She began with a breezy hello, she later recalled.

"Mom," Mr. Feeney responded, "I'm not calling to chat. I'm in the World Trade Center and it's been hit by a plane."

The calm manner of the staff could not contain the strain. Laurie Kane, whose husband, Howard, was the restaurant's comptroller, said she could hear someone screaming, "We're trapped," as they finished their final conversation. Gabriela Waisman, a conference attendee, phoned her sister 10 times in 11 minutes, frantic to keep the connection. Veronique Bowers, the restaurant's credit collections manager, kept telling her grandmother, Carrie Tillman, that the building had been hit by an ambulance.

"She was so confused," Mrs. Tillman said.

9:01

North Tower, 104th Floor, Cantor Fitzgerald, 1 hour 27 minutes to collapse

Just two floors below Windows, the disaster marched at an eerily deliberate pace, the sense of emergency muted. The northwest conference room on the 104th floor held just one of many large knots of people in the five floors occupied by Cantor Fitzgerald. There, the smoke did not become overwhelming as quickly as at Windows. And the crash and fires were not as immediately devastating as they had been a few floors below, at Marsh & McLennan.

In fact, Andrew Rosenblum, a Cantor stock trader, thought it would be a good idea to reassure the families. With his wife, Jill, listening on the phone from their home in Rockville Centre, N.Y., he announced to the room: "Give me your home numbers," his wife recounted.

"Tim Betterly," Mr. Rosenblum said into his cellphone, reeling off a phone number. "James Ladley." Another number.

As the list grew, Mr. Rosenblum realized that 40 or 50 colleagues were in the room, having fled the smoke. "Please call their spouses, tell them we're in this conference room and we're fine," he said to his wife. She

remembers scribbling the names and numbers on a yellow legal pad in her kitchen, as the burning towers played on a 13-inch television in a cubbyhole near the backdoor.

Mrs. Rosenblum handed pieces of paper with the numbers to friends who had shown up. They went either to the leafy, fenced-in backyard, where the dog wandered among them, or to the front lawn, calling the families on cellphones.

Mr. Rosenblum's group, including Jimmy Smith, John Salamone and John Schwartz, sat on the eastern side of the bond trading area, in one of the open areas, according to John Sanacore, one of the group who was not at work that day. The spot offered expansive views of the Empire State Building.

On the opposite end of the bond area, overlooking the Hudson River, other traders were gathered. John Gaudio, who normally worked in that section but was on a golf outing that morning, recalled that Ian Schneider sat at the head of a string of desks where he led a global finance group. Michael Wittenstein, John Casazza and Michael DeRienzo were all in that area, and, like Mr. Schneider, were using land lines at their desks to take calls from concerned customers and loved ones, according to six people who spoke with them. "The building rocked like it never has before," said Mr. Schneider, who was there for the 1993 bombing, in a phone call with his wife, Cheryl.

In the equities trading area in the southern part of the 104th floor, looking toward the Statue of Liberty, there was a third group. Here, Stephen Cherry and Marc Zeplin pushed a button at their desk to activate the squawk box, a nationwide intercom to other Cantor offices around the country. "Can anybody hear us?" Mr. Cherry asked. A trader in Chicago who was listening in later said that she managed to reach a firehouse near the trade center. "They know you're there," the trader told them.

Mike Pelletier, a commodities broker in a Cantor office on the 105th floor, reached his wife, Sophie Pelletier, and was then in touch with a friend who told him that the airplane crash had been a terrorist attack. Mr. Pelletier swore and shouted the information to the people around him, Mrs. Pelletier said.

In Rockville Centre, on the front lawn of the Rosenblums' house, Debbie Cohen dialed the numbers on the yellow pieces of paper she had been handed by Jill Rosenblum.

"Hello? You don't know me, but I was given your number by someone who is in the World Trade Center," she said. "About 50 of them are in a corner conference room, and they say they're O.K. right now."

9:02

South Tower, 98th Floor, Aon Corp., 57 minutes to collapse

Those in the south tower were still spectators, if wary ones. "Hey Beverly, this is Sean, in case you get this message," Sean Rooney said on a voice mail message left for his wife, Beverly Eckert. "There has been an explosion in World Trade One — that's the other building. It looks like a plane struck it. It's on fire at about the 90th floor. And it's, it's — it's horrible. Bye."

Even in Mr. Rooney's tower, people could feel the heat from the fires raging in the other building, and they could see bodies falling from the high floors. Many soon began to leave. The building's staff, however, announced that they should stay — judging that it was safer for the tenants to stay inside an undamaged building than to walk onto a street where fiery debris was falling.

That instruction would change at the very moment that Mr. Rooney, who worked for the insurance company Aon, was leaving a second message for his wife, at 9:02 a.m.

"Honey, this is Sean again," he said. "Looks like we'll be in this tower for a while." He paused, as a public announcement in the background could be heard.

"It's secure here," Mr. Rooney continued. "But ——" He stopped again to listen: "if the conditions warrant on your floor you may wish to start an orderly evacuation."

"I'll talk to you later," Mr. Rooney said. "Bye."

As Mr. Rooney spoke, United Flight 175 was screaming across New York Harbor.

9:02

South Tower, 81st Floor, Fuji Bank, 57 minutes to collapse

Yes, Stanley Praitnath told the caller from Chicago, he was fine. He had actually evacuated to the lobby of the south tower, but a security guard told him to go back. Now, he was again at his desk at Fuji Bank. "I'm fine," he repeated.

As he would later tell his story, those were his final words before he spotted it.

A gray shape on the horizon. An airplane, flying past the Statue of Liberty. The body of the United Airlines jet grew larger until he could see a red stripe on the fuselage. Then it banked and headed directly toward him.

Another one.

"Lord, you take over!" he remembers yelling, dropping under his metal desk.

At 9:02:54, the nose of the jetliner smashed directly into Mr. Praitnath's floor, about 130 feet from his desk. A fireball ignited. Steel furnishings and aluminum plane parts were torn into white-hot shrapnel. A blast wave hurled computers and desks through windows, and ripped out bundles of arcing electrical cables. Then the south tower seemed to stoop, swinging gradually toward the Hudson River, ferociously testing the steel skeleton before snapping back.

Through most of both towers, the staircases were tightly clustered, and in the north tower, they were all immediately severed or blocked by the blast. Along the impact zone of the south tower, floors 78 to 84, however, the stairs had to divert around heavy elevator machinery. So instead of running close to the building core, two of the stairways serving those floors were built closer to the perimeter. One of them, on the northwest side, survived. A report in USA Today this month also suggested that the surviving stairway might have been shielded by the machinery.

However the stairway survived, it made all the difference to Stanley Praitnath, who, huddled under his desk, could see a shiny aluminum piece of the plane, lodged in the remains of his door.

The plane, entering at a tilt, raked across six floors. Three flights up was the office of Euro Brokers, on the 84th floor. Most of the company's trading floor there was annihilated. Yet even there — at the bull's-eye of the airplane's impact — other people were alive: Robert Coll, Dave Vera, Ronald DiFrancesco and Kevin York, among others. Within minutes, they headed to the closest stairwell, led by Brian Clark, a fire warden on the 84th floor, who had his flashlight and whistle.

A fine powder mixed with light smoke floated through the stairwell. As they approached the 81st floor, Mr. Clark would recall, they met a slim man and a heavysset woman. "You can't go down," the woman screamed. "You got to go up. There is too much smoke and flame below."

This assessment changed everything. Hundreds of people came to a similar conclusion, but the smoke and the debris in the stairwell proved less of an obstacle than the fear of it. This very stairwell was the sole route out of the building, running from the top to the bottom of the south tower. Anyone who found this stairwell early enough could have walked to freedom.

This plain opportunity hardly read that way to the band of survivors who stood on the 81st floor landing, moments after the plane crash. They argued the alternatives, with Mr. Clark shining his flashlight into his colleagues' faces, asking each, "Up or down?" The debate was interrupted by shouts on the 81st floor.

"Help me! Help me!" Mr. Praitnath yelled. "I'm trapped. Don't leave me here!"

With no further discussion, the group in the stairs turned in different directions. As Mr. Clark recalls it, Mr. Coll, Mr. York and Mr. Vera headed up the stairs, along with the heavysset woman, the slim man and two others he knew from Euro Brokers but could not identify. Mr. York and Mr. Coll hooked arms to support the woman, Mr. Clark recalled. One of them said: "Come on, you can do it. We're in this together."

Mr. Clark and Mr. DiFrancesco headed toward the man yelling for help. Mr. Praitnath saw the flashlight beam and crawled toward it, over toppled desks and across fallen ceiling tiles. Minutes earlier, this had been Fuji Bank's loan department, employee lounge and computer room. Finally, he reached a damaged wall that separated him from the man with the flashlight.

From both sides, they ripped at the wall. A nail penetrated Mr. Praitnath's hand. He knocked it out against a hard surface in the darkness. Finally, the two men could see each other, but were still separated.

"You must jump," Mr. Clark told Mr. Praitnath, whose hand and left leg were now bleeding. "There is no other choice."

As Mr. Praitnath hopped up, Mr. Clark helped boost him over the obstacle. They ran to the stairwell and headed down. The steps were strewn with shattered wallboard. Flames licked in through cracks in the stairwell walls. Water from severed pipes poured down, forming a treacherous slurry.

They moved past the spot with the heavy smoke that the woman had warned Mr. Clark against. Perhaps the draft had shifted; maybe the smoke had not been all that bad to begin with. In any case, the stairs were clear and would be clear as late as 30 minutes after the south tower was hit.

Meanwhile, Mr. DiFrancesco took a detour in search of air, climbing about 10 floors, where he found the first group to go upstairs. They could not leave the stairwell; the doors would not open. Exhausted, in heavy smoke, people were lying down, Mr. DiFrancesco included. "Everyone else was starting to go to sleep," he said. Then, he recalled, he sat up, thinking, "I've got to see my wife and kids again." He ran down.

9:05

South Tower, 78th Floor, Elevator Sky Lobby, 54 minutes to collapse

Mary Jos cannot say for sure how long she was lying there, unconscious, on the floor of the sky lobby, outside the express elevator. Her first recollection of stirring is when she felt searing heat on her back and face. Maybe, she remembers thinking, she was on fire. Instinctively, she rolled over to smother the flames. She saw a blaze in the center of the room, and in the elevator shafts.

That was terrifying enough. Then, below the thick black smoke and through clouds of pulverized plaster, she gradually noticed something worse. The 78th floor sky lobby, which minutes before had been bustling with office workers unsure whether to leave the building or go back to work, was now filled with motionless bodies.

The ceilings, the walls, the windows, the sky lobby information kiosk, even the marble that graced the elevator banks - everything was smashed as the second hijacked plane dipped its left wingtip into the 78th floor.

In an instant, the witnesses say, they encountered a brilliant light, a blast of hot air and a shock wave that

knocked over everything. Lying amid the deathly silence, burned and bleeding, Mary Jos had a single thought: her husband. "I am not going to die," she said, remembering her words.

In the 16 minutes between attacks, those in the south tower scarcely had time to absorb the horrors they could see across the plaza and decide what to do. To map their choices about movements is to see the geography of life and death.

Before the second plane hit, survivors said, the mood in the sky lobby was awkward: relief at the announcements that their building was safer than walking on the street, and fear that it really wasn't. In these critical moments, people milled about, trying to decide. Be at trading desks for the opening of the market, or grab a cup of coffee downstairs? At Keefe, Bruyette & Woods, nearly the entire investment banking department left and survived. Nearly all the equities traders stayed and died.

One of them, Stephen Mulderry, spoke to his brother Peter, and described the blaze in the north tower he could see from a window. Still, the word had come from the building management that his tower was "secure" - and his soundless phone was blinking for his attention. "He said, 'I got to go - the lights are ringing and the market is going to open,'" Peter Mulderry recalled.

In the moments before the second impact, everyone in the 78th floor sky lobby was poised between going up or down. Kelly Reyher, who worked on the 100th floor at Aon Corporation, stepped into a local elevator headed up. He wanted to get his Palm Pilot, figuring it might be a while before he could return to his office. Judy Wein and Gigi Singer, also both of Aon, debated whether to go back and get their pocketbooks from their 103rd floor office. But Howard L. Kestenbaum, their colleague, told them to forget about it. He would give them carfare home.

As some office workers spoke nervously of the loved ones they were rushing to rejoin, there was even a bit of humor.

"I have a horse and two cats," Karen E. Hagerty, 34, joked, as she was squeezed out of an elevator spot.

At the instant of impact, a busy lobby of people - witness estimates range from 50 to 200 - was struck silent, dark, all but lifeless. For a few, survival came from having leaned into an alcove. Death could come from having stepped back from a crowded elevator door.

As Ms. Wein came to, she had her own battered body to deal with: her right arm was broken, three ribs were cracked and her right lung had been punctured. In other words, she was lucky. All around her were people with horrific injuries, dead or close to it. Ms. Wein yelled out for her boss, Mr. Kestenbaum. When she found him, she said, he was expressionless, motionless, silent. Ms. Hagerty, who had joked about the cats at home, showed no signs of life when a colleague, Ed Nicholls, saw her. And Richard Gabrielle, another Aon colleague, was pinned to the ground, his legs apparently broken by marble that had fallen on them.

Ms. Wein tried to move the stone. Mr. Gabrielle cried out from pain, she said, and told her to stop.

Gradually, those who could move, did. Ms. Wein found Vijayashanker Paramsothy and Ms. Singer, neither of whom had life-threatening injuries. Kelly Reyher, who had been on his way to get his Palm Pilot, managed to pry open the elevator doors with his arms and his briefcase. He crawled out of the burning car and found Donna Spira 50 feet away. Her arm fractured, her hair burned, Mrs. Spira could still walk.

A mysterious man appeared at one point, his mouth and nose covered with a red handkerchief. He was looking for a fire extinguisher. As Judy Wein recalls, he pointed to the stairs and made an announcement that saved lives: Anyone who can walk, get up and walk now. Anyone who can perhaps help others, find someone who needs help and then head down.

In groups of two and three, the survivors struggled to the stairs. A few flights down, they propped up debris blocking their way, leaving a small passageway to slip through.

A few minutes behind this group was Ling Young, who also survived the impact in the sky lobby. She, too, said she had been steered by the man in the red bandanna, hearing him call out: "This way to the stairs." He trailed her down the stairs. Ms. Young said she soon noticed that he was carrying a woman on his back. Once they reached clearer air, he put her down and went back up.

Others never left.

The people who escaped said Mr. Paramsothy, who had only been scraped, remained behind. Ms. Young said that Sankara Velamuri and Diane Urban, colleagues of Mrs. Jos from the State Department of Taxation and Finance, tried to help two more seriously injured friends, Dianne Gladstone and Yeshavant Tembe, both also state employees.

All five of these people would die.

Of the dozens of people waiting in the sky lobby when the second plane struck, 12 are known to have made it out alive.

9:35

North Tower, 104th Floor, Cantor Fitzgerald; 106th Floor, Windows on the World; 53 minutes to collapse

So urgent was the need for air that people piled four and five high in window after window, their upper bodies hanging out, 1,300 feet above the ground.

They were in an unforgiving place.

Elsewhere, two men, one of them shirtless, stood on the windowsills, leaning their bodies so far outside that they could peer around a big intervening column and see each other, an analysis of photographs and videos reveals.

On the 103rd floor, a man stared straight out a broken window toward the northwest, bracing himself against a window frame with one hand. He wrapped his other arm around a woman, seemingly to keep her from tumbling to the ground.

Behind the unbroken windows, the desperate had assembled. "About five floors from the top you have about 50 people with their faces pressed against the window trying to breathe," a police officer in a helicopter reported.

Now it was unmistakable. The office of Cantor Fitzgerald, and just above it, Windows on the World, would become the landmark for this doomed moment. Nearly 900 would die on floors 101 through 107.

In the restaurant, at least 70 people crowded near office windows at the northwest corner of the 106th floor, according to accounts they gave relatives and co-workers. "Everywhere else is smoked out," Stuart Lee, a Data Synapse vice president, e-mailed his office in Greenwich Village. "Currently an argument going on as whether we should break a window," Mr. Lee continued a few moments later. "Consensus is no for the time being."

Soon, though, a dozen people appeared through broken windows along the west face of the restaurant. Mr. Vogt, the general manager of Windows, said he could see them from the ground, silhouetted against the gray smoke that billowed out from his own office and others.

By now, the videotapes show, fires were rampaging through the impact floors, darting across the north face of the tower. Coils of smoke lashed the people braced around the broken windows.

In the northwest conference room on the 104th floor, Andrew Rosenblum and 50 other people temporarily managed to ward off the smoke and heat by plugging vents with jackets. "We smashed the computers into the windows to get some air," Mr. Rosenblum reported by cellphone to his golf partner, Barry Kornblum.

But there was no hiding.

As people began falling from above the conference room, Mr. Rosenblum broke his preternatural calm, his wife, Jill, recalled. In the midst of speaking to her, he suddenly interjected, without elaboration, "Oh my God."

9:38

South Tower, 97th Floor, Fiduciary Trust; 93rd Floor, Aon Corp.; 21 minutes to collapse

"Ed, be careful!" shouted Alayne Gentul, the director of human resources at Fiduciary Trust, as Edgar Emery slipped off the desk he had been standing on within the increasingly hot and smoky 97th floor of the south tower.

Mr. Emery, one of her office colleagues, had been trying to use his blazer to seal a ventilation duct that was belching smoke. To evacuate Fiduciary employees who worked on this floor, Mr. Emery and Mrs. Gentul had climbed seven floors from their own offices.

Now the two of them, and the six or so they were trying to save, were all in serious trouble.

As Mrs. Gentul spoke to her husband on the phone - he could overhear what was happening - Mr. Emery got up and spread the coat over the vent. Next, he swung a shoe at a sprinkler head, hoping to start the flow of water.

"The sprinklers aren't going on," Mrs. Gentul said to her husband, Jack Gentul, who listened in his office at the New Jersey Institute of Technology in Newark, where he is a dean. No one knew the plane had cut the water pipes.

"We don't know whether to stay or go," Mrs. Gentul told her husband. "I don't want to go down into a fire," she said.

Among the doomed, the phone calls, messages and witnesses make clear, were many people who had put themselves in harm's way by stopping to offer a hand to colleagues or strangers. Others acted with great tenderness when all else was lost.

Mrs. Gentul and Mr. Emery of Fiduciary, whose offices stretched from the 90th to the 97th floors, had made their own fateful decisions to help others.

When the first plane hit across the plaza, the fireball billowed across the western facade of the 90th floor, where Mr. Emery was in his office. "I felt the heat on my face," said Anne Foodim, a member of human resources who worked nearby.

Mr. Emery, known for steadiness, emerged, the lapels on his blue blazer flapping as he waved people out. "Come on, let's go," he said, escorting five employees into a stairwell, including Ms. Foodim, who recounted the events. They walked down 12 floors, reaching the 78th floor and the express elevator, with Mr. Emery giving encouragement.

"If you can finish chemo, then you can get down those steps," Mr. Emery told an exhausted Ms. Foodim, who had just completed a round of chemotherapy. When they finally reached a packed elevator on the 78th floor, Mr. Emery made sure everyone got aboard. He squeezed Ms. Foodim's shoulder and let the door close in front of him. Then he headed back up, joining Alayne Gentul.

Like Mr. Emery, Mrs. Gentul herded a group out before the second plane hit. A receptionist, Mona Dunn, saw her on the 90th floor where workers were debating when or if to leave. Mrs. Gentul instantly settled the question. "Go down and go down orderly," she said, indicating a stairway.

"It was like the teacher saying, 'It's O.K., go,'" Mrs. Dunn recalled.

Together, Mrs. Gentul and Mr. Emery went to evacuate six people on the 97th floor who had been working on a computer backup operation, Mrs. Gentul told her husband.

Mr. Emery was hunting for a stairwell on the 97th floor when he reached his wife, Elizabeth, by cellphone. The last thing Mrs. Emery heard before she lost the connection was Alayne Gentul screaming from somewhere very near Ed Emery, "Where's the stairs? Where's the stairs?"

Another phone call was under way nearby. Edmund McNally, director of technology for Fiduciary, called his wife, Liz, as the floor began buckling. Mr. McNally hastily recited his life insurance policies and employee bonus programs. "He said that I meant the world to him and he loved me," Mrs. McNally said, and they exchanged what they thought were their last goodbyes.

Then Mrs. McNally's phone rang again. Her husband sheepishly reported that he had booked them on a trip to Rome for her 40th birthday. "He said, 'Liz, you have to cancel that,'" Mrs. McNally said.

On the 93rd floor, Gregory Milanowycz, 25, an insurance broker for Aon, urged others to leave - some of them survived - but went back himself, after hearing the announcement. "Why did I listen to them - I shouldn't have," he moaned after his father, Joseph Milanowycz, called him. Now he was trapped. He asked his father to ask the Fire Department what he and 30 other people should do. His father said he passed word from a dispatcher to his son that they should stay low, and that firefighters were working their way up. Then, he says, he heard his son calling out to the others: "They are coming! My Dad's on the phone with them. They are coming. Everyone's got to get to the ground."

Even when the situation was most hopeless, the trapped people were still watching out for one another. On the 87th floor, a group of about 20 people from Keefe, Bruyette & Woods took refuge in a conference room belonging to the New York State Department of Taxation and Finance. During the final minutes, Eric Thorpe managed to get a call to his wife, Linda Perry Thorpe, who was waiting to hear from him at a neighbor's apartment. No one spoke from the tower. Instead, Ms. Thorpe and the neighbor listened to the ambient noise.

"I hear everything in the background," Mrs. Thorpe recalled, including, she said, gasping. "Someone asks, 'Where is the fire extinguisher?' Someone else says, 'It already got thrown out the window.' I heard a voice asking, 'Is anybody unconscious?' Some of them sounded calm.

"One man went berserk, screaming. I couldn't understand that he was saying anything. He just lost it.

"I heard another person soothing him, saying, 'It's O.K., it'll be O.K.'"

9:45

South Tower, 105th Floor, 14 minutes to collapse

Minutes after the second plane struck the south tower, Roko Camaj called home to report that a throng had gathered near the roof, according to his son, Vinny Camaj. "I'm on the 105th floor," Roko Camaj told his

wife. "There's at least 200 people here."

The promise of sanctuary on the roof had seemed so logical, so irresistible, that scores of people chased their fates up the stairs. They were blind alleys.

Mr. Camaj, a window washer who had been featured in a children's book, carried the key to the roof, his son said. That key alone would not open its door: a buzzer also had to be pressed by the security staff in a command post on the 22nd floor. And the post had been damaged and evacuated.

The roof seemed like an obvious choice - and the only one - to people on the upper floors. A police helicopter had evacuated people from the roof of the north tower in February 1993, after a terrorist bomb exploded in the basement. For a variety of reasons, though, the Port Authority, with the agreement of the Fire Department, discouraged helicopters as part of its evacuation plan. Police commanders ruled out a rooftop rescue that morning.

Whatever the wisdom of the policy, it came as a shock to many people trapped in the towers, according to their families and summaries of 911 calls. Only a few realized that Stairway A could take them down to safety, and that information never circled back upstairs from those escaping or from the authorities. Frank Doyle, a trader at Keefe, Bruyette & Woods, called his wife, Kimmy Chedell, to remind her of his love for her and the children. She recalls he also said: "I've gone up to the roof and the rooftop doors are locked. You need to call 911 and tell them we're trapped."

The 105th floor was the last stop for many of those who had climbed toward the roof, a crowd dominated by Aon employees. At 9:27, a man called 911 and said a group was in the north conference room on the 105th floor. At 9:32, a man on the 105th floor called 911 and asked that the roof be opened. At 9:38, Kevin Cosgrove, a fire warden for Aon, called 911, then rang his brother.

Sean Rooney called Beverly Eckert. They had met at a high school dance in Buffalo, when they were both 16. They had just turned 50 together.

He had tried to go down but was stymied, then had climbed 30 floors or so to the locked roof. Now he wanted to plot a way out, so he had his wife describe the fire's location from the TV pictures. He could not fathom why the roof was locked, she said. She urged him to try again while she dialed 911 on another line. He put the phone down, then returned minutes later, saying the roof door would not budge. He had pounded on it.

"He was worried about the flames," Ms. Eckert recalled. "I kept telling him they weren't anywhere near him. He said, but the windows were hot. His breathing was becoming more labored."

Ceilings were caving in. Floors were buckling. Phone calls were being cut off. He was alone in a room filling with smoke. They said goodbye.

"He was telling me he loved me."

"Then you could hear the loud explosion."

10:00

North Tower, 92nd Floor, Carr Futures, 28 minutes to collapse

"Mom," asked Jeffrey Nussbaum. "What was that explosion?"

Twenty miles away in Oceanside, N.Y., Arline Nussbaum could see on television what her son could not from 50 yards away. She recalls their last words:

"The other tower just went down," Mrs. Nussbaum said.

"Oh my God," her son said. "I love you."

Then the phone went dead.

The north tower, which had been hit 16 minutes before the south, was still standing. It was dying, more slowly, but just as surely. The calls were dwindling. The number of people falling from windows accelerated.

That morning, the office of Carr Futures on the 92nd floor was unusually busy. A total of 68 men and women were on the floor that morning, 67 of them associated with Carr.

About two dozen brokers for Carr's parent company had been called to a special 8 a.m. meeting. When the building sprang back and forth like a car antenna, door frames twisted and jammed shut, trapping a number of them in a conference room.

The remaining Carr employees, about 40, migrated to a large, unfinished space along the west side. Jeffrey Nussbaum called his mother, and shared his cellphone with Andy Friedman. In all, the Carr families have counted 31 calls from the people they lost, according to Joan Dincuff, whose son, Christopher, died that morning.

Carr was two floors below the impact, and everyone there had survived it; yet they could not get out. Between 10:05 and 10:25, videos show, fire spread westward across the 92nd floor's north face, bearing down on their western refuge.

At 10:18, Tom McGinnis, one of the traders summoned to the special meeting, reached his wife, Iliana McGinnis. The words are stitched into her memory.

"This looks really, really bad," he said.

"I know," said Mrs. McGinnis, who had been hoping that his meeting had broken up before the airplane hit. "This is bad for the country; it looks like World War III."

Something in the tone of her husband's answer alarmed Mrs. McGinnis.

"Are you O.K., yes or no?" she demanded.

"We're on the 92nd floor in a room we can't get out of," Mr. McGinnis said.

"Who's with you?" she asked. Mr. McGinnis mentioned three old friends - Joey Holland, Brendan Dolan and Elkin Yuen.

"I love you," Mr. McGinnis said. "Take care of Caitlin." Mrs. McGinnis was not ready to hear a farewell.

"Don't lose your cool," she urged. "You guys are so tough, you're resourceful. You guys are going to get out of there."

"You don't understand," Mr. McGinnis said. "There are people jumping from the floors above us."

It was 10:25. The fire raged along the west side of the 92nd floor. People fell from windows. Mr. McGinnis again told her he loved her and their daughter, Caitlin.

"Don't hang up," Mrs. McGinnis pleaded.

"I got to get down on the floor," Mr. McGinnis said.

With that, the phone connection faded out.

It was 10:26, two minutes before the tower crumbled. The World Trade Center had fallen silent.