Introduction Part II: Matter against Memory
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The new millennium started with a bizarre legal battle. The David Irving trial, which unfolded at the English High Court of Justice between January and April 2000, involved one of the most intense presentations and aggressive cross-examinations of architectural evidence as part of a legal process on record. In 1996, seeking publicity for his cause, David Irving sued an American writer and her publisher for libel, for calling him "the most dangerous of all holocaust deniers and a falsifier of history." This debate was one of the starting points for the trajectory of thought practice that lead to our conception of forensic architecture. It also demonstrates the relations between material investigation and the politics of negation that are central to this practice.

On the tenth and eleventh days of the trial, January 26 and 27, the legal debate revolved largely around the architecture of one of the gas chambers—an underground structure that was part of Crematorium II in Auschwitz-Birkenau. Irving, representing himself, focused his cross-examination of the expert witness facing him—historian Robert Jan van Pelt—on the existence of four small holes in the remains of the ceiling of the concrete ruin of the structure.

The seven-hundred-page expert report van Pelt prepared on behalf of the defense is one of the most important precedents for the practice of forensic architecture.

According to the few surviving witnesses, both perpetrators and victims, it was through these holes that the contents of canisters of cyanide poison known as Zyklon B were introduced into a room packed with thousands of people. On the tenth day of the trial, Irving initiated the following exchange with van Pelt.

IRVING: You do accept, do you not, that the whole of the story of the 500,000 people killed in that chamber rises or falls, rests or falls on the existence of those holes in that roof?

VAN PELT: No.
We only have the eyewitness evidence.

I disagree with that. The whole story rises and falls on the evidence that this room was a gas chamber, which is a slightly different issue. ¹

On the following day, after going through several other architectural and functional details, Judge Charles Gray addressed van Pelt directly: “You have not seen any holes in the roof, have you—when you went there?” Van Pelt had to answer in the negative. Indeed, van Pelt’s expert report, submitted to the court before the session, conceded that “these four small holes […] cannot be observed in the ruined remains of the concrete slab,” but explained that verification was impossible, due to the state of the ruin. ² He also suggested that it would have been logical for the Nazis to backfill these holes with concrete before they retreated in January 1945. Van Pelt explained the absence of evidence as the result of the Nazis’ attempt to remove and destroy all incriminating traces.

Negation compounds two forms of violence: the violence against people and things, and the violence against the evidence that this violence did take place. At the end of his cross-examination Irving offered van Pelt nothing less than a deal:

And you do accept, do you not, that if you were to go to Auschwitz the day after tomorrow with a trowel and clean away the gravel and find a reinforced concrete hole where we anticipate it would be from your drawings, this would make an open and shut case and I would happily abandon my action immediately?

I think I cannot comment on this. I am an expert on Auschwitz and not on the way you want to run your case.

There is my offer. I would say that that would drive such a hole through my case that I would have no possible chance of defending it any further. ⁶

According to Irving’s logic, nonexistent holes in the roof would constitute holes in the case. Without evidence for these holes, the room could not have functioned as reported. The witnesses, according to Irving, were deluded or lying. If this room was not a gas chamber, Auschwitz could not have been a death camp, Irving’s logic continued. Without Auschwitz as the functional, and later the symbolic, center of the extermination process, the holocaust, as a premeditated industrialized policy of racially motivated killing, must never have happened. This was, in short, the essence of his claim to have been libeled when called a denier. A similar linear logic was at work in the devilish formulation of Robert Faurisson, the negationists’ puppet-master: “no holes, no holocaust.” ⁷ Irving conjured the holes as the barrel of the gun and claimed that it was impossible to condemn the Nazis (and him) without them.

While Irving’s political logic was content to stop with proclaiming the innocence of the Nazis, the “lies of the survivors,” and the “fallacy” on which the state of Israel was established, a more bizarre phenomenon is represented by those revolutionary groups who have, since the 1980s, supported those denying the holocaust. ⁴ They see the narrative of the holocaust, expounded by museums, documentary and feature films, university programs, and archives, as forming the cultural and intellectual basis on which the liberal-democratic-capitalist order rests. Without the holocaust, the entire apparatus of Western democracy post-World War II—the Fourth Geneva Convention, the 1948 Universal Declaration of Human Rights, the concept of genocide, the United Nations as a system aspiring to manage conflict, maintain international order, and undertake peacekeeping, even the ethical basis for American domination, perceived, in its own eyes, as the bulwark against an “evil” modeled on the Nazis—would stand on nothing. The holocaust, they have argued, stands in the way of a global revolution precisely because, through its association with the category of Totalitarianism, it was mobilized in order to equate Nazism with Communism and suggest that “evil” lurks behind every attempt at radical political transformation or liberation struggle. Instead of confronting the way in which the use of the holocaust shaped the politics of the present as that of the “lesser evil,” these groups have sought to reinvent history, thus discrediting their claims. ⁹

Staking the entire case of the holocaust on the existence or nonexistence of holes in a fragmented and almost pulverized concrete slab may have the appearance of a desperate act, but it seems that during the 1990s for holocaust deniers the holes had begun to occupy a place analogous to that of stigmata. The use of material evidence (in this case the use of the absence of crucial material evidence) to contradict the power of survivors’ testimony was by then the established method of holocaust deniers. Witness testimony, Faurisson elsewhere claimed, produced “too much metaphysics, not enough materialism.” ¹⁰ The evidence presented was deemed too indirect, at best circumstantial, an assembled collection of disparate data, none of which was conclusive and all of which lacked the power of the “thing in itself.”

Paradoxically, a similar approach in 1983 helped uncover a truth and brought Irving some fame for being the first to call the “Hitler Diaries” fake, after several of its pages had been authenticated by distinguished historians concentrating their analysis on issues of style, voice, and historical fact. From the floor of a pressroom at the headquarters of Stern magazine in Hamburg, into which he was able to sneak, Irving shouted “check the ink,” before being thrown out. ¹¹ The ink was later dated to the 1950s. It was ink as the material carrier of words that was mobilized against the very words written with it.

In the 1996 trial, however, it was not ink but architecture—or more precisely, the absence of a particular piece of architectural evidence—that Irving sought to mobilize against witnesses’ memories. Given that a hole can be understood as “nonmatter,” Irving was effectively pointing to the
absence of an absence. Irving regarded this double absence as functioning in the manner of what legal theory refers to as "negative evidence"—an absence of material evidence that is evidence in itself. "Negative evidence" can, potentially, be used to dismantle complex constructions and networks of knowledge. This was the way it was employed here—as an attempt to dismantle the assemblage of evidence for extermination. For van Pelt the "presence" of "negative evidence" demonstrated the very opposite: that the Nazis were engaged in holocaust denial—that they were in fact the first holocaust deniers—well before people like Irving took up this task. In any case, the absence of evidence was certainly not evidence of absence.

Irving also based his case on the claim that none of the few surviving representations of the roof showed either holes or the shafts to which they were connected. Where the shafts did appear, as in one famous image (see fig. 4. in "The Architecture of Negation" in this volume), he claimed they were insulating rolls standing on the roof.12 It was hard to confront this stubborn logic. Van Pelt patiently explained that none of the drawings of the gas chamber showed the holes, because the architects were not allowed to draw in these pieces of incriminating evidence.

An aerial photograph shot by an Allied reconnaissance mission aiming to document a nearby petrochemical factory on August 25, 1944, was one of the very few documents to have showed the roof of Crematorium II. A single 35 mm negative from an automated sequence of photographs shot along the flight path of a Mosquito reconnaissance plane captured an area about the size of five by three miles. This photograph included the Birkenau camp, and the roof in question was captured at one of the edges of the image, close to the area of the lens's parallax distortion. When enlarged, four blurry marks could be seen on the roof. The image, along with a few other aerial photographs from the spring and summer of 1944, were discovered and annotated only in 1978 by two CIA image analysts. Harun Farocki's 1988 film Images of the World and the Inscription of War presented blowups of these photos. The blurry marks on the roof were annotated by the CIA as "vents."13 Irving claimed that the marks could not be the holes in the roof because they were too large and their form was undefined, and insinuated that the negative had been tampered with by the addition of brush strokes.

Van Pelt presented a report by Nevin Bryant, supervisor of image processing applications at NASA’s Jet Propulsion Laboratory in Pasadena and one of the world leaders in the analysis of aerial and satellite images. While the CIA analysts enlarged the negatives in an analogue fashion, Bryant used digital technologies to revisit the issue of the photo’s evidentiary value. After enhancing it with software programs used by NASA for satellite image interpretation, Bryant was able to peer into the "molecular composition of the film." At this magnification he could confirm that the blurs on the aerial images were caused by the effects of the chemical process of image capture on the surface of the film, and suggested that they might be the result of an interference pattern or a moiré effect of the kind that tends to develop when the size of a single silver salt particle in the emulsion of the film is larger than the element it is exposed to capture, in this case the size of the hole.14

When the size of the hole approximates to the size of a silver salt grain, it has entered the threshold of detectability, a condition significant in the forensic evaluation of photographs. Within this condition the materiality of the object represented—the roof or the hole—and the materiality of the surface representing it—the surface of the negative—must come simultaneously under intense scrutiny. Both the roof and the negative were simultaneously examined as images and as material things, the former made of concrete and the latter of silver salts.15 One materiality was reflected in another. Just like a negative, the concrete roof was a recording device, a sensor imprinted not with light but with historical processes. If forensic architecture emerged at the Irving trial as a new kind of archaeology, it was not an archaeology of material excavation but rather an archaeology of the physicality of the media by which it was captured.

As the cross-examination of van Pelt went on, it became clear that against the singular nature of Irving’s negative evidence, van Pelt had woven an increasingly complex and convincing network of converging evidence. This included the interpretation of architectural plans drawn from the archive of Auschwitz Central Construction Office, aerial photography, letters, diaries, logbooks, testimonies, and groundlevel photographs—which together produced a narrative that could recalibrate in relation to any new discovery and finding that was presented. Anyone interested in learning more about this analysis should read one of van Pelt’s many books about Auschwitz, which overwhelmingly made the case for its history as an extermination camp, in addition to the interview we conducted for this collection.16

Irving lost the case, and our aim is not to reopen it. The significance of this trial was not in challenging the story of the holocaust but rather in the fact that it introduced new methodologies and epistemic frames—architecture, its media representations, their materiality, and their threshold of visibility—into the historical method of World War II research, and from there into the analysis and investigation of other conflicts, establishing a set of important concepts for the practice of forensic architecture.
Environmental Negation

Coincidentally or not, when climate change denial emerged as a significant force in the mid-1980s, around the same time that Holocaust denial became prominent as a pseudoscientific discourse, its first battle was around another hole. Climate change deniers were of course obsessed with refuting the existence of the hole in the ozone layer—a protective ceiling that otherwise absorbs the major part of the sun's ultraviolet radiation. The hole, generated by CFC emissions, was discovered and negated in close succession in the second half of the 1980s. Just like the holes in the ceiling of Crematorium II, it is through the "Antarctic stratospheric ozone depletion zone" that a lethal substance—in this case radiation—may reach the surface of the earth and threaten to destroy most forms of life on it. The entire earth would thus become a toxic space.

"Climate change skeptics," as deniers prefer to refer to themselves, supported by companies responsible for aerosol emissions, mobilized to claim that the hole in the ozone layer did not exist, that the sequence of operations that had "confirmed" its existence—invoking sensing, processing, and modeling—was prone to error and manipulation and that the image created was but one possible scenario amongst others.

A climate model is a mathematical construction conceived to predict probable future scenarios based on past data, but it is also an image, a visual representation in a time based cartography drawn on various scales. While a photograph documents events past, the model produces image representations of possible futures; however, in an analogous manner to a photograph, the model has a resolution, created by the distribution of climate data sensors placed across the surface of the earth, in oceans, and in the different layers of the atmosphere. Because the sensors are not evenly spaced apart, the model has variable resolutions across its extent: it is denser in some parts, where microconditions produced by, for example, cities, islands, or lakes exercise stronger effects on the environment; and less dense in others, such as oceans and also, of course, Antarctica, which was, until the automatic weather station construction spree of the 1990s, of such low sensor resolution that it could indeed be said to be at the threshold of detectability of the model.

Climate change skeptics demanded material proof rather than mathematical constructions. A 1995 Congressional session of the Subcommittee for Energy and Environment of the US Congress' Committee on Science ominously titled "Stratospheric Ozone: Myths and Realities" heard the following statement by Vernon J. Ehlers, the Republican representative of Michigan, a state with an abundance of polluting industries. In a manner typical of climate change skeptics, Ehlers claimed that climate sciences are "trans-scientific." The claims for the ozone hole "are scientific in their origin" he said, "but they're in a sense beyond science because we cannot do the experiments. We cannot go up and create an ozone hole and see what the impact is. And so we can merely observe, model, predict. Then observe again, model again, predict again. This results in large uncertainties in the scientific results. And the difficulty is that, as a result, you will find scientists on both sides of issues...” In fact there weren't scientists on both sides of this issue, but presenting loony theories as an equal position in a legitimate debate was always the aim of negationists.

It is true, as Seth Denizen has confirmed, that the hole in the ozone layer should not be understood as a static feature in the way a hole in solid concrete might be. The contours of the ozone hole "took shape" only when the scientists "created" them by filtering their data through selective categories and then used this cross section of data to create an image. The raw data that the scientists initially recorded, Denizen explains, "even once it was plotted, still did not appear as a hole: it was scattered, showing no definite trend." Representing ozone levels only during southern hemisphere spring-times was the only way to illustrate the steady decrease in the ozone levels in an area of the stratosphere the size of North America. But this seasonal phenomenon need not necessarily have been described as a "hole." The hole was constructed as a concept and as an image in order to call for action. The choice of the word and the way it was drawn, as Denizen describes it, was intentional, a master-stroke of forensic aesthetics. Meteorologist Jonathan Shanklin, who, in 1985, together with two other scientists from the British Antarctic Survey, Joe Farman and Brian G. Gardiner, discovered the seasonal thinning in the ozone layer over Antarctica, seems to have since been made aware of the power of the "hole" metaphor: "In retrospect, that was a really good thing to call it" he recalled years later, "because an ozone hole must be bad. Almost automatically, it meant that people wanted something to be done about it. The hole had to be filled in..."

In the same way that the proclamation of the hole was used to mobilize action, its negation became a prize. There must be something about holes that attracts negationists! It might be the linear relation between holes in matter and holes in an argument, a relation highlighted in Irving's words to the judge presiding over his case: "I am going to keep on driving holes in this case until your Lordship appreciates the significance of the holes, or their absence." But a hole is not simply an absence. It is more, not less, information than the matter that surrounds it, be that reinforced concrete or ozone-rich atmosphere. This is because, as we have seen above, and shall explore further in what follows, a hole is information both with regard to the materiality it perforates (concrete/ozone) and to the shape of its absence. It is of course also information in regard to the modes of its capture and representation (aerial photograph/mathematical model).

We shall plunge deeper into our "theory of holes" after looking at other implications of modeling the future.
Predictive Forensics

Predictive forensics is a mode of investigation concerned with evidence of a destruction that has not yet taken place. The evidence is in the future and the future, as we have seen, is the domain of the model. Predictive forensics is now commonly employed in the context of two major and seemingly unrelated fields—environmental science, dealing with the risks associated with planetary-scale climate change, and security analysis, concerned with predicting the risks associated with what used to be known as “the Global War on Terror.”

These two fields of practice are of course very different, yet they have some aspects in common. They both seek to manage risk in relation to global but nonlocalized dangers whose containment depends on the preemptive transformation of entire ways of life and the entire depth of space. The securitization of cities and infrastructure is currently the defining feature of contemporary urban design as well as urban life, while radical changes in modes of life on every scale are necessary to mitigate the effects of climate change. While in relation to climate change, too little is actually being done because the industrial lobbies are too strong, in relation to the War on Terror, state mobilization is in a state of overkill, for precisely the same reason.

One of the goals of the current security doctrine is the prediction of risk and the preemptive disruption of its operational networks. One of the prevalent modes of this security management involves “preemptive targeted assassinations”—the killing of individuals whose existence is believed to increase the overall levels of risk. The most common technique currently employed for carrying out targeted assassinations, in some parts of the world, is the use of missiles fired from drones. Many critics consider this campaign of extra-judicial executions to be, as it name suggests, illegal. They are mostly right. Various aspects of these strikes violate different tenets of national laws and International Humanitarian Law. However, the relation of drone strikes to the laws of war is more complex. In fact, when interpreted by state lawyers writing regulations for military and other executive state branches, it is remarkable just how much violence the laws of war enable.

One of the main regulatory principles for targeted assassinations involves a curious temporal inversion. Judicial opinions commissioned by states most frequently employing drones for assassinations—the US and Israel—have authorized their militaries to exercise targeted killing in relation to “imminent threats of violent attack.” According to their interpretation of the laws of war, people may be killed not for crimes they have committed in the past—retribution in such cases must be sought through criminal proceedings, requiring states to catch and detain suspects and bring them to trial (a practice both Israel and the US are often reluctant to engage in)—but rather for the attacks these people will have committed in the future. What trace does violence that has not yet happened leave “in front”? Predictive forensics—the futurology of contemporary warfare—looks for such traces in the analysis of patterns of behavior and movement in space. It is most commonly frontier zones, areas outside of sovereign control, that are the spaces in which state killing undergoes this type of temporal inversion from dealing with past crimes to addressing future threats.

In these zones, “signature killings” are based on calculations that are not unlike those used in the technical analysis of stock prices, which attempt to predict the future on the basis of patterns of past behavior. With these and related techniques, the contemporary battlefield starts to resemble a field of calculations constituted of risk analysis, pattern recognition, proportionality calculations (how many civilians are likely to die in proportion to the scale or significance of a military target) and, finally, mission assessments. But this economy, just like the financial one on which it is based, has fallen into crisis. Similar to financial derivatives that were invented to mitigate risk but continuously cause it to proliferate—as Gerald Nestler’s essay in this book makes clear—military attacks designed to reduce risk end up multiplying it. We must therefore be wary of the risks of risk mitigation practices themselves.

Drone Frontiers

Drone warfare does not solely rely on technologies of navigation, communication, vision, and munitions delivery. It also depends upon a set of juridical, political, and territorial conditions, which make the logic of the drone campaign far more diffuse than that of a straight line between aircraft and target. The areas currently most intensively under attack by drones—North Waziristan, Gaza, and the remote areas of Yemen and Somalia—are frontier regions. Each of these frontiers has its particular historical, political, and territorial characteristics, each is subject to a different juridical and sovereign arrangement, but all are defined (by their assailants) as areas that are to a lesser or greater degree, outside the effective jurisdiction or control of the central government of the state in which they exist. Alleging lack of effective control on the ground, and with it the impossibility of arresting suspects, is what legally enables assassinations. The contemporary frontier is however not only a territorial and a legal condition, it is also a visual one. This is most clearly expressed in Waziristan, the southern part of a region known as the Federally Administered Tribal Areas (FATA). FATA was established as an exceptional zone during the time of the British Raj. The area is now within the borders of the Pakistani state, but state law and effective state control are hard to exercise. The area is largely self-regulated and attempts by the state to exercise control often lead to violent clashes. Exits from and entries to this zone are permitted only to residents and the military. Informal regulations, enforced by both the military and militants, also prevent the bringing in or taking out of electronic paraphernalia including navigation equipment, mobile phones, and cameras. The consequence of
the media siege is that very few images of the damage caused by drone strikes as well as very few eyewitness and survivors’ testimonies are available outside of these regions. Together with degrees of legal exception and territorial isolation, this media blackout is an enabling condition of drone warfare. In his essay, “Persistent Exception: Pakistani Law and the Drone War,” Jacob Burns shows how the exceptional status of FATA has been used in the campaign of drone warfare there, while allowing the US to deny the very existence of the campaign. He shows how in the low years of the campaign Pakistani and US sources misleadingly claimed that reported casualties of drone strikes had in fact died in “bomb making accidents.” Other zones intensively targeted by drone campaigns, such as the rural areas of Yemen and Somalia, are also outside of effective sovereign control, and are similarly hard for nonresident to approach. 19

The ability to hide and deny a drone strike is not an insignificant side effect of this technology, but a central part of a campaign that relies to a great extent on secrecy and deniability. The violence inflicted by drone warfare is thus typically compounded by the perpetrators’ negation: the violence against people and things redoubled by violence against the evidence that violence has taken place. The media siege limiting documentation and testimonies from the ground is effective because the only other available photographic perspective—that of commercial and publically available satellite images—is of a resolution in which the damage caused by a drone strike is hardly visible. This has to do not only with the technical resolution of satellite imagery, and the laws that limit it, but with the physical dimension of the architectural damage that these strikes bring about. It is the interaction between these conditions that is important.

Drone missiles of the kind used to target buildings and interior rooms within them are often equipped with a “delay fuse.” The few milliseconds between impact and detonation allow the missile to penetrate through a roof and spray its load—hundreds of lethal steel fragments—inside the room (rather than detonating upon impact with the roof and expending the blast force outside). These fragments kill or wound upon contact but usually leave the structure intact. Seen from above, the small hole in the roof is the only visible trace that indicates that the room under it has become an execution chamber. Once more, the forensic problem is that of identifying and imaging a hole in a roof!

The diameter of a hellfire missile—one of the most common types fired by drones—is about 18 cm; other missile sizes do not vary by much. The size of the hole a missile leaves in a roof depends of course on several other factors, such as its material and

structure, but most are smaller than the 50 cm square that is the size of a single pixel in the resolution to which publically available satellite images are degraded. 20 The hole is, once again, at the threshold of visibility.

When the figure dissolves into the pixelated ground of the image, it is the conditions that degrade the image, or keep it at a lower resolution, that should be looked at. The pixilation of publically available satellite images is not the result of visual or optical constraints. Rather they are degraded following legal regulations and directives. 21 The resolution of 50 cm/pixel (in which the size of a pixel is half a meter by half a meter) has been chosen as the threshold of visibility because it is aligned with the dimension of the human body. Pixels are monotone surfaces. Their color is determined as an average of all frequencies that the camera sensor detects at the level of the pixel. Half a meter square is the frame within which the human body fits when seen from above. The size of the pixel is designed to mask the body and make it disappear. This is a useful resolution for satellite image providers because they can avoid the risk of privacy infringement lawsuits when recording people on private rooftops or terraces, for example. But the regulation has also a security rationale.

Not only do important details of strategic sites get camouflaged by the fifty centimeter rule in Israel and the Palestinian territories it occupies. An amendment to the US Land Remote Sensing Policy Act, which sets the permitted resolution of the US optical satellites (which currently dominate the market), dictates that these areas—and thus the violations undertaken in them—are shown in a resolution of one meter per pixel, in which a car is made of two pixels and a roof, another common target, is depicted by between 9 and 16 pixels. 22 This snow screen placed over Israel’s actions contributed to Turkey’s decision, after its conflict with Israel over the Gaza Flotilla—discussed by Maayan Amir in this volume as a “conflict over images and representation”—to send its own image satellite into space and make publically available 50 cm/pixel images of Israel, and this despite the fact that the satellite technology includes Israeli-made optics.

These specifications have direct implications for the documenting of drone attacks. Although at a resolution of 50 cm the general features of individual buildings can be identified, a hole in a roof—the signature of a drone strike—might appear as nothing more than a slight color variation,
a single darker pixel perhaps, in the pixel composition of the image. Even if satellite images close to the time before and after an attack could be obtained, very little difference would be noticed.

The 50 cm²/pixel satellite imagery thus poses a digital version of the material problem presented by the aerial photographs in the Irving trial (and to some extent by the problem of imaging the hole in the ozone). The historical situations are very different: attempting to exterminate an entire people in gas chambers has nothing in common with a secret and largely illegal assassination war conducted by the US in densely populated civilian areas. Nevertheless, in both these cases, the hole in the roof is the indication that the room under it was a site of execution, and in all these cases the evidence—a hole—is at the threshold of detectability of the images in which they are captured or represented.

We do not know the precise optical specifications of contemporary drone vision; what we do know from the testimony of former drone operators is that people could be seen but not positively identified, and that spades could be mistaken for guns. But identifying the human body is the very purpose of drone vision, whose function is ultimately the targeting of individuals. Drone warfare is about the human figure, and this is, as we have seen, precisely the opposite of what publically available satellite images are designed to offer. It seems that the trajectory of research traversed by Forensic Architecture has led back to the individual figure. Drone strikes are executed at a significantly higher resolution than the one at which the damage they create can be captured in satellite photographs. This fact inverts one of the foundational principles of forensics, namely that the crime’s investigator should be able to see more, using better optics or in better resolution, than the perpetrators of the crime. This inversion is derived from a more fundamental one: usually it is state agencies that investigate individuals or criminal organizations, which is why the better resources and optics are on the side of the investigators. In our case, however, it is state agencies that do the killings and independent organizations the forensics. The differential in knowledge, embodied in the gap between the resolution in which attacks are undertaken and the resolution at which they can be investigated, is the space of denial.

This manipulation of the field of vision enables a form of denial that is different from the forms presented earlier in this essay. To say: “this is untrue,” or “this did not happen,” or “this will not happen” is to add information to the public domain. The formulation that the US employs—officially sanctioned as the “Glomar response”—is a form of denial that aims to add no information whatsoever to the public domain. Under its terms, US state agencies are authorized to “neither confirm nor deny the existence or nonexistence” of documents requested under the Freedom of Information Act, and thus to “neither confirm nor deny” the existence—or nonexistence—of a secret war of assassination in Pakistan. But “glomarization” is also an intervention in the field of vision: when the traces of destruction are too small to be represented in the resolution of publically available satellite images, it is the satellite image itself that can neither confirm nor deny the existence or nonexistence of, for example, holes in roofs that would otherwise constitute evidence of state sanctioned violence. Chris Woods, in an essay in this volume, explores the absurd logic of hiding a known secret. In this context, denial functions as a manifestation of the power of the state to inflict violence and to deny its consequences. But the glomarization of drone warfare is not simply a rhetorical act sanctioned by executive orders; it is made possible by the production of a territorial, juridical, and visual reality—the formative conditions of the contemporary frontier.

**Return to the Witness**

Forensic Architecture (a team including Susan Schuppli as coordinator, Jacob Burns, Steffen Kremer, Francesco Segrebondi, Chris Cobb-Smith, Reiner Beelitz, Samir Harb, and Blake Fisher in collaboration with Situ Research) has been involved, together with and on behalf of various organizations, including the UN Special Rapporteur for Human Rights, in trying to gather architectural evidence for several drone strikes in Pakistan, Yemen, and Gaza. Without the possibility of traveling to the sites of the strikes, and with the images available to us degraded to a considerably lower resolution than those in the archives of the state agencies pursuing this campaign, we turned to witness testimonies. This was not simply a return to the aerial dimension of victim testimonies, as conceptualized during the “era of the witness”: rather, the mode of engagement with testimonies that follows the “forensic turn” involves their enhancement and entanglement with different techniques and technologies of interpretation, most of them spatial.

The testimonies we obtained are reproduced in the drone investigation section of this book. Here, I would like to present some reflections in relation to two of the five cases we have investigated. The first is an investigation based upon an aural deposition of a survivor of a drone strike and the other is based on the interpretation of a video testimony shot using a handheld apparatus (most likely a mobile phone) in the aftermath of another strike. Both these testimonies were delivered in relation to strikes in FATa, and both were ruptured or incomplete. The memory of the witness was interrupted by the subjective experience of extreme violence while the video testimony registered the rushed movements of a videographer who felt himself in danger. Both witness and the video file had to make a perilous path across the siege lines of Waziristan before the testimony they recorded could be publically disseminated.

The witness was a German woman who was in her home in Mir Ali, North Waziristan when it was hit by a strike in October 2010 that killed five people. After the attack, she made her way back to Germany. There she
delivered her testimony to a human rights organization and in the media, but some of the details of the attack were obscured from her memory. Based on her step-by-step instructions, we constructed a detailed computer model of her house that included all rooms, furniture and objects she could remember.

The process of model building was instructive. Through it, the witness recalled previously forgotten details. Many architectural details brought back fragments of memory from the life in this house and also from the strike itself. When the digital model was complete, we rendered it in such a way that we could undertake a virtual walk through the reconstruction twenty-four hours before and after the strike. Walking within the virtual model, the witness could "return" to the space and time of the strike, recollecting and recounting some of the realities of life and death under drones from the previously rarely available perspective of its victims.

Elements encountered in this reconstruction included children’s toys and a child’s walker in the open courtyard—which one might have thought would indicate to a drone operator that children were on the premises. There was also, significantly, a fan, to which I shall return later.

Unlike in our other investigations, here architecture did not figure materially as evidence. We had no ruins to study, measure and on which to base a reconstruction; rather, we reconstructed the architecture out of testimony. We used the digital model of the house as a way of helping enhance and organize the memory of a violent event.

This investigation drew its inspiration from what historian Frances Yates called the “art of memory.” In her magnum opus about the classical and medieval tradition of mnemonic techniques, Yates emphasized the relationship between memory, architecture, and destruction. The invention of the art of memory was attributed by Cicero and others to the Greek poet Simonides: he had just walked out of a banquet hall full of people when the roof collapsed, killing everyone inside. The bodies could not be identified, but Simonides was able to reconstruct the flow of conversation between the guests around the table and thus remember where each guest had been sitting and identify the bodies, which could then be returned to their families for burial. The mnemonic techniques of the art of memory, attributed to this experience, have since reserved a special place for architecture as a medium for establishing relations between people, places and things.

The technique, made famous by the rhetoricians and orators of antiquity like Cicero and Quintilian, advised orators tasked with remembering long and complex speeches to commit the spatial arrangement of known buildings to their memory or to mentally construct new ones. Every room in these buildings was to be furnished with objects relating to the issues that the orator needed to bring up—a fountain (perhaps a naval battle), a dagger (a murder), a bed (perhaps a love affair). In delivering the speech, the speaker would imagine walking through the building, passing through corridors, traversing courtyards, opening and closing doors, encountering objects, and in this way navigating the different issues and ideas. The same building could be used for different speeches. All that was necessary was to remove one set of objects and bring in new ones, then “walk” through the building again. But the technique also posed another problem, not dealt with by Yates. Just like in other attempts at material or digital erasure, the objects arranged in the rooms could not be fully removed however many times they were dragged out. French poet Jacques Roubaud has described the way objects would reappear in the context of the wrong speeches, haunting the building or specific rooms within it.

When buildings become too cluttered with the ghosts of such objects, they must be abandoned or destroyed. This reveals another layer of the complexity by which architecture and memory intersect with violence and destruction; and also of the importance of forgetting, a task considerably more difficult than that of remembering, but nevertheless one on which memory depends.

One object in particular was important to the witness from Mir Ali. It was a freestanding fan that stood in the small courtyard that mostly served the women and children. When building the model, the witness seemed uneasy about it, repeatedly adjusting its location. Later, when “walking” through the model in the digital aftermath of the strike, she mentioned seeing human flesh on the fan’s blades, which she collected for burial. The fan is a media form, retaining and transferring a traumatic event.

While the above testimony revealed something of the complexity of memory’s relation to violence and architecture, the second testimony I would like to discuss dealt with information saturated in a piece of video footage. The video in question was shot in the aftermath of a March 2012 drone strike in Miranshah, North Waziristan, in which four people were killed. It was a rare piece of footage, one of very few videos documenting a site destroyed by a drone strike. It was smuggled out of Waziristan and passed from hand to hand before arriving at the desk of Amna Nawaz, NBC Pakistan Bureau Chief in Islamabad. When the video was broadcast...
its contents were understood to show nothing more than an indistinct ruin. There was, however, much information saturated within the blurry footage.

The first thing that the study of the video revealed was not about the ruin but rather about the videographer recording it. The ruin was video-captured from a window of a higher building overlooking it. The interior of the room occupies a large part of the video frame. But the capturing of the darkness inside the room, the window frame, the hasty camera movements around the opening, the slanted and blurry sequences, were not irrelevant information: they rather indicated that the videographer was recording from a certain depth inside the room, being careful not to come too close to the window, or to be seen above the sill.9 The video thus captured an important thing: the state of mind of the videographer, a sense of danger. There could be several reasons for the videographer to feel it was important to capture his/her state of mind. The videographer might have been worried about US drones watching overhead, as they do in the aftermath of a bombing. Local militants have gathered.

The video thus initially depicted two rooms, each functioning as a recording device of sorts: the room from whose window the first part of the video was shot, and the room within the ruin in which people were killed. A later sequence within the video depicted the interior of another empty room. The videographer had evidently descended from the higher building and entered the ruin itself. The interior space seemed structurally intact but for a small hole at the center of the ceiling.

It was a hole of the kind that is caused by the entry of a drone missile, smaller than each of the 50 cm² pixels that compose the satellite image of the roof, and thus invisible in it. While the window was the relevant aperture in the "videographer's room" (it was the position of the window frame in the image that indicated the danger) the hole in the ceiling was the relevant aperture in the "targeted room." It was through this hole that the blast force of the missile entered. The room’s interior walls were clearly dotted with hundreds of small fragments. A careful examination of these fragments revealed two distinctly shaped gaps within their otherwise even distribution on the wall. Although we cannot be sure, these could be the outlines of the people that died in the blast. If so, their bodies absorbed the fragments and left their "shadows" on the wall behind. The room’s walls thus functioned as something akin to a photograph, exposed to the blast in a similar way to which a negative is exposed to light, just as the remains of bodies created voids in the ash layer over Pompeii, or as a nuclear blast famously etched a "human shadow" on to the steps outside the Sumitomo bank in Hiroshima. Combining pathology and forensic architecture, the traces of dead bodies seem to have become part of the architecture.

Both testimonies were enhanced using architectural methodologies, though in very different ways. In the first, a model of a building was the means of assembling and reconstructing the memory of a violent event; in the second, our analysis treated the building as a recording device on which the bodies of victims were imprinted. Both had the potential to confront state-sponsored denial with the moral force of firsthand experience. Both offered only faint signals, flashes of memory in the context of a war that is still largely unknown. Bringing those fragments to public knowledge is no guarantee of public action, let alone of stopping the campaign. For this to happen, mobilization around these traces, perseverance, and vigil are necessary. *

These acts of bearing witness also had another important element in common: they involved taking risk. In order to be made public both the witness and the video had to make an indeterminate path out of a frontier zone under siege. To a certain extent, both these testimonies exemplified the power of parrhesia—a term that in ancient Greek literally meant "to speak everything" and in ancient Hebrew evolved to mean "in face of the public." These two meanings of the term each designate an aspect of the practice of forensis. In a series of lectures titled "fearless speech" that Michel Foucault delivered shortly before his death, he used and further developed the concept of parrhesia as the courage to risk one's life in order to speak an unpopular truth. Parrhesia, Foucault explained, is a form of criticism articulated in...
a situation where the speaker or confessor is in a position of inferiority with respect to the interlocutor. The parrhesiastes is always less powerful than the one with whom he or she speaks. The parrhesia comes from ‘below’, as it were, and is directed towards ‘above’.” The parrhesiastes, he continued, chose to speak the truth to those who try to hide, deny, or accept it. Parrhesia, then “demands the courage to speak the truth in spite of some danger. And in its extreme form, telling the truth takes place in the ‘game’ of life or death.”

It is remarkable how relevant this practice is to these cases before us. As testimonies that involve risk and the moral courage to confront sovereign violence and its denial, these acts of parrhesia pose the most fundamental ethical and conceptual challenge to the aesthetic-political practice that in this book we refer to as forensis.

1 The book in question was Deborah E. Lipstadt, Denying the Holocaust: The growing assault on truth and memory (New York: Free Press, 1993). The book was republished in the United Kingdom in 1994 by Plume, a division of Penguin—whom Irving sued. Denying the Holocaust accused Irving of deliberating misrepresenting evidence to confirm to his ideological viewpoint. English libel law purds the burden of proof on the defense, meaning that it was up to Lipstadt and her publisher to prove that her claims were substantially true.

2 Robert Jan van Pelt’s expert report submitted to court in the David Irving trial is a foundational document in the history of forensic architecture. An extended version of this report was republished in Robert Jan van Pelt, The Case for Auschwitz: Evidence from the Irving Trial (Bloomington: Indiana University Press, 2002).


5 Van Pelt, The Case, 2–3.


7 Van Pelt, The Case, 21.

8 One of the main such proponents was a Paris based bookshop and publishing house called La Vieille Taupe, which became renowned in the 1980s for publishing anti-Semitic and Holocaust denial literature.


11 This occurred on April 25, 1983, Stern’s largest competitor, the Bild Zeitung, smuggled Irving into Stern’s press conference to announce the discovery. See van Pelt, The Case, 21.

12 Irving also presented a dubious laboratory report penned by Fred Leuchter, a former US penal system execution specialist, that claimed that the chemical composition of randomly chiselled out and pulverized building remains he stole from a gas chamber did not have the cyanide contents he would have expected to find in a US operated execution Gas Chamber. See the film by Errol Morris, Mr. Death: The Rise and Fall of Fred A. Leuchter, Jr. (USA, 2000), 94 min.


14 Van Pelt, The Case, 84 and 155.

15 This might be similar to what Alfred North Whitehead called “nonsensuous perception,” with which matter has a direct, non-sensuous sense of duration in form. A. N. Whitehead, Adventures of Ideas (New York: Macmillan, 1918), 131–34.


17 Thanks to Adrian Lhahoud for his advice.


19 Thanks to Adrian Lhahoud for his advice.


23 Thanks to Susan Schuppli for her advice.

24 The operative concept in regulating this temporal inversion is that of “imminence,” which means “instant, overwhelming, leaving no choice and no moment for deliberation.” But the temporality of imminence becomes elastic, gradually pushed back by a series of qualifying formulations such as “risk of imminent harm,” “threat imminent of violent attack,” “continuing and imminent threat.” Imminence, as Jameel Jaffer from the ACLU puts it, “is no longer a concept that implies the coming of a specific event—instead […] it is now more equivalent to menace: amorphous and undefined.” Jameel Jaffer, “The Justice Department’s White Paper on Targeted Killing,” ACLU Blog of Rights, February 2013, https://www.aclu.org/blog/national-security/justice-departments-white-paper-targeted-killing, last accessed August 30, 2013.

25 John Brennan has put it this way: “we’re not carrying out these actions to retaliate for past transgressions. We are not a court, we’re not trying to determine guilt or innocence, and then carry out a strike in retaliation.” John Brennan, The Efficiency and Ethics of U.S. Counterterrorism Strategy (The Wilson Centre, April 30, 2012), http://www.wilsoncenter.org/event/ the-efficiency-ethics-us-counterterrorism-strategy.

26 The Federally Administered Tribal Areas are officially a “Prohibited Area” which nonresidents require special permission to enter. A complete list of Prohibited Areas can be found in Ministry of Foreign Affairs (Pakistan), “Protocol (II) Section, Description of ‘Open’ and ‘Prohibited Areas’ (Annexure I),” January 6, 2011, http://www.pakresponse.org/Files/Portals/0/Policy/Lists%20%20Updated%20Open%20and%20Prohibited%20Areas%20in%20Pakistan%20-%2006%20January%202011.pdf.

Telephone conversation with Lars Bromley (Principal Analyst and Research Advisor, Human Rights and Security at the UN Institute for Training and Research UNITAR and Operational Satellite Applications Programme UNOSAT), January 28, 2013.


State agencies may make use of the Glomar response only when they are dealing with information that is “specifically authorized under criteria established by an executive order to be kept secret in the interest of national defense or foreign policy.” Public Law 89-487, JULY 4, 1966, (e) (1), 251, http://www.gpo.gov/fdsys/pkg/STATUTE-80/pdf/STATUTE-80-Pg250.pdf, last accessed January 2014.

The Freedom of Information Act (FOIA) was signed into law on July 4, 1966 and took effect a year later. It means that any person has the right, enforceable in a court of law, to request and receive access to records from any Federal agency, so long as those records are not subject to exemption from release, for example because of national security concerns. The Glomar response usually quotes relevant exceptions to Freedom Of Information Acts as “Exemptions One, Three and Five, 5 U.S.C. § 552(b)(1), (3) and (5).” Following the principles of forensis we have undertaken this investigation for various types of forum: there was of course no existing court with jurisdiction over this matter. The US is not a signatory of the Rome Statute and is thus not subject to rulings by the International Criminal Court (ICC). We have provided evidential reports in the following contexts: legal action brought by Pakistani lawyer Shahzad Akbar in the UK Court of Appeal, regarding UK involvement in the form of providing intelligence on targets to the US; an international investigation by the UN special rapporteur for Counter Terrorism and Human Rights (presented at a side event of the UN General Assembly in New York); and journalistic investigations with the Bureau of Investigative Journalism.


