"It was like a miracle, but before our very eyes, and almost in the drawing of a breath, the whole body crumbled into dust and passed from our sight."
– Bram Stoker[1]

IMPURE MATTER: A Forensics of WTC Dust

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As architecture collapsed into micro-spherical debris, it produced a billowy ash cloud that lingered for days obscuring the boundaries between the terrestrial spaces of the built environment and the atmospheric realm into which its Twin Towers had previously reached. When viewed remotely from orbiting satellites this spatial fusion-confusion was confirmed, as neither a shift in scale, nor a pixel-by-pixel comparative analysis could disentangle pulverized architecture from airborne matter, or human remains from rubble[1]. Much has been said about the ways in which the smoke and dust clouds of 9/11 momentarily obliterated the human dimensions of the tragedy as Lower Manhattan was shrouded in an incendiary fog that defied all technical attempts at peering

1 The IKONOS high-resolution commercial satellite captured images of Lower Manhattan at 11:43 AM EDT on September 12 2001. The IKONOS travels 680 kilometres above the Earth's surface at a speed of 28,000 kilometres per hour. The French SPOT satellite took infrared images identifying hot spots at 11:55 AM EST on September 11 2001 (3 hours after the attack). NASA's Terra satellite saw Manhattan from an altitude of about 1,300 kilometres. Satellites deployed by the US National Oceanic and Atmospheric Administration (NOAA) to track storms, forest fires, and volcanic eruptions also acquired images of the aftermath of the events in New York. In addition to these remote sensing technologies, The *Expedition Three* crew on the International Space Station also took photographs of the site from an altitude of nearly 400 kilometres.

Dust, smoke and ash engulf buildings around the World Trade Center in New York City, after the collapse of both towers on September 11, 2001.

French SPOT infrared satellite imagery of Lower Manhattan taken at 11:55 AM EST on September 11 2001.

directly into the scene of the crime[2], Instead our collective global gaze was transfixed by images of the transmutation of glass and steel into a kind of cosmic dust – a demonic metaphysics in which architectural substance became pure nature once more, or so it appeared. The bodies of the more than 2,780 missing were not in evidence in these first televisual transmissions, instead they were understood as trapped and possibly interred within the architectural remains of the towers which were themselves still hidden from view by the haze of fallout. But this was a false reading of the image, a mirage if you will, for what the microspheres of dust carried were not simply the material remains of the destroyed towers but all of the buildings' contents including its human occupants. The body was not missing in the images of swirling dust that we witnessed repeatedly those first few days after the tragedy but was emphatically present within each specimen of dust at 1.3 parts per 100.

Part I: When the Dust Settled

Dust is an aggregate of synthetic and natural particles whose micro-material complexity is so thoroughly entangled and

2 "What is missing from this image [writes Laura Kurgan referring to the IKONOS image] is what is missing now from the city or the world, and it is always missing at the limits of one-meter resolution, for all its detail. What is missing are the missing, over 5,000 people now presumed dead. Beneath or beyond the limits of visibility, of data, are the dead. And yet they remain in the image, in the ruin of the image, and ask something of us." In Laura Kurgan, "New York, September 11, 2001, Four Days Later..." in *Ctrl Space: Rhetorics of Surveillance from Bentham to Big Brother*, ed. Thomas Y. Levin, Ursula Frohne and Peter Weibel (Karlsruhe: ZKM, 2002), 655.

inclined to metamorphosis that it has no particularised form or objectness of its own but rather assumes the contours of all other things. As emblematic non-material, dust has been brooded over by artists and writers for centuries that found in its formless nature the metaphoric vocabulary of remainder and decay.[3] Dust understood as such is always temporally oriented towards an understanding of the past as inanimate. Dust is said to invade; it creeps and amasses; it covers over and veils, consigning its objects and events to the languor of history. Even when it accrues it seems somewhat depthless – dust is all about surface, the spatialised patina of passing time. Georges Bataille conceptualised dust as matter-in-waiting: a stealth-like incursion from the future that slowly disavows the vitalism of all that it touches.

Architectural history has similarly been haunted by the gothic spectre of dust as an amorphic and insinuating filth, only to become preoccupied by its antithesis in the planar cleanliness of modernism exemplified by the hygienist movement.[4] In a matter of minutes, the gleaming glass towers of the World Trade Center (WTC) that were pulverized into dust, reversed this architectural evolution bringing about a gothic revival of a different order, in that, the terror augured by late 18th century writings on the insidious nature of dust was revived as a war against the dust-makers

3 See the *Cabinet Issue 35 Dust* for various historical accounts of dust. Sina Najafi, ed., *Cabinet* 35 (Brooklyn: Immaterial Incorporated, 2009).

4 Mies van der Rohe's Seagram Building in New York (1958), with its externalized structural articulation minimally clad in sheets of glass offers an exemplary example of the kind of planar corporate modernism that went on to influence the design of the World Trade Center as did his Lake Shore Drive towers project on Chicago's waterfront (1951).

Space Imaging's IKONOS one-metre resolution satellite image taken at 11:43 AM EDT on September 12 2001.

themselves. However as an expression of the external condition of torpor, dust typically lacks the necessary vitality whereby the past gains traction and is able to unsettle the present. Unlike "dirt" which has been theorized as "matter out of place" (Mary Douglas) and subjected to vigorous regimes of purification, dust is treated as a much more mundane surplus that can be gently swept aside. Dusty is never as bad as dirty, but nor is it as symbolically transgressive. Dirt connotes a contamination of more than the just the surface of things, it has an insidious claim on interiority that makes it stubborn to purging, an attribute that has been semantically useful to poets and preachers alike. Dirt gets into things defiling boundaries between entities, whereas dust [it seems] merely submits objects to stasis.

> Dirt is an object found in a place where it does not belong; dust reproduces in miniature everything that surrounds us. Neither dirt nor dust are specific bodies, however. The first is composed of minute bodies which find themselves in contact with an object, and which the latter has retained in some manner. The second is composed of minute bodies crushed into powder, which is deposited on the object.[5]

In spite of the disgust conjured by writers such as Bataille when contemplating the transformation that a century of accumulated dust would exact upon the slumbering mound of Sleeping Beauty,

5 German chemist Jutsus Von Liebig writing in the mid 19th century, quoted in Edmond Locard, "The Analysis of Dust Traces. Part I," *The American Journal of Police Science* 1, no. 3 (1930), 276-298.

contemporary accounts of dust tend to treat it more perfunctorily as superfluous matter. Even the cosmic dust that is being used by astronomers to read the fossil record of the universe regards this matter as benignly ubiquitous, although the chemical composition of this kind of interstellar and intergalactic material has no corollary to its earthbound counterparts. Dust in general, appears more dreary and dreamlike than terrifying or repulsive. Thus the expression "when the dust settles" suggests that dust will never be asked to do the dirty work of history – to toil in murky recesses and dig though muck and rubble in order to bring the particulate matters of past events into the contact zone of the present. Dust merely encloses or discloses pre-existent realities. (While this characterisation of dust is reasonably accurate, its real potential resides in its capacity to register prior events *within* its particulate matter, maintaining a certain connectivity with the past as a consequence of its ontological rather than rhetorical nature. This turn towards the internal composition of dust as harbouring multiple singularities – data packets if you will – opposed to more common descriptions as an distributed surface event is something I will come to shortly.) Once the dust clouds of 9/11 had settled the scale of the human tragedy would be revealed – a new kind of image-event, cleansed of interference, would be made manifest in which the body (even in its damaged state) would be returned to the visual field. But this anticipatory narrative of full disclosure never materialised in quite these terms.

Part II: An Unauthorized Biography of Dust

The 2,780 missing were largely subsumed by the cataclysmic force of collapsing architecture, which was itself transformed

into fine powdery soot. Intact bodies were nowhere to seen frustrating rescue efforts, which ultimately managed to recover 19,906 human fragments, but of these remains only 293 were fully intact bodies and only 12 could be identified by sight. In the aftermath of recovery, rescue workers who had dug through the tons of hazardous rubble with their hands and rudimentary tools, began to develop respiratory problems in the form of a dry and persistent cough. Within six months elevators and air ventilators in buildings adjacent to the WTC site, continuously began to fail.[6] The dust had not simply settled, but had entered into the lungs of rescue workers and local inhabitants as well as into the mechanical systems of nearby buildings.

> You have 10-story buildings that leave more debris than these two 100-story towers. Where the fuck is everything? A serious weeklong search and we've found 200 in a pile of 5,000? What's going on? Where is everyone? Why aren't we finding more bodies? Cause it's all vaporized – turned to dust. We're breathing people in that dust.[7]

Its an image that prompts involuntarily gagging and explains, in part, why the mediated abstraction of airborne dust clouds hover-

6 See Nicholas Petraco, Thomas A. Kubic and Lisa Faber, *The Microscopic Analysis of World Trade Center Dust* (New York: National Forensic Science Technology Center, August 15 2007), 3.

7 A fireman speaking in a Brooklyn bar who had done a 24-hour shift at Ground Zero. Christopher Ketcham, "A Season in Hell," in *Salon.com*, ed. Christopher Ketcham (New York City: Salon Media Group, 2011), vol. 2012.

ing at a distance, much like the mushroom clouds of the atomic bomb, offers a kind of perverse 'visual pleasure' or respite from the horror occurring at the immediacy of ground level/Ground Zero. As uneasy as the thought of unwitting acts of anthropophagi that the inhaling of WTC dust by man and machine alike might provoke, most common dust specimens actually contain a high percentage of exfoliated human skin tissue and human hair along with many other natural and synthetic fibres, particles, emissions, and pollutants. Our bodies are constantly processing the sloughed-off excess and waste produced by our contact with other species or by the frictions occurring between different specimens. And we in turn deposit minute trace evidence of our passage through space and in time wherever we move and whenever we make contact with another surface. As Edmond Locard, the French criminologist credited with laying the foundations of forensic science famously postulated, "every contact leaves a trace." This principle of exchange asserts that in any encounter between bodies, objects, materials, and spaces certain residual traces are deposited and exchanged. These points of contact between entities can be mapped scientifically to link the distribution of bodies and objects within space. Dust writes Steven Connor is a "medium of transformation and exchange. Almost without qualities itself, dust has the quality of qualitylessness, the virtual virtue of transmitting the virtues of other substances. It is both a terminal and a mediate matter, inert, but sometimes, for that very reason, omnivalent.[8] Dust scrambles the material signals of objects and events, transmitting complex information from one space to another. Hacking into dust has

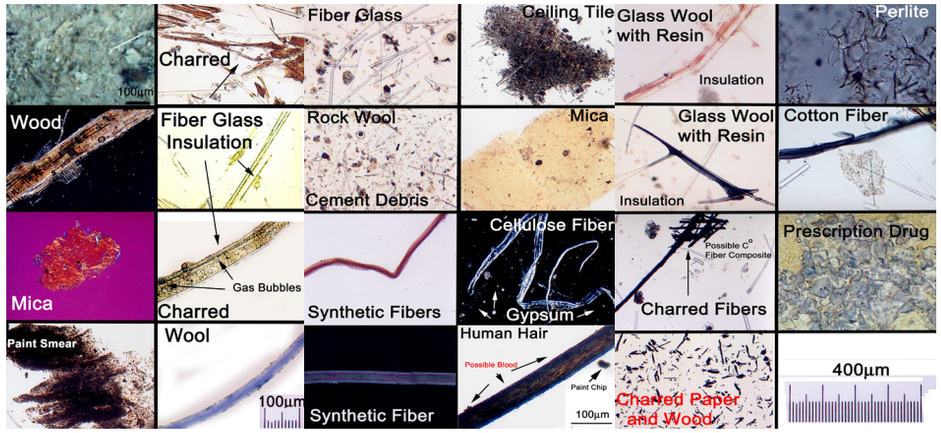
8 Steven Connor, "Pulverulence," *Cabinet* 35 Fall (2009), 71.

consequently become a key activity of the forensic investigator who must become skilled at cracking its chemical coding chains.

All matter, chemically speaking, can be divided into two primary subcategories: that of pure and impure substances. Dust is considered to be "impure matter" because it is a mixture containing two or more elements or compounds in close proximity whose proportions can vary, whereas water is a pure substance because it always consists of hydrogen and oxygen in a ratio of 1:8 by mass and 2:1 by volume. I have turned my attention to the forensic analysis of World Trade Center dust specimens in order to argue against the prevailing grammars of dust with their metaphoric stakes in a de-politicised history of material relations as merely a "chronics of things" unhinged from the specific events out of which each diminutive element has emerged.[9] By examining the particular chemical and physical properties of dust we further 'unsettle' the assumed distinctions between human/non-human configurations of matter and are better able to argue, as I have done elsewhere, for the fundamental ontological inseparability of all matter.

In the *Analysis of Dust Traces* (1920) Locard discusses the nature and composition of dust, noting that what is key to an understanding of dust is that it is "an accumulation of debris in a state of pulverization" whether derived from organic or

9 I take this phrase from a statement made by Quentin Meillassoux in an interview with Robin MacKay. "That's what is difficult - conceptually I can affirm it, but what is difficult is to give this sensation that you are in a world where you cannot make a physics, but only a chronics, of things." Robin Mackay, Florian Hecker and Quentin Meillassoux, "Document Uf 13-1," in *www.urbanomic.com*, ed. Urbanomic (Urbanomic, 2010), 3.



Macroscopically, each bulk specimen appeared somewhat like recently erupted volcanic ash. Tiny aliquots of bulk specimens were studied with a polarized light microscope (PLM). These initial PLM studies revealed that each bulk sample was composed of a myriad of materials. It appeared that all the materials composing the buildings and all of the buildings' contents were literally pulverized by the collapse of the Twin Towers. (Petraco, Kubic and Faber, The Microscopic Analysis of World Trade Center Dust).

Table 1 - Tabulation of WTC dust data.

Materials	Count	Percent of Total
Fiber Glass/Rock Wool	1615	45.1
Asbestos	5	Trace*
Synthetic Fibers	72	2.0
Human Remains	47	1.3
Natural Fibers	49	1.4
Paper Fibers	74	2.1
Ceiling Tiles	73	2.0
Mica Flakes	76	2.1
Plaster/Concrete Calcite, Dolomite, Gypsum	1138	31.8
Paint Smears & Chips	18	Trace
Metal Flakes	19	Trace
Wood Fragments	20	Trace
Foam Fragments	6	Trace
Charred Wood & Debris	257	7.1
Plastic Fragments	5	Trace
Perlite	8	Trace
Drug Fragments	12	Trace
Glass Fragment	50	1.4
Unknowns	40	1.1
Totals	**3584**	**100%**

*Less than 1%.

Tabulation of WTC dust data.

inorganic entities. “The characteristic of pulverization distinguishes dust from mud and dirt. Mud is dust mixed with liquid, that is, in a plastic state. When the mud is oily it takes the name of cambouis. Dirt is dust with an admixture of fatty and desiccated bodies.”[10] Pulverization is the defining attribute of dust because the compound debris particles that comprise dust are in effect the partial-objects of other [usually larger] entities, which have been ground down. “As a matter of fact, pulverization destroys the morphologic state, which would enable us ordinarily to recognize these objects by our senses or even with our instruments. On the other hand, the transformation does not go so far as to reduce the object into its ultimate elements, that is, into molecules or atoms. . . we do indeed, find them in a certain physical state, where the micro-chemical diagnosis of its origin is still possible.” [11] Contrary to the popular image of dust as the expanding material surface upon which other traces, such as the imprint of a footstep might negatively be registered, dust specimens themselves, when understood technically as impure matter, archive traces of multiple objects in a state of transformation. As a compound material substance in which radically heterogeneous materials have momentarily locked together, dust is the material witness par excellence because it maintains these distinctions to the end allowing them to tracked back to the particular circumstances out of which they emerged. For Locard dust specimens were “the mute witnesses, sure and faithful, of all our movements and of all our encounters.” While it would

10 Edmond Locard, “The Analysis of Dust Traces. Part I,” *The American Journal of Police Science* 1, no. 3 (1930), 276-298.

11 Locard, “The Analysis of Dust Traces. Part I.”

be somewhat fallacious to suggest that it's various impurities deterritorialise and reterritorialise each other sharing matter-energy flows in a manner similar to the processes of becoming that characterise the "noce contre nature" (against nature marriage) of the wasp and orchid famously discussed by Deleuze and Guattari[12]. However the compound substances found in dust do confer meaning onto the relations produced between them when we understand the forensic expert as a transversal agent committed to probing dust particles in the same way that the orchid and wasp are mutually attentive to pollen. Through their probing intercessions, forensic scientists are able translate the material impurities of dust into a convincing narrative or origin story: a tale of two towers. Moreover, the natural cooperation between wasp and orchid that brings two unlike organisms together in a process that still manages to sustain their radical differences, is echoed by the pulverization and coming together of different kinds of substances in dust. The resulting assemblage never produces a material strata whose differences can be reconciled to create a synthetic whole that might, in turn, be named. There is no nomenclature for identifying a WTC dust specimen that includes fibre-glass, rock wool, asbestos, synthetic and natural fibres, paper, human remains, ceiling tiles, mica flakes, plaster and concrete, paint smears, metal flakes, fragments of wood, foam, and plastic, perlite, drugs, glass shards and other unknown materials.

12 Gilles Deleuze and Félix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia*, trans. Brian Massumi (London: Continuum, 1987).

> Dust, as I have said, may be formed of the debris of all kinds of bodies. In enumerating the elements composing it, there would be made a list of all the substances, organic or inorganic, existing on the earth. The essential point, however, is the exact state or condition of the respective substances before they reached the status of pulverization.[13]

"Specimens of Ground Zero dust where obtained from first responders: members of the police department sworn laboratory personnel, crime scene unit detectives and personnel from the OCME's office. Additional specimens of WTC dust were obtained from individuals employed to clean and restore historical churches and graveyards located near Ground Zero. Finally, specimens where collected by the authors [of the study referenced in this essay] from several buildings six months after 9/11."[14] When discussing

13 Locard, "The Analysis of Dust Traces. Part I."

14 The testing protocol is outlined as follows: 1) each bulk specimen was thoroughly loosened and mixed gently using an agate mortar and pestle; 2) each bulk sample was equally divided into eight aliquots; 3) each aliquot was divided into eight equal portions; 4) each portion was placed on a microscope slide, covered with a No. 1½, 22mm, round cover-glass, and dispersed evenly in Melt Mount® R.I. 1.539; and 5) each specimen was labeled for identification. Next, a quantitative particle count of each specimen was carried out with a polarized light microscope fitted was a Chaulkly, point-count reticule. At least 1,000 particles were counted for all of the microscope slide preparations made from each bulk specimen. The results were recorded on a WTC dust data sheets. This data was used to compute the percent of each material present in the average specimen. Nicholas Petraco, Thomas A. Kubic and Lisa Faber, *The Microscopic Analysis of World Trade Center Dust* (New

the analysis of WTC dust at a New York Microscopic Society lecture (May 28 2003) Dr. Nicholas Petraco, one of the three authors of the subsequently published study, expressed his incredulity at finding drug residue within the tested specimens.[15] "I suppose prescription drugs are so ubiquitous that traces of them would be found after the catastrophic destruction of any segment of an urban nexus, but this still surprised me." Today the US consumes 80% of the world's opioid pain medications and 99% of the world's hydrocodone, a semi-synthetic opioid. Between 1997 and 2007, the years roughly bracketing 9/11, the milligram per person use of prescription opioids has soared from 74mg to 369mg, representing an overall increase of 402%.[16] In order for trace elements of drugs to register within WTC dust specimens that included all of the material debris found in the immediate environs of Ground Zero, the percentage of people taking them in 2001 would have had to be even significantly higher than current levels of consumption. Many community health studies have examined the impact of 9/11 upon drug use, especially the increase in drugs taken for treatment of post-traumatic stress disorder and depression. However Petraco's surprise at finding

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York: National Forensic Science Technology Center, August 15 2007), 4-6.

15 The report "The Microscopic Analysis of World Trade Center Dust" was authored by Dr. Nicholas Petraco, MS, D-ABC, Forensic Consultant, NYPD, Adjunct Assistant Professor, John Jay College, CUNY, Dr. Thomas A. Kubic, JD, PhD, Associate Professor, John Jay College, CUNY, and Ms. Lisa Faber, MFS, Criminalist IV, Supervisor NYPD Hair and Fiber Unit.

16 David Kloth, "America's Fatal Addiction to Prescription Drugs," *The Guardian* (June 10, 2011), http://www.guardian.co.uk/commentisfree/cifamerica/2011/jun/10/prescription-drug-abuse?INTCMP=SRCH

the presence of drugs in the WTC dust samples returns the narratives of drug use back to the materials themselves, which are in the unenviable position of being able to chronicle the magnitude of wide-spread drug use/abuse (prescription or otherwise) without the causal factor of a cataclysmic drug-inducing event. That is to say, if we learn how to read the significance of the statistical composition of dust as a question of proportionality between fibreglass and narcotics.

The presence of drug fragments also returns the human body to the space of eviscerated architecture as a denatured body that was already materially impure. Human remains conjoined with concrete and plaster can perhaps be accepted piously as a passage from dust-to-dust, whereas the presence of drugs troubles the telling of an entirely moral narrative. It is this realisation that takes us aback, I believe, when confronting the tabulation of dust data. The insight that the body was already damaged in someway prior to the violence inflicted by crushing architecture. Morality would come to play a crucial role in the Administration's response to 9/11 and the evidence of drugs in WTC dust can be seen as clouding the moral distinctions between good and bad upon which its righteous wars were waged. The symbolic purity of a body subjectively tainted by drugs requires a more nuanced semantic articulation than a body conceptualised as objectified "human remains" returned to ash. Of course the narrative of the 'flawed' body, riven by alcohol or drugs or weakened by its sexual proclivities and desires, runs rampant through American society, exemplified by the political figures of Clinton, GW Bush and most recently by GOP candidate Herman Cain. But it's a story that has always been redeemed by a call to a higher purpose—service to God, Country, and family. It

is also a story that extends the mythos of self-remaking that has been powerfully operative within the American psyche, one that can convert poverty into wealth, debauchery into virtue or even corpulence into slimness. The transformative potential of the American "Can Do" spirit is continually paraded as evidence of capitalism's capacity to accommodate difference and promote tolerance.[17] This is all to say, that the bodies invoked by the rhetorical framework of 9/11 were not these kinds of damaged but redeemed bodies. In their collective status as victims, all personal impurities were symbolically purged and the "secretaries, businessmen and women, military and federal workers; moms and dads, friends and neighbors" who died were of necessity collectively represented as wholly innocent. Their private bodies transformed into a national body whose wounds were solely inflicted by external forces.[18]

17 Subsequent controversy in 2009 around the proposed building of an Islamic cultural centre in the general vicinity of Ground Zero highlighted the limits of this tolerance with respect to the ways in which the narrative field of 9/11 could be re-distributed other than in reductive terms.

18 President GW Bush's *Address to the Nation* on September 11 and 21 2001 substantiates my line of argumentation in its invocation of a nation wounded, whose tolerant and progressive nature has ensured that God has chosen its side in its global fight for justice. In vowing to seek retribution for the acts of terror, Bush also made a pledge to return the US to the economic prosperity, which he (along with many) regarded as the symbolic target of the terrorist attack. The moral project of attending to the nation's psychic wound was thus conjoined to healing its financial health, a position echoed by New York major Rudy Giuliani imploring Americans to go and out shop otherwise the "terrorists will have won".

Another brief example of a material history that one could excavate out of the geological strata of WTC rubble is that of asbestos. During initial construction of the financial complex (1966-73) asbestos was widely used as a building material due to its tensile strength, low cost, high melting point, and resistance to chemical breakdown. An estimated 400 tons of asbestos were incorporated into the structures of the WTC. However, anticipating a imminent ban by the Environmental Protection Agency (EPA), builders had stopped including asbestos-based materials by the time they had constructed the 40th floor of the North Tower, the first of the Twin Towers to be completed as well as the first hit in the attacks and the last to go down in flames. Asbestos is still regarded as one of the most robust fire-retardant materials and in the weeks following 9/11 some engineers and scientists wondered if the banned substance (had it been used throughout) might not have helped to contain the fire damage in the towers long enough for people to escape.[19] According to EPA reports, the implosion from the towers "pulverized asbestos to ultra-fine particles" and the World Trade Center Health Registry estimates about 410,000 people were exposed to asbestos during the rescue, recovery and clean-up efforts that followed 9/11. Instead of saving lives through its fire-retardant properties, exposure to the asbestos used in constructing the lower regions of the towers has contributed to severe illness and death. Although the analysis of WTC dust confirms trace evidence of asbestos, this data sample can't testify to what might have been

19 James Glanz and Andrew C. Revkin, "A Nation Challenged; Haunting Question: Did the Ban on Asbestos Lead to Loss of Life?" The New York Times, September 18, 2001, Science section.

had its prohibition not been in place. But what it tells us about its low particle count in relationship to that of the other insulating materials (45.1%), lower even than that of human remains (albeit not an insulator) is that while it was incapable of retarding fire in its macro-material form, its low threshold occurrence when inhaled as toxic micro-particles, was sufficient for causing chronic disease and death.

These two examples begin to suggest ways in which a forensics of WTC dust might prove productive for reading the complex social, economic, and political relations out of the material strata of our world. Moreover, the ethical dimensions of an event in which the loss of life in the US was followed by more than 10 years of retaliatory war is itself provoked by this microscopic study of dust, when we also learn to read material relations between human and non-humans actors out of an image-field of seemly formless dust clouds. In doing so we come to understand that images taken at a distance, that the aesthetic realm of our emergent remote sensing technologies, is also the realm of radical imagining and seeing. If we accept ethics as the domain of action in and on the world, then the very act of looking is also an act of intervening into the image-stream of the event as a kind of witness, be it as a drone operator scouring Afghani targets from a console in Nevada, a technician recalibrating the position of the IKONOS Space Imaging satellite, or a forensic scientist examining a glass slide of dust specimens by means of polarized light microscopy. WTC dust becomes political when its intricate materiality is exposed and ultimately returned to the image-fields from whence it came as the productive instantiation of a forensic aesthetics that renews our vision, allowing us to see the world for what it really is — impure matter.