

Regarding *The Road* by Cormac McCarthy

1. A catastrophe killed the world.

In *The Road*, the earth may be dead by climate change, by asteroid impact, by nuclear winter.

Climate change—a changed climate—is a result, not a cause. A sterile world by climate change is cumulative, over time, with global warming leading to forests burning and creating an atmospheric soot-barrier layer. Events such as a “shear of light” and “a series of low concussions” (52), and effects from these events such as electricity out, and the man catching a bathtub of water, do not fit into a “cumulative, over time,” model.

If the world change is an asteroid impact, that the man hears the arrival of a world-killing asteroid as a “series of low concussions” begs credulity. For the man to have been close enough to hear the impact, he would have been too close to the overwhelming event to have survived. Also, in the later 1970s or early 1980s, and compared to a nuclear exchange, a world-killing asteroid would most likely more greatly surprise the man than that he just checks the lights and runs a tub of water.

If the catastrophe that kills the world is nuclear winter, then the “shear of light” and “low concussions” to which the man reacts may be a set of several Multiple Independent Reentry Vehicle (MIRV) nuclear warheads from a missile.

An item to note is that the title of an early book on nuclear winter, *The Cold and the Dark* (1986), is echoed in the very first lines of *The Road*, “he woke in the woods in the dark and the cold of the night” (3, see also “he woke in the cold dark coughing (175)).

Given central and east Tennessee as a start for the father and son’s journey on the road (see Wes Morgan on the path they followed in *The Road*), a bomb flash could be seen in the night sky at some distance, and instantaneous blast straight-line gamma radiation could be absorbed by terrain. In the time the bathtub fills, these effects are no longer threats. And, if at ten or twenty miles, the concussions of the several separated warheads could be heard without much if any blast concussion effect (see Kearny 28).

What would remain after such blasts is particulate radioactive fallout. When atomic weapons are triggered as air bursts by altitude, traces of unconsumed radioactive bomb material, and newly radioactive by-products, are carried upward by the heat of explosion, and are then carried off by prevailing winds with little lingering radiation. Heavier particles will settle nearer, lighter particles farther, and those lifted into the stratosphere will travel very far and drop out only slowly. Atomic weapons triggered as ground bursts additionally will carry upward relatively heavier dirt and dust, and these particles will mix with some of the blast’s radioactive by-products, and will drop out of the atmosphere relatively close to the burst site as a radioactive plume. In comparison, a

bomb core is a few kilograms of uranium or plutonium, and the Chernobyl 4 reactor core was 192 tons of fuel.

Yet, for people not killed by immediate gamma radiation, by blast heat, by concussion, and not within two or three miles of the immediate rain-out or snow-out of larger nuclear fallout, sheltering for a week, two weeks, a month, will reduce the dangers of nuclear fallout to virtually negligible levels (Kearny 12, *CaD* 19, 78, 105). Residual radioactivity at seven hours after detonation has declined to ten percent of its level at detonation. For every next time factor of seven (i.e. forty-nine hours, two weeks, fourteen weeks) radiation is cut by ninety percent of its previous level (the 7-10 rule). At fourteen weeks after detonation, radiation is one 1/10,000th of that within one hour of detonation (Kearny 12-13).

In *The Road*, in the early years after the bombs, people wore goggles with their masks (28), and goggles or eyeshields sewn into masks are elements of eye protection against what radioactive dust is present (see a Soviet pattern illustrated, Kearny 130). As goggles are not part of the father and son traveling, it can be that these niceties have worn out, cannot be otherwise improvised. Walking in the road, which can be swept by rain and wind, in fact reduces the hazard of kicking-up and inhaling longer lasting radioactive strontium and cesium dust with thirty year half-lives (*CaD* 196, Kearny 76). The roadrats in their “canister masks” and “a biohazard suit” are “coughing” (60), as the novel’s father is coughing in more instances than need to be cited.

A Defense Department map projecting windblown fallout patterns in the United States shows eastern Tennessee, and a corridor along the South Carolina and Georgia borders, to the Atlantic shore, a corridor about two hundred miles wide, that is expected to be fallout free, or at worst travelable after one or two weeks of sheltering (Oberdorfer 19, Kearny 30). And this corridor matches the father’s plan to travel south. Time has passed after the nuclear blasts: the son is of an age to remember the house in which he grew up (36). At about 415 miles from Knoxville, Tennessee, to Savannah, Georgia, (which is on the Route 25 that Wes Morgan projects), the pair’s march, if three months at a minimum, by the math is a little over four miles a day, and is, in the novel “a few miles a day” (31). As the father needs to get them out of Tennessee before winter, his decision to head south seems sensible, and realistic.

2. About “shear of light.”

In *The Road*, with unrelieved overcast days and still darker nights, lights are virtually all small, personal, flickering. Yes, a forest fire runs up and down in a mountain forest (30). But, except for its “sootfall,” that fire is distant, a reminder of burning cities (59).

In the phrase “shear of light,” “shear” is modified by a prepositional phrase, marking this “shear” as a noun, as a tool with which to cut. A rain of nuclear explosions, searing light and then concussion, turning sunlight into sooty darkness, are the “shear” that

comes into being as “The clocks stopped at 1:17” (52). McCarthy’s “shear of light” can relate to the Bible’s Revelations 1:17, which signals the end of times, as a bookend to God’s “Let there be light” in Genesis. This is the end of time for the world given over to people’s free will. Fire and ashes and dust, in Revelations, in *The Road*, follow this end of times, in the “sooty” devil’s fire and ashes.

Too, as the “shear” ends biblical time, there is an echo of old images of the Fates, spinning, measuring, cutting, the thread which is a person’s life. McCarthy never uses the word “fate” in *The Road*, but the image of the thread is always present, as the road itself is a thread. Look at a map. The roads, the paths, are lines, curves, thread, intersecting choices, free will complexities (see “maze of tracks” (104). Early in the book the father and son look at a map of roads, “studying the twisted matrix of routes in red and black” (86), and the “twisted matrix of routes” is viewed again at the end of the book in the mazes within the image of a brook trout’s back as “vermiculate patterns that were maps of the world in its becoming. Maps and mazes” (287). It’s as if the final paragraph of the novel can be read as its first paragraph, and the book’s first image in which the father is led by his son, with light between them, could stand as their story’s conclusion.

And a map becomes mazes as the folded oil company map the father and son carry falls into little sheets of crayon numbered pages—an echo of book pages—that all look too alike, the oil derived paraffin crayon numbers intended to keep order. And it is petroleum oil mixed with a little gas that feeds the lamp used to read the map (7, 136).

They measure the map, their plan, with a “piece of string” (199), a life-metaphor and time-metaphor of their travel. And, as if in a maze, the father “always think[s] we’ve gone further than we have” (195, cf. 181-82 “couldnt find” the town on the map).

Too, as the routes are “in red and black,” there is an allusion to the later question of the value of the fathers, as if in a “ledgerbook” (196), which is of choices, the gain, the loss, given in black and red entries, though the ledgerbook does not exist and the fathers are dead.

For all the bridges the father and son cross traveling the road, only once, at the end of travel, at the sea, the road is cut by the book’s first washed-out bridge (275), a bridge cut by what had been a perfectly violent storm blowing east to west (277), from what had been east’s light and into the darkened continent.

As the map is a weaving of crossing roads, there is an echoing when the two pass through a place of weaving, an “old mill town,” on the continent’s coast (199, cf. 78). The blue tarp is another weaving: a shelter, lighter and more rot-resistant than canvas. And the tarp’s translucence to the father and son’s light, showing blue light in the darkness, is a celestial color. Sheets of plywood are both the door to the survival shelter (134), and the lean-to shelter the son makes for his father’s final rest (278), and this plywood is wood in crossed layers, an echo of warp and woof. And the paper of the map, the paper of the books, has in it a tradition of weaving, as scrap woven cloth was soaked and beaten for its thread fibers for book paper for printing presses.

Two coils of rope are on the storm-stranded boat, two fifty foot coils (228), threads, the father and son perhaps as mortal coils. The father stitches his leg wound, and when finished cuts silk thread (266). At the coast, the father and son come to where a fire has swept over cars in which people were fleeing that same fire, and the cars' tires are burned to "rings of wire" (273). These rings can be those people's coils, endings, in a metaphor which exists as an ever larger image when McCarthy writes of these corpses with "ten thousand dreams" unfulfilled (273), in an expression based on the number ten thousand, which can be used to stand for the count of nameable things in the world, the ten thousand illusions, the ten thousand dreams.

At the coast, where there are the "bones of seabirds," they see another life-woven image: "At the tide line a woven mat of weeds and the ribs of fishes in their millions stretching along the shore as far as the eye could see like an isocline of death. One vast salt sepulchre," and the father curses to himself that the loss is "Senseless. Senseless" (222), in which he recognizes that in the sea no longer blue (215), these are things that "could not be put back" (287), and which, for no good reason, the people of the earth had destroyed.

3. Other Items

3.1 In *The Road*, the father is associated with military items and practices. When he shoots the roadrat who has a knife at his son's throat, the father takes a "two-handed position balanced on both knees at a distance of six feet" (66). He will "cut a perimeter" (68, see also: 117 "walked the perimeter," 198 "checking the perimeter," 205 "secure the area," 206 "After we've secured the area"), to best guard them when "bivouacked" (168). He watches the bloodcult in the road as an "army" (91), with the ground "shuddering" (92) to their synchronized march. When the grocery cart is stolen at the shore, the father wants to know "Bootprints. How many?" (253). The "canvas bag" the father will "tote over his shoulder" is an item equal to a duffel bag (275). The times the father cuts the son's hair (151, 212) is a way to point to the son's hair as golden (152), and can also be a strictly grooming behavior, but short hair in the late 1970s, early 1980s, can be a military characteristic.

The father shaves his beard (152, 212), which, in fact, can stand in some contrast to the "outcast from one of the communes" (255), who was "sullen, bearded, filthy" (255). To further conflate items, the man at novel's end in the yellow and gray parka, and who befriends the boy, has hair "long and matted" (282). Yet, within the world of the novel, because there was no commune barricade at that point in the road (see 79), this man was not one from a commune, but is characterized with a military term, when described as "A veteran of old skirmishes" (281). The father is forty or more years old (26 "pinholes" in the mantel). Regarding age and hair, he father's military would have been perhaps in the early 1960s, the veteran's perhaps mid-1970s, with differing veterans' attitudes. The veteran's shotgun hangs "upside down over his shoulder" (281) on a lanyard, a cord

attached to the gun at one point, to allow the gun to swivel immediately when needed, and the shotgun barrel is non-threateningly pointed down when meeting the boy, a position which can be distinguished from the roadrats in the diesel truck “holding rifles,” not slung, but ready in their hands (61).

Regarding the father’s illness, coughing up blood, and that symptom coming and going over time (the father not coughing 126-174), the illness appears to be tuberculosis. Five to ten percent of the United States’ population carries the tuberculosis bacteria, and medical literature on post-nuclear war effects notes that protein deficiencies in diet will trigger active cases of respiratory diseases, specifically including tuberculosis. Too, notwithstanding the tuberculosis endemic in the United States, in fact Southeast Asia has the highest endemic tuberculosis rate at forty-four percent of the population. And the military, in the 1960s, was in Vietnam.

3.2 Quite a few items are “piled up” in the novel. In signs of organization, cat bones are piled (26). After the father shoots the roadrat man, his bones are later found piled (71), “cairns” of piled stones (“lost patters”) are by the road (180), the son sleeps with his head on a pile of clothes (227), the thief piles his rags in the road (256), the father and son later return the thief’s clothes in a pile on the road (260). And at a crossroads are “dolmen stones” (261), an open megalithic tomb of large upright stones supporting a top stone (as if a table or an altar). Writing in blackthorne ink, in lampblack ink, is discussed here, with the “dolmen stones” as if both an ancient tomb, and because at some “entabed moment,” a table for writing—remembering all the novel’s references to books—an altar for offering—remembering all the novel’s references to God—are no longer possible because, again, the fathers are dead, the ledgerbook does not exist (196).

3.3 The father cautions the son “things you put into your head are there forever” (12). A corpse is in a doorway (12); three bodies are hanging (17); a head is in a cakebell (184); figures are “half mired” in the road (190); an infant is spitted and charred (198); an “ancient corpse” is in the sea among driftwood (236). And yet the son says that he “will not remember” these new world horrors “the way you [the father] do” (174).

3.4 Trellis items: The book includes a starving “trellis of a dog” (87). The etymology of *trellis* is of “three threads together,” in the warp, for strength in a weaving. Early in the book, an “old iron bridge in the woods” (66), can be a shape of the book’s end’s collapsed bridge, where father and son watch water “coiling over the iron trelliswork” (275), a trellis, an iron bridge characteristic, of open triangles, three sided figures for strength.

In the novel there is also a trellis with a shape like a “graph,” which would be characterized by right angles, by rectangles (121). The father has removed his shoes to find, by the touch of his feet, armfuls of “Hard and brown and shriveled” apples, desiccated windfalls, and as he goes for a basket to hold them he sees, “A trellis. The

dark serpentine of a dead vine running down it like the track of some enterprise upon a graph" (121). One thought is that Jesus says "I am the vine," and the vine here is dead. And yet in this tight grouping of apples, a serpentine shape—vine both tree and serpent—is a desiccated further emblem of the beginnings of human time's fall from Grace at the end of time, but not on the stability of a three-trellis, but withered on some graph-rectangle ledgerbook-like trellis that is in this image a twisted wintry downward path since barefoot Eden, and McCarthy later declares there is no ledgerbook in which to tally success or failure (196).

3.5 The father sees, the son sees: Very early in the book, the son watches his father, with "shapes claiming" the father that the son "could not see" (26). The reader's impression of the father, who "dialed the number of his father's house in that long ago" (7), is that the father is a little lost, yet when son talks to his dead father at the book's end (286), we know enough by then to find the thought of the son's conversation natural and good.

In the novel, the son often sees things in this world with greater clarity than does his father. The father "glassed the valley below with the binoculars" and saw "Nothing" (78), yet when the boy is handed the binoculars—without asking to use them, as if this is a routine sequence—and after he "adjusted the wheel" to his own eyes, the son tells his father "I see smoke" (78). As the binocular exchange continues, the point that they have different eyesights is made a second time, as the father "refocused" the binoculars before he looked a second time, and after the son gave him a reference point, he did see the smoke. In a later scene, the son sees a "small figure" in the road—"the boy stopped and put his hand on the carriage. Papa, he whispered. The man looked up" (161). The son sees smoke from a cookfire (196). The son sees a plantation house a mile off the road through a "curtain of soot" (202).

The father "sees" other things: the boy's "pale and tangled hair. Golden chalice, good to house a god" (75), and "What if I said that he's a god?" (172). The father's eyes are older than the son's, more tied to books, burned by early fallout dust, by more years of this dust, and from these problems, and in his coughing, he is able with his "weeping eyes" to see the son with golden hair "glowing in that waste like a tabernacle" (273), with "light all about him" (277).

In the book's opening, in the father's dream vision of a transparent "creature" in a cave, "where the child led [the father] by the hand," "Their light playing over the wet flowstone walls" (3), they see the beast's bones, brain, heart, bowels, "cast up in shadow on the rocks behind it" (4). The dream is a metamorphosis of Plato's Allegory of the Cave, in which people with their backs to the light and to the real things see only the shadows cast by real things on the cave wall they face (cf. 58 "philosophers chained to a madhouse wall"). In astrological terms, the characteristics of head, heart, bowels, are: thought, love (of those known), and reins or compassion (love-affection-consideration

for those not deeply known). These characteristics seem distributed as thought and love in the father's self, and as love and compassion in the son's self.

In these sorts of distinctions between the father and son is also an echo of the Old Testament Father, and the New Testament Son, particularly as it is the son who intercedes with his father to show compassion, generosity, toward the others they meet on the road. The son wants to help the man struck by lightning (though nothing can be done) (50). The son talks his father into feeding a very old man (163-64, 168-69, 173), and begs that his father give the cart's thief back his clothes, even given the fact that the thief shows no care for their lives when he steals their clothes (255-260), the son's plea an intercession against an-eye-for-an-eye judgment.

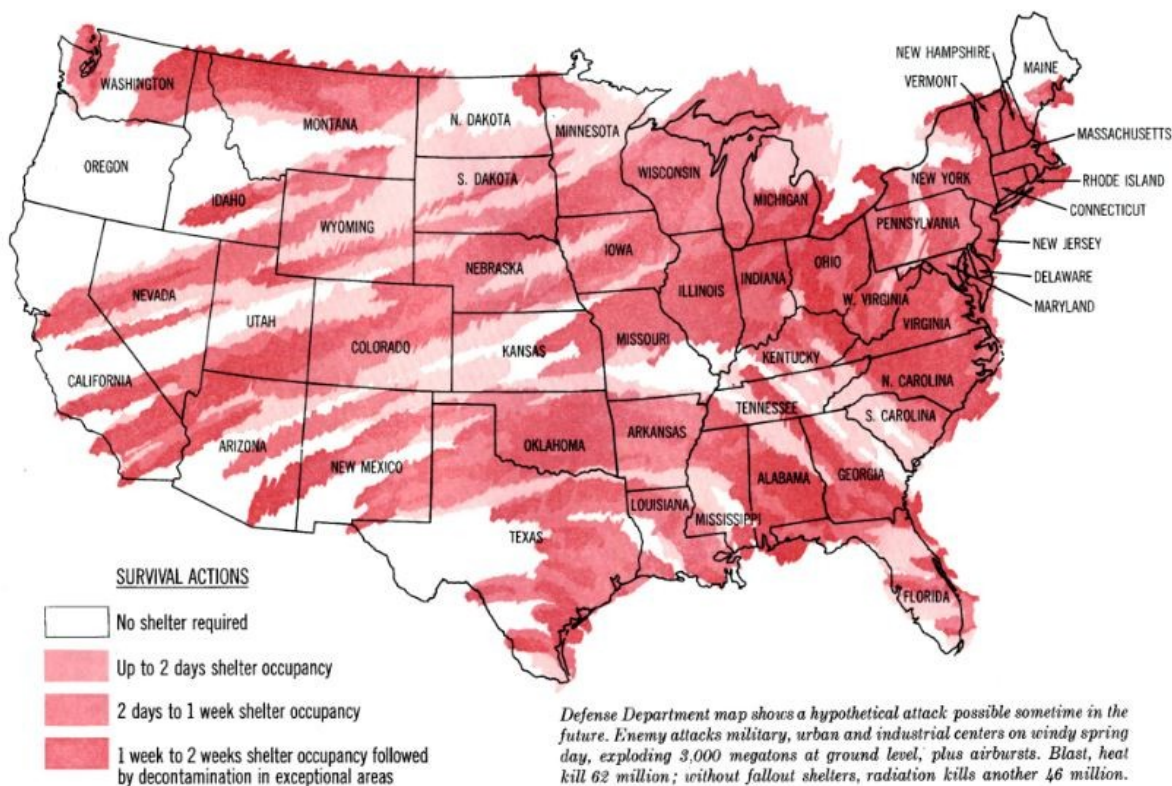
The father "held aloft" his newborn son (59) in a gesture that may be more than simply clearing the son's airway, may also be an offering, an acknowledgement, an intercession, a prayer or plea for protection. Later, after they had traveled the road for a while, the father "looked at the sky out of old habit but there was nothing to see" (103). And the man's wife spoke truly when she says "[Y]ou wont survive for yourself." "[C]obble together some passable ghost." "Breathe it into being and coax it along with words of love." "[S]hield it from harm with your body" (57). In the man's illness, the child he has protected has become such a symbol.

At the books end, "Old dreams encroached upon the waking world." Once again in the dream cave, the father sees that "In that cold corridor they had reached the point of no return which was measured from the first solely by the light they carried with them" (280). The light between them is rightly the Spirit.

The father looks east for light in the book's first paragraph, and at the end he has the son's light—"There was light all about him" (277). The father, the son, the light; the light, their love, is between father and son as the physical lamp is located between them at the book's opening ("Their light" 3, see also they "lay down with...the lamp between them" 10). And at the book's end the son makes a fire to warm them—the son's first fire—which becomes "A fading light" that triggers for the father the "Old dreams" with cave elements, dripping water, "tracks of unknown creatures," akin to the father's dream that opens the book. In this final vision "The light was a candle which the boy bore in a ringstick of beaten copper" (280). The "salitter" (261) is drying from the earth, the presence of God in the earth is fading, and the boy "tried to talk to God but the best thing was to talk to his father and he did talk to him and he didn't forget" (286).

THE EFFECTS OF A FULL SCALE nuclear exchange are at best models, extrapolations, guesses. McCarthy's story seems unconcerned by who first launched, how many megatons, or where and when.

Oberdorfer, Dan. "Survival of the Fewest." *The Saturday Evening Post*. 236 (March 23, 1963): 17-21.



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Kaitlin (not verified) on 17 Oct 2011. "The clocks stopping at 1:17, etc." At: scienceblogs.com/builtonfacts/2009/03/24/the-road. Accessed 5/8/2020.

Kearny, Cresson H., *Nuclear War Survival Skills: Lifesaving Nuclear Facts and Self-Help Instructions*. [Original Edition Published September, 1979 by Oak Ridge National

Laboratory A Facility of the U. S. Department of Energy] Updated and Expanded Edition, 1986. Skyhorse Publishing, NY, 2015.

Morgan, Wesley G. (2008). "The route and roots of *The Road*." *The Cormac McCarthy Journal*, 6(1), 39-47.

Along the road, McCarthy names conifers (95, 117, 196, etc.), and duff—pine needles fallen under a tree (95, 117, 124), and birds (53, 63, 215).

"Conifers, birds and mammals are prominent among the more sensitive groups" (Ehrlich, Paul R. *CaD* 52).

"Nonhuman organisms are differentially susceptible to radiation damage. The most vulnerable include most of the coniferous trees that form extensive forests over the cooler parts of the Northern Hemisphere" (Ehrlich, Paul R. *CaD* 52, cf. Woodwell, George M. *CaD* 126).

"Dead, dry conifers would become kindling for eventual massive forest fires" (Ehrlich, Paul R. *CaD* 61).

"In addition, marine ecosystems are particularly vulnerable to both light reductions and UV-B increases, potentially leading to devastation of the phytoplanktonic food base" (Harwell, Mark A. *CaD* 121).

At the coast, a storm had "leveled the dead black trees from east to west like weeds in the floor of a stream," where the man "knew that he could go no further and that this was the place where he would die" (277), the storm was an effect of the nuclear war, the nuclear winter. It would seem fortunate that the father and son walked to the coast several years after the start of the nuclear winter, when the temperature differential between land and ocean seems to have moderated.

"The only areas in the Northern Hemisphere where terrestrial plants might not be devastated by severe cold would be in coastal zones and on islands where temperatures would be moderated by the oceans. Coastal areas, however, would experience especially violent weather because of the enormous temperature differential that would develop between the land and the sea" (Ehrlich, Paul R. *CaD* 50, see also Sagan, Carl *CaD* 16).

"The thermal differential between intensely cold continental land masses and the warmer oceans creates violent coastal storms" (Ehrlich, Paul R. *CaD* 61).

In *The Cold and the Dark*, projections are that “nuclear winter” lasts a few months, perhaps a year or maybe two, and do not include soot taken into the stratosphere by fires, by firestorms. Yet, in *The Road*, the son is seven or eight years old, and he has known nothing but winter darkness. So, the novel’s many references to soot, and the continuing forest fires, are perhaps present to extend the scientific modeling.

“Is there a circumstance, likely or unlikely, in which the smoke plume reaches into the stratosphere? In that case the effects are much worse, much more prolonged than we calculated. We have not assumed any significant stratospheric soot” (Sagan, Carl *CaD* 34).

“The climatic impact of sooty smoke from nuclear fires ignited by airbursts is expected to be more important than that of dust raised by surface bursts (when both effects occur). Smoke absorbs sunlight efficiently, whereas soil dust is generally nonabsorbing. Smoke particles are extremely small (typically < 1 μm in radius), which lengthens their atmospheric residence time.”

“[I]ntense fire storms could pump smoke into the stratosphere, where the residence time is a year or more” (Turco, R. P.; Toon, O. B.; Ackerman, T. R.; Pollack, J B.; Sagan, Carl *CaD* 182).

“If a nuclear war results in the burning of cities and forests, then fine particles—very dark, sooty, smoky particles—enter the lower atmosphere. This combination of dust from high-yield nuclear weapons explosions and soot from cities and forests set ablaze by air bursts of any yield produces, according to our calculations, a pall of obscuring material which significantly darkens and cools the Earth. The structure of what used to be the troposphere would be profoundly changed” (Sagan, Carl *CaD* 134).

The sun is created in Genesis, and a “Spectrally...very similar” light is in the novel’s “shear of light” that is the end of virtually all of that earthly creation. Too, “People sitting on the sidewalk in the dawn half-immolate and smoking in their clothes” (32) are direct bomb effects since “during that brief time, clothing, paper...would smoke and burst into flames. Exposed skin would be severely charred.”

“One of the most striking effects of a nuclear explosion is its ability to burn and char a vast surrounding area. About one-third of the total energy of a low-altitude nuclear burst is emitted from the fireball as an intense pulse of ‘bomb light.’ Spectrally, this light is very similar to sunlight except that it is highly concentrated. For example, at a distance of 10 kilometers from a 1-megaton, low air burst, the fireball would grow in

brightness to 1,000 times the sun's brightness in one or two seconds, after which it would dim rapidly. But during that brief time, clothing, paper, and other materials irradiated by the bomb light would smoke and burst into flames. Exposed skin would be severely charred by third-degree burns" (Turco, Richard P. *CaD* 81).

If the world's catastrophe in *The Road* is nuclear winter that follows war using nuclear weapons, and given a 7-10 rule, given above, of the relatively quick decay of virtually all fallout near to a bombsite, what radiation could survivors expect?

"For the 5,000-megaton baseline case, we find that the prompt fallout, the plumes of radioactivity that are carried downwind of targets, gives a radiation dose for 30 percent of Northern Hemisphere midlatitude land areas of about 250 rads. In addition, there is a dose of about 100 rads delivered more or less uniformly over the Northern Hemisphere. This is a combination of external emitters and ingested radioactive materials. The prevailing wisdom establishes a mean lethal whole-body dose of ionizing radiation, for healthy adults, of between 400 and 500 rads. This is with the help of comprehensive medical care" (Sagan, Carl *CaD* 19).

"In the TTAPS 5,000 megaton scenario, the intermediate-term, external, whole-body, gamma ray dose was calculated to be 20 rem, on average, for the Northern Hemisphere" (Holdren, John P. *CaD* 78).

"The calculations presented here show a background radiation level of about 50 rads. These 50 rads, in external gamma rays, [because trapped in the troposphere] will be spread over a longer period of time. Therefore they will not produce any serious symptoms. The rate of decay of blood cells is greater than the rate in which the radiation is received. Thus I feel that we should not include this effect as one which causes initial stress. Why? Because there are long-term serious effects—carcinogenic and possibly genetic. It seems to me that the effects as described here [the cold and the dark] are already so serious that consideration of radiation effects would not add significantly to results" (Rotblat, Joseph *CaD* 105).

The father and son "came upon a country where firestorms had passed leaving mile on mile of burn," "and they began to come upon the dead. Figures half mired in the blacktop, clutching themselves, mouths howling" (191).

Middlebrook, Martin. 1980. *The Battle of Hamburg*. Allen Lane. In Rhodes, Richard. *The Making of the Atomic Bomb*. Touchstone / Simon & Schuster, NY, 1986.

“Small fires had coalesced into larger fires...[t]hat created the wind, a thermal column above the city like an invisible chimney above a hearth; the wind heated the fury at the center of the firestorm to more than 14,00 degrees, heat sufficient to melt the windows of a street car, wind sufficient to uproot trees” (Middlebrook 473-474).

“The firestorm completely burned out some eight square miles of the city, an area about half as large as Manhattan” (Middlebrook 474).

A nineteen-year-old Hamburg milliner remembers a scene during a firestorm following an Allied bombing, “We got to the Löschplatz [park] all right but I couldn’t go on across the Eiffestrasse because the asphalt had melted. There were people on the roadway, some already dead, some still lying alive but stuck in the asphalt. They must have rushed on to the roadway without thinking. Their feet had got stuck and then they had put out their hands to try to get out again. They were on their hands and knees screaming” (Middlebrook 474).

The father’s illness may be a radiation effect, as he was probably out-of-doors seeking food sooner and longer than his wife with the child. Or he could have developed tuberculosis.

“Tuberculosis.” *Wikipedia*.

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<https://www.ncbi.nlm.nih.gov/books/NBK219162/>

“5-10% of people in the United States population test positive by the tuberculin test.”

“As of 2018 one quarter of the world’s population is thought to have latent infection with TB.”

“As of 2018, most TB cases occurred in the regions of South-East Asia (44%), Africa (24%) and the Western Pacific (18%) [.].”

“Tuberculosis.” *Wikipedia*. Robbins; WHO “Tuberculosis”; WHO “Global”

“If a tuberculosis infection does become active, it most commonly involves the lungs (in about 90% of cases). Symptoms may include chest pain and a prolonged cough producing sputum.”

“Tuberculosis.” *Wikipedia*. Lawn and Zumla; Behera

“Diseases like salmonellosis, shigellosis, infectious hepatitis, amoebic dysentery, malaria, typhus, streptococcal and staphylococcal infections, respiratory infections and tuberculosis would occur in epidemic form over vast areas” (World Health Organization 5).

“[A]s people became desperate with hunger, survival instincts would take over, and armed individuals or marauding bands would raid and pilfer whatever supplies and stores existed” (“The Immunological Impact of Nuclear Warfare.” National Institute of Health 285).

“Stress, depression, and bereavement have all been reported to alter the immune system and increase the risk of infection” (“The Immunological Impact of Nuclear Warfare.” National Institute of Health 321).

“The cellular immune deficits associated with protein-calorie malnutrition correlate with the frequency and severity of infections with *Candida albicans*, measles, and tuberculosis, all of which are T lymphocyte-mediated infections” (“The Immunological Impact of Nuclear Warfare.” National Institute of Health 323).

“Clinical studies suggest that psychological variables influence susceptibility to infection and delay recovery from upper respiratory diseases, influenza, herpes simplex lesions, and tuberculosis. These psychologically induced altered immune states are probably mediated by changes in lymphocytes. T lymphocyte function is significantly depressed in bereaved spouses.” (“The Immunological Impact of Nuclear Warfare.” National Institute of Health 321-322).