Stark Realities of *End Zone*

An Honors Thesis (HONRS 499)

by

Ryan K. Hilton

Patti White, Ph.D.

Ball State University
Muncie, Indiana

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We are speaking on this occasion, not as members of this or that nation, continent, or creed, but as human beings, members of the species man, whose continued existence is in doubt. The world is full of conflicts, and overshadowing all conflicts is the titanic struggle between communism and anti-communism. Almost everybody who is politically conscious has strong feelings about these issues. But we want you, if you can, to set aside such feelings and consider yourselves only as members of a biological species which has had a remarkable history, and whose disappearance none of us can desire. We shall try to say no single word which shall appeal to one group rather than to another. All, equally, are in peril, and if the peril is understood there is hope that we may collectively avert it.

--Bertrand Russell and Albert Einstein

September 1955
**Thesis Statement**

*End Zone* (1972), by Don DeLillo, is about nuclear war and college football; here, metaphor is used to show the interchangeability between the two. Gary Harkness is the narrator, a man obsessed with nuclear war. Preparation and escalation are key concepts used to describe the winning season Harkness and his teammates are having at Logos College in Texas, until they lose the "big game." Then a sense of the *unspeakable* permeates Logos, as no one wants to discuss the results of the game. DeLillo brilliantly conceals the fact that the United States has entered a nuclear war. Metaphor becomes literal after physical signs of nuclear blast and fallout become apparent.

My purpose is to explain many of the physical signs--disguised and blatant--that the *unspeakable* has occurred. Events suggesting that thermonuclear war has occurred include: refugees, a blasted landscape, the walking wounded, war games, hair loss, suicide, and refugees.
Stark Realities of End Zone

That’s it, the Zone!
And immediately such a chill over my skin...
Every time it’s that chill, and even now I still don’t know
if that’s how the Zone receives me or
if it’s the Stalker’s little nerves playing tricks.

--Iurii Shcherbak (Chernobyl)

End Zone (1972), by Don DeLillo, is about college football and nuclear war. Gary Harkness, the narrator of the novel, is fascinated by nuclear war. Since he is a football player, he is also fascinated by football. And in the words of Coach Emmett Creed, the entire football team at Logos College lives for football: “It’s only a game, but it’s the only game” (15). But Harkness’s fascination with nuclear war is hauntingly abnormal. He not only associates nuclear war with football, but with everyday life.

From the start, Harkness wastes no time in providing the details of his football history. He has true ability as a halfback, since he attests that he won all-state honors at that position and received 28 athletic scholarship offers from colleges around the country. He accepted a scholarship at Syracuse University, but reveals he was thrown out:

They threw me out when I barricaded myself in my room with two packages of Oreo cookies and a girl named Lippy Margolis...For a day and a night we read to each other from a textbook on economics. She seemed calmed by the incoherent doctrines set forth on those pages. (18)

Other schools accepted Harkness, but he simply did not fit into their programs. He finally settles at Logos where he “like[s] the idea of losing [himself] in an obscure part of the world.” He discovers that his life means “nothing without
football" (22).

As the book opens, the Logos football team has gathered for practice two weeks before school begins. No one else is at the small Texas campus. The desert sun and grueling practices take a toll on all the players, but the isolation bothers Harkness the most. “Of all the aspects of exile, silence pleased me the least” (30). He further expounds on silence and exile:

Exile in a real place, a place of few bodies and many stones, is just an extension (a packaging) of the other exile, the state of being separated from whatever is left of the center of one’s own history. (31)

One way that Harkness and the players deal with the silence and isolation is by playing “Bang, You’re Dead,” the game every juvenile has played in which the player’s hand assumes the shape of a crude pistol and fires at other players. The Logos football teams enjoys this game because “it [brings] men closer together through their perversity and fear, because it enable[s] [them] to pretend that death could be a tender experience, and because it [breaches] the long silence” (34).

**Part One**

*WHEN THE GOING GETS TOUGH*  
*THE TOUGH GET GOING* (17)

The first page of the first chapter piques the reader’s interest: Harkness mentions there were “intonations to that year...” (3), but he never defines those intonations. Harkness is evasive and speaks of metaphor. He hints at an impending doom or sense of failure: he implies that something will go amiss in the story. For example, Harkness foreshadows the fall of Taft Robinson, the star running back:

In time he might have turned up on television screens across the land
endorsing eight-thousand-dollar automobiles or avocado-flavored instant shave... But this doesn't happen to be it. There were other intonations to that year, for me at least, the phenomenon of anti-applause--words broken into brute sound, a consequent silence of metallic texture.... (3)

Much later in the book, Harkness tells us that Robinson eventually drops off the team, shaves his head, and begins wearing dark sunglasses. But Harkness never tells us why the star running back at Logos College in west Texas changes, and never asks Robinson about his drastic changes, nor does Harkness--who is usually ruminative--speculate. Furthermore, Robinson does not speak of his changes.

In Part One, End Zone focuses on the football practices at Logos College and on the conversations among the players, coaches, and professors. The reader sees the preparation, repetition, and anguish involved in trying to perfect the team. Harkness sums up Part One concisely in his narrative, naming four aspects of football and the practices associated with it: "(1) A team sport. (2) The need to sacrifice. (3) Preparation for the future. (4) Microcosm for life" (19). These are also aspects of thermonuclear war. Fighting a war is a team effort by the armed forces; a great deal of preparation and sacrifice are essential. Clearly, football is a microcosm for life--or more precisely, football is a metaphor for the currently escalating nuclear confrontation in Harkness's world.

Part One could easily be subtitled "Preparation." Logos practices in the unbearable heat and deftly defeats inferior opposing teams, while Harkness carries on strange, elusive conversations with his teammates. Just as Logos must prepare for the "big game," so must the United States prepare for nuclear war with a foreign country. For instance, Harkness reveals that before leaving for Logos College, he
noticed something of military significance in his home town:

In late spring, a word appeared all over town. MILITARIZE. The word was printed on cardboard placards that stood in shop windows. It was scrawled on fences. It was handwritten on loose-leaf paper taped to the windshields of cars. It appeared on bumper stickers and signboards. (20)

As the book progresses, particularly after the big game, the reader sees that Harkness is not simply comparing football and nuclear war. In actuality, he is cloaking a nuclear war crisis beneath an “all-important” college football game, or the “big game.” Unfortunately, the nuclear big game is a reality in which people take their lives, or become deathly ill, while others flee the consequences. The horror is unspeakable; therefore, football is the only thing left for Harkness and the players at Logos College to speak about.

Despite the fact that little attention is paid to the small games (or skirmishes) Logos plays in Part One, Harkness reveals that the Logos College football team enjoys a winning season playing mediocre teams. Before the team’s biggest game, which is narrated in painstaking detail, Logos has “scored 246 points and given up 41” (95). Obviously, Logos has a good team, but Harkness informs us that the team faces a game “that [will] make or break the season” (95). Since football constitutes the teammates’ lives, the big game will yield splendid results if they are to win, and dire, lasting consequences if they are to lose. The big game is against West Centrex Biotechnical Institute.

The name of Logos’s nemesis--West Centrex Biotechnical Institute--is unlike the names of schools that have football programs. For one thing, the name is devoid of life, implying a robot-like student body and football team. Further, the
name conceals the word centre in "Centrex," intimating its centrality of the book. "Biotechnical" is somewhat of a paradox: bio means "life"; technical, "mechanical" or "automated." Further, Centrex is not a college or a university; instead, Centrex is an Institute, a sterile and brutal world. The nature of the opponent is unknown, wicked, and subhuman:

This is a bunch of head-hunters. They like to hit. They have definite sadistic tendencies...Centrex is mean. They're practically evil. They'll stomp all over you. It'll be men against boys. You better execute out there. (95-96)

As Logos practices and plays small games, the United States and the rest of the world wage and suffer through small strategic nuclear attacks. West Texas has not yet been hit or exposed to radiation. In other words, the “zone” in Harkness’s and everybody else’s world is west Texas.

The characters are keenly aware that their world is falling apart. People are in despair because their “destiny is in the hands of a Being or Force dwelling beyond the scope of man’s reason” (70). And because of the tragedies that occur in Part One, Harkness and everyone at Logos “[is] unquestionably reminded of [their] destinies” (70). For instance, quarterback coach Tom Cook Clark shoots himself in the head one morning with a .45. Immediately following Clark’s funeral, Norgene Azamanian’s destiny is horribly fulfilled in a fatal automobile accident. Harkness, an exile in Texas, envisions the destruction occurring elsewhere in the world from a nuclear holocaust:

I seemed to be subjecting my emotions to an unintentional cycle in which pleasure nourished itself on the black bones of revulsion and dread. Tidal waves for Bremerhaven. Long-term radiation of the
Mekong Delta. For Milwaukee I had planned firestorms. (43)

Later Harkness says, "I assumed someone in my family had died...I wasn't particularly relieved that no one had died" (94). Harkness fears for his family, and that is why he is not relieved to find that "no one had died" (94).

Throughout, Harkness speaks of strange topics and toils over arcane, abstract concepts. He concentrates on subjects that have no real significance in everyday life. Harkness even wonders about himself: "What was wrong with me? Had I gone mad?" (21). Nuclear war pervades Harkness's life because it is imminent, and he is maintaining a stoicism against what is occurring in reality. In other words, the world has gone mad, not Harkness.

Harkness finds reality unspeakable. Nuclear war is horrible and frightening to think about and describe: language fails here because it cannot express the turmoil, destruction, and outright depravity that pervades the world. Harkness has given up on language because it no longer serves to accurately communicate. And he is not the only one facing the inadequacy of language. For instance, Billy Mast, who lives two doors down from Harkness, "[works] every night at memorizing a long poem in a language he'd never read before, never spoken, never even heard except in one or two movies" (73). Mast realizes that his native English cannot express the horror that approaches so he spends his time speaking in a language which does not communicate to him. Since humans think in language, speaking an unintelligible tongue yields no reality.

Later, in Part Three, Mast further discusses his obsession with language failure and the "untellable" class he is taking at Logos. When asked about the class, he says he cannot reveal what they study in the class because it is untellable: "We've done a certain amount of delving. We plan to delve some more. That's about all I
can tell you” (181).

In thermonuclear war, after the damage is done and there are no survivors, there is no communication, only “the silence.” In Part One, DeLillo addresses these general concepts: language breakdown, game strategy, escalation, and silence. Each of these prepares the reader to recognize the nuclear detonation, which directly affects Logos in their big game.

Harkness never reveals what transpires in the real world, nor do the other characters in the book. Harkness’s reality is limited; he sees everything through the eyes of football and military strategy. His professors toil over kill-ratios, while his teammates speak of the “metallic silences,” such the discussion Harkness and Bloomberg hold about the issue:

"Does the silence bother you?"
"What silence?” he said.
"You know what I mean. The big noise out there.”
"Out over the desert you mean. The rumble.”
"The silence. The big metallic noise.”
"It doesn’t bother me.”
"It bothers me,” I said. (48)

Harkness introduces “silence” and “metallic” earlier, but never fully explains what he means. He skirts the issue:

There were other intonations to that year, for me at least, the phenomenon of anti-applause--words broken into brute sound, a consequent silence of metallic texture. (3)

The “big noise” and “rumble out there” are nuclear detonations outside of Texas. Bloomberg and Harkness are discussing their approaching destinies.
Toward the end of Part One, Harkness is so obsessed with nuclear war that he walks two miles to his professor's motel to learn more about it. His fears about nuclear destruction escalate as the big game draws nearer. Major Staley informs Harkness about the consequences of nuclear war:

First to sixth hour after detonation the ground-zero circle is drenched with fallout. By the end of the first day the dose-rate begins to slow down. After a few months it slows down considerably. It all depends on the megatons, the fission yield, air to surface burst, wind velocity, mean pressure altitude, descent time, median particle size. (86)

After Harkness's visit with Major Staley he walks back to his dormitory and describes the landscape:

The sun was low, swept by slowly moving clouds in its decline, a crust of moon also visible, more pure in silence than the setting sun. I walked quickly, the only moving thing. Nothing else stirred, not even waning light folding over stone and not the slightest flick of an insect at the perimeter of vision. (88)

The landscape is the Texas desert, with sparse vegetation, wildlife, and few humans. The landscape is harsh from the intense heat and dry climate, as it would be after nuclear detonation from the nuclear blast and radiation fallout. "We were in the middle of the middle of nowhere, that terrain so flat and bare, suggestive of the end of recorded time, a splendid sense of remoteness firing my soul" (30). Harkness hints that the end is coming when he says, "...suggestive of the end of recorded time...(3)." Armagedon is drawing nearer as the nuclear strikes get closer to west Texas.
Throughout, when Harkness describes the landscape, he never mentions any living animals or insects, since most life forms in the plant and animal kingdoms are not immune to the intense desert climate just as they are not immune to radiation poisoning. In addition, since there is sparse vegetation and low populations in western Texas, a blasted nuclear zone may prove difficult to discern in Harkness's descriptions of the landscape.

Harkness is fully aware of his landscape and describes the inhospitable Texas wasteland at length. "I passed a number of dead animals, just scraps of fur now, small pieces of flesh macadamized, part of the highway..." (79). Are these corpses roadkill or victims of the desert? Perhaps they are victims of radiation as it gradually sweeps across the country. Just as the big game draws closer to Logos College in western Texas, so does the immediate, local nuclear fallout. Humans as well as other animals--and even insects--cannot endure radiation once it attains a certain "rad" level:

It is interesting to note that lower life forms are more resistant to radiation death. The LD/50 for sheep, swine, dogs, and cats is about 220 rads; for monkeys (and humans) 500 rads; for rabbits, mice, and hamsters, roughly 900 rads....One of the most radiation-resistant creatures on earth is the cockroach. It has an LD/50 of 100,000 rads. (Panati & Hudson 24)

In Part Three Conway informs Harkness about radiation resistance. His discourse nicely parallels the above-cited paragraph:

"Insects are highly resistant to radioactivity," Conway said. "Man dies if he's exposed to six hundred units. Mr. Insect can survive one hundred thousand units and more. And he won't have birds feeding
off him. He’ll be able to reproduce freely. There won’t be any balance in the sense we know it.” (207)

Present day Chernobyl, the site of the 1986 nuclear reactor disaster is described much the same way as Harkness describes the Texas landscape, baren of life or vegetation:

Now Chernobyl is virtually deserted, devoid of human life, surrounded by a silent brown forest. The men, women, and children who lived there have been told that their homes will be uninhabitable for years to come. (Gale & Hauser 23)

**Part Two**

...the breathless impact of two destructive masses, quite pretty to watch (111).

Part Two, approximately thirty pages long, centers on the big game between Logos and Centrex. Harkness painstakingly describes the action of the football game, giving the reader every single detail, such as what plays are run, the kinds of snaps used, and a multitude of football jargon. Football uses a coded language just as the military employs a coded language for all military situations: “Blue turk right, zero snag delay” (111).

Harkness even warns that “the spectator, at this point, is certain to wonder whether he must now endure a football game in print...”(111). He then points out that many commentators of the game “have been willing to risk death by analogy in their public discussions of the resemblance between football and war” (111). Ironically, Harkness “risks death” by analogy throughout the entire book.

During the Logos-Centrex game, Harkness and Ted Joost carry on an obscure
conversation about satellites. This exchange is another allusion to thermonuclear war, for warfare of this magnitude is fought strategically from thousands of miles above earth via the use of satellites. The idea of playing a football game from space is absurd; this exchange is not about playing football from space, but rather serves as a reminder that the big game--nuclear war--can be and is played from space:

This whole game could be played via satellite....A computer provides the necessary input. There’d be a computerized data bank of offensive plays, of defensive formations, of frequencies. The satellite broadcasts to the helmet. (132-133)

Logos loses the big game, and the team is crushed physically and emotionally. As Logos meets in the locker room after the game, a team prayer is forthcoming, but first Billy Mast again elects not to use English and recites a few German words to himself “in total stillness” (142). The results of the big game are unspeakable, and the German words give him comfort, “though not as much as they used to when he didn’t know what they meant” (142).

Part Two is about the Logos-Centrex game. Part Two also describes the nuclear blast, the detonation of nuclear warheads in west Texas. Harkness implies that the big game is not really the football game, but actual warfare when he says: “As Alan Zapalac says later on: ‘I reject the notion of football as warfare. Warfare is warfare. We don’t need substitutes because we’ve got the real thing’ ” (111).
Part Three

I realized I had nothing to look forward to, nothing at all.

I hoped this was just a momentary postgame depression (146).

Part Three begins on the team bus after the devastating loss of the big game at Centrex. Nearly the entire Logos football team suffers some injury as a result of the game: Billy Mast has a broken arm; Lenny needs “this thing of [his] x-rayed”; Conway suffers a broken collarbone; Lee Roy Tyler and Randy King, a wrenched knee; Yellin, a swollen ankle, and Dickie Kidd, a shoulder separation. The list continues for another half page of “assorted contusions and lacerations” (147). The cracking and breaking of bones is symbolic of the colliding of nations at war, the “breathless impact of two destructive masses” (111). The sheer brute force it takes to break these players’ bones is similar to the sheer brute force of thermonuclear war which will shatter Harkness’s world. The injuries conjure up images of the blast that the Logos community experiences. These players are the walking wounded, victims of the nuclear blast and fallout.

Harkness focuses on the injuries of the players, on the aftermath of the battle (war). The majority of the injuries are broken bones. The reasons: Nuclear blast and radiation.

Nuclear blast injuries are self-explanatory: injuries suffered from the millions of megatons of fissioning atoms. But radiation fallout injuries are less overt and more difficult to comprehend:

Generally, radiation injuries fall into two categories. The first type occurs when a large dose of radiation has been received and many cells
are affected. Under these circumstances, severe tissue damage and radiation sickness are evident within days. The second type of radiation is long-term and results from damage to a single cell...it is inevitable that a certain percentage will be ingested or inhaled. Once this occurs, due to their chemical makeup, the particles settle in certain organs. For example, strontium-90 is chemically similar to calcium, and is therefore incorporated into bone (Gale & Hauser 20-21).

Radiation most seriously affects cells that divide quickly--those making up bone marrow, hair follicles, and the gastrointestinal tract (Gale & Hauser 34). In particular, strontium-90, a type of radioactive fallout, "has an affinity for our bones" (Panati & Hudson 145). Strontium-90 attacks the human bone tissue and weakens it. The Logos community, before the big game, has already been subjected to fallout from other nuclear zones; the radiation has been slowly leaking into the Texas wasteland, and the unspeakable has become a reality. Strontium-90 has affected the skeletal structure of the players' bodies, making the bone tissue weak and permitting the bones to crack like egg shells.

Further examples are rife in Part Three that thermonuclear war has broken out. Harkness speaks of the military draft when he again mentions the MILITARIZE sign that was plastered all around his hometown. This time he discusses it with Myna Corbett and Alan Zapalac. Zap provides an interesting angle on the issue: "I don't trust a place where that kind of i-z-e word appears. I-z-e words make me nervous. I go underground. I go into the mountains" (165). Myna, who mysteriously has dropped a lot of weight throughout the book, says she would go to Canada or Mexico if she saw that sign. Zap and Myna understand the nuclear significance of the sign.
Also in Part Three, Harkness discusses other injuries—not the big game injuries (blast injuries), but radiation effects. One outstanding example of radiation poisoning includes Harkness's description of Wally Pippich: "Wally's tongue was lumpy and bluish" (177). Additionally, the players know that Robinson simply did not shave his head. He lost his hair from radiation poisoning, but Harkness and his teammates are too frightened to openly admit it: Harkness remarks, "I know all about it. I have no comment" (213). Then Harkness says that Robinson's sunglasses do not mean anything, just like Steeples's golf glove on his hand. Spurgeon, however, says that Steeple's glove has a purpose. The glove, Spurgeon says, is hiding some unknown infection:

Steeples has some kind of infection. It's ugly as hell apparently.

He was exposed to something. It's a sort of burn plus a sort of infection.

He just wants to keep it hidden. (213)

Survivors of the Chernobyl incident suffered similar burns, known as beta-radiation burns and thermal burns. Obvious signs of radiation induced skin injuries did not develop until 3 days after the accident, when a transient skin erythema developed. Widespread erythema 5-10 days later developed with areas of the skin breaking down, some of which required surgery (Mould 60).

Just as Harkness and the rest of the Logos community do not address the unspeakable horror, the persons involved in the operations at the Chernobyl plant also chose not to speak of it. For instance, professor A.A. Abagyan, a nuclear engineer at Chernobyl, held a news conference shortly after the 1986 disaster. He was asked about the people in the emergency zone—the ground-zero level at the nuclear site—and from this brief exchange, a sense of the unspeakable pervades:

Questioner: "What happened to them?"
Abagyan: "You mean medically?"

Questioner: "No."

(Pause.)

Abagyan: "They have been punished.

Questioner: "How?"

(Even longer pause.)

Abagyan: "I am not an expert in that field."

(Press conference brought to an abrupt close.)

(Mould 65)

Later, Harkness comes to terms with the horror of the aftermath. He says:

It rained and then snowed. I wrote letters through the blurred afternoons, embryonic queries on the nature of silence and time, notes really, laconic and hopeful, ready for bottling, and I mailed them to friends and former teachers, to people back home, to self-possessed young women in prospering colleges. There were no picnics with Myna. The days seemed longer than incandescent days of summer. Mrs. Tom died finally after remaining in a coma for several weeks. (189)

Typically, the western Texas desert receives no snowfall; it is not impossible, but it is extremely rare. The snow Harkness describes is a result of the effect of radiation fallout on earth's weather systems. For instance, there is a widely held theory that freakish weather was caused by the H-bomb tests of the 1930s and 1940s. And NASA has concluded that our weather is becoming increasingly eccentric from radiation that is emitted from all types of sources (Fry et al. 281).

Harkness writes letters of hope to former acquaintances, "embryonic queries
on the nature of silence and time, notes really.” He writes the letters to fill the long days, not really expecting any sort of reply because the people he is writing to are no longer alive. These notes are queries, philosophical in nature, a form of catharsis to appease Harkness’s fear. His days are numbered—radiation now affects his Zone, the End Zone.

By the end of *End Zone*, it is apparent that Taft Robinson is indeed suffering from radiation exposure. He drops off the team, and when Harkness visits him in his room one day, there is a sense that Robinson is just pretending to be able to see from behind his dark sunglasses:

> Come right in. Find a chair and make yourself right at home.
> I see you’ve already got a chair. If I’m not mistaken, you’re already in the room and you’re already seated. (231)

Since he has little or no sight, Robinson has to organize his room, keeping only the essentials, in order to allow him to mentally picture where everything is: “The room seemed slightly more bare than it had the last time I’d visited” (230).

The last two pages of the book confirm that detonation has occurred. Harkness’s professor Zapalac has mysteriously left without a trace: “His scarf was there but he wasn’t” (241). Earlier, Zap said he would “go underground” or “to the mountains” if the I-Z-E words ever appeared in his town (165). And the reader gets a sense that everyone else at Logos College has left. Harkness says: “There was nobody around and no sign of uniforms, new or old” (241).

Harkness then reveals that the next day he became violently ill: “High fevers burned a thin straight channel through my brain. In the end they had to carry me to the infirmary and feed me through plastic tubes” (242). By this point, Harkness, himself, has succumbed to radiation and now relies on life-support. His condition
parallels the symptoms of early onset radiation poisoning:

Radiation sickness is the first effect of high, whole-body doses. Symptoms include loss of appetite, nausea, vomiting, diarrhea, intestinal cramps, salivation, dehydration, fatigue, apathy, listlessness, sweating, fever, headache, and low blood pressure...In many cases radiation sickness is the prelude to a painful death. (UNEP 67)

**Conclusion**

_End Zone_ is rife with signs of nuclear war. Many parallels between Harkness's descriptions and textbook symptoms of nuclear warfare and radiation fallout exist. One of the most convincing parallels of game strategy and actual thermonuclear warfare occurs in Part Three. Here, Harkness visits Major Staley in his motel room, and the two play a crude form of warfare. Unfortunately, the scenarios that end in spasm responses that Staley and Harkness dream up are not hypothetical. The text suggests that the "twelve major steps or moves to complete the game" are actually happening around the world (223). In step eleven "Washington, D.C., is hit with a 25-megaton device. New York and Los Angeles are hit with SS-11 missiles" (225).

Although Harkness lives in a nuclear ravaged country, DeLillo masterfully conceals the overt signals that nuclear warfare is raging; at the same time, he permits the reader to draw his own conclusions. Harkness, a Texas exile, lives in a heat-blasted environment, where little difference can be discerned after a nuclear warhead detonates in the desert. In no direct way does Harkness tell what really happens; but he and everyone else at Logos rely on coded language. When they do not speak in a special coded language, they speak of abstract theories or revert to
speaking in an unknown language. Harkness likens nuclear war to game theory. He worries about the breakdown of language. And although concrete and animate objects are glossed over in Harkness's descriptions, he provides the reader with clues that radiation poisoning pervades the Texas landscape.

The different types of pain and suffering that all of the characters experience, ranging from broken bones, blindness, hair loss, weight loss, and nausea, are not even addressed; in these instances, Harkness and the other characters simply refuse to speak, allowing silence to permeate.

From the number of allusions, strange occurrences, and physical maladies mentioned in the book, it is possible to conclude that *End Zone* is not about the end sides of a football field; rather, *End Zone* is about ground-zero at Logos College in west Texas.
Fry, RJM, Douglas Grahn, Melvin L Greim, and John Rus, eds.  


Annotated Bibliography

Fry, RJM, Douglas Grahn, Melvin L Greim, and John Rus, eds.  

This colloquium addresses the major worries concerning exposures of populations to ionizing radiation. Most of the information on radiation hazards to man involves somatic effects and has been derived from the study of unusual groups of people who received unusual exposures. The colloquium also delves into issues such as models from radiation toxicity data, epidemiological conclusions from radiation toxicity studies, implications and applications of radiation toxicity data to other environmental hazards, and the degradation to our environment.


This moving book paints the picture of the 1986 nuclear core disaster. It provides a basic background to nuclear theory, such as the innovators behind it, a brief history, and an elementary introduction into nuclear reactions. The rest of the book gives gripping accounts of the disaster and the lasting ramifications after the accident.


Translated from Masuji Ibuse's *Kuroi Ame*, this moving novel weaves a central theme around the stories of several different people living in Hiroshima. The narrative moves backwards and forwards in time, the moment of the bomb's dropping, the crucial point around which the whole work revolves, occurring to great effect in many different guises throughout the book.

Chernobyl marked the final, spectacular collapse of the Cold War. This account examines the idea that nuclear bureaucrats succeeded in creating a new, more covert, and insidious version of the violence that has been perpetrated in the Soviet Union for more than seventy years: this new violence—radiation—was in turn aggravated by a deliberate policy of downplaying its dangers, as well as by the secrecy that surrounded the Chernobyl tragedy.


This book is an historical account of what happened before, during, and after the Chernobyl nuclear disaster. By the author’s choice, he does not “embroil” himself in the political arena over Chernobyl’s implication for the environmentalist issue. Included in the work are photographs to enable the reader to visually appreciate the actuality of the tragedy and its aftermath.


This book addresses the fact that while enjoying the benefits of radiation, people have ignored the many dangers associated with it. Almost unnoticed, radiation has become a pervasive, life-threatening pollutant—the invisible killer we cannot see, feel, or smell. Along with poisonous chemicals, radiation has emerged as a major health hazard, and if unchecked, it will become the primary pollutant in our lifetime.


Iurii Scherbak’s *Chernobyl* was published in the Soviet monthly journal, *Iunost*, in two issues in the summer of 1987, and also in the Ukrainian journal, *Vitchyzna*, in the spring of 1988. This English version appears as a result of an agreement negotiated between the Canadian Institute of Ukrainian Studies (CIUS) and the USSR Copyright agency in Moscow. This remarkable book represents our first eyewitness testimony to the events of and succeeding the Chernobyl disaster of April and May 1986.

This pamphlet-sized book addresses one publicly controversial issue: the effects of radiation. The United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) collects available evidence on the sources and effects of radiation, and evaluates it. It considers the wide range of natural and man-made sources and estimates the risks from radiation exposures. Much of this information is complied within this book.