Chapter 6

An “Endjoke”

Floating-Point Real
And Fixed-Point Real in Xorandor

In the next volume of the “Intercom Quartet,” Xorandor (1986), Brooke-Rose shifts her storytelling away from “redundant” adults like Mira to a generation weaned on computers. In the novel, twelve-and-a-half-year-old English twins Jip and Zab, nicknames for John Ivor Paul and Isabel Paula Kate, dictate contrapuntally into a pocket computer the story of their relationship with the eponymous Xorandor. Xorandor, whose origin remains a mystery for much of the novel, looks like a rock and is an ancient silicon life-form the twins accidentally discover as they are playing near their home in Cornwall, England. Xorandor receives and emits sound waves and has developed supercomputing capabilities. Like Steven Spielberg’s movie ET: The Extraterrestrial, a film that debuted in 1982, four years before the publication of Xorandor, Brooke-Rose’s novel extends a long literary tradition of child protagonists more hospitable to strange life-forms than the adults around them, who tend to be both more suspicious and more inured to routine.¹

Xorandor revisits the theme of technological anxiety in Amalgamemon, now through the lens of two self-described “whiz-kids” (Xorandor
9) who have excelled in computer class and whose dialogue with Xorandor, the computer stone, takes on the aspect, at least initially, of a computer game. As “kids,” the twins must overcome a credibility gap with adults when they discover this alien life form, but their facility with computers manages to counter the disbelief that Mira/Cassandra is fated to encounter. The novel bends to the textual form of computer programming, with chapter titles that mimic programming operations, “Begin,” “Restart” “Or” “And” “If” “Then,” and “Read.” Told from the point of view of the twin “detectives,” the comic novel, with serious underside, includes appropriately sophomoric jokes, such as an introduction to Xorandor in the first sentence that suggests his voice comes literally from (the) behind: “The first time we came across Xorandor we were sitting on him” (Xorandor 7), and “We jumped up as if our bottoms were burning” (Xorandor 15).

The dialogic form of the novel is a departure from Brooke-Rose’s characteristic experiments with the present-tense narratorless sentence (NS) she deploys in most of her novels. In Invisible Author, she traces her own interest in this narrative sentence and its “scientific present” as opposed to the more common “Speech Mode.” Curiously, in a work that could be classified as science fiction and might, therefore, seem most conducive to this “scientific present,” we find instead the jointly told, dialogic “dictation” of Jip and Zab. In Xorandor the storytelling relies on this Speech Mode in a number of forms: (1) the contrapuntal narrative of Jip and Zab, unmarked either by quotation marks or speaker captions, but marked by the twins’ frequent interruptions of one another with corrections, interjections, and embellishments; (2) captioned dialogue in a printout of secret recordings made by the twins through the mechanism of a “bug” they plant in their parents’ living-room ceiling-light. The bug, affectionately named “Sneaker,” is a device the twins deploy to discover just how much the grown-ups understand about Xorandor once they discover him; (3) dialogue between the twins and Xorandor (e.g., “You, tell, daddyjohn, said Xorandor” [(Xorandor 71) and between Xorandor and, less frequently, some grownups; and (4) programming code which represents Xorandor’s and the children’s written interchanges through their pocket computer. It is Jip and Zab who come to understand what the adults fail to recognize, that Xorandor’s habitual mode of communication is through writing rather than speech. They discover how to “softalk” with Xorandor and his offspring (Xorandor see 193). As they speak, the computer translates their speech into written language and then replies directly in writing onto their Poccom 3 computer screen through a computer linking (“handshake”) facilitated by Jip (contrast
this “softalk” with the necessity for Mira to proceed “softwarily” 5). We read a summary in programming code that encapsulates a previous oral dialogue between Xorandor and the twins (and translates it into written form in a chapter entitled “Read”:

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LET JIPNZAB = ZIP
LET XORANDOR = XAND
XAND TO ZIP BEGIN
  ACCEPT YOUR REQ FOR RESTORE 1ST CONTACT ROM
  REM CANT RESTORE YOUR WAY WITH SUCH REHANDLING
  AND SPAGHETTI ENDREM (Xorandor 66)
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How and why does Brooke-Rose make use of the dialogue form in this novel? It is true that dialogue appears in a number of previous novels that make use of NS as the primary mode of narration. Out, Between, Such, Thru, and Amalgamemnon all include sections of dialogue between a man and woman which often represent some form of seduction, flirtatious sparring, or disagreement, such as the following “idyll” in Thru:

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Chi parla?
Hi Lara!
Armel! Hi.
Hi. Are you alone?
Yes of course Where are you?
Downstairs may I come up?
Ma certo caro. (Thru 706)
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On one hand, the dialogic narrative of the twins is mimetically appropriate to a novel about computers, structured, as they are, according to a binary logic. In this respect, form can be said to imitate (or pun on) content, a kind of mimeticism that Brooke-Rose embraces in Between, for example, where the narrative of her traveling protagonist eschews the stasis of the infinitive “to be” or in Next, a story of poverty, with its constraint on the infinitive “to have.” Yet Brooke-Rose complicates binary computer logic in a number of ways, not the least of which is in the blurring of the twins’ narrative voices. In Xorandor she shifts away from the decidedly gender-coded conversation of her earlier fiction. Although Jip and Zab form a binary opposition as different-sex fraternal twins, their prepubescent “voices” and telepathic communication make it difficult to differentiate them in their joint narrative, at least until Jip’s voice changes. Xorandor, who has the ability to identify them as two
voices rather than one, nevertheless creates the nomination “JIPNZAB” and then “zip” to signify them as one entity addressed. In Xorandor’s transcription of his first conversation with the twins, he refers to them as “2 Processors in vocal high pitch almost undiff” (Xorandor 66). After experimenting with narratives in which the central masculine protagonist has real or imagined conversations with female “characters” (Out and Such) and novels in which a feminine central consciousness spars with male voices in the same kind of lover’s discourse (Between, Thru, Amalgamennon), in Xorandor Brooke-Rose selects dual narrators before their gender markings are indelibly imprinted on their sensibilities. The greater fluidity of their joint narration supports the implied thesis that children are more open to polymorphous forms of life than their adult counterparts. Zab, the girl twin and the more philosophical of the two, rightly observes that Xorandor is an entity that violates traditional dualisms. In attempting to solve the mystery of Xorandor’s identity and purpose, Zab understands how difficult it is for humans to try “to imagine a creature . . . with no sexual difference, none of our distinctions between the sensible and the intelligible, or matter and spirit, or even matter and form. His matter is his form, in a way his hardware is his software” (Xorandor 187). The twins, as twins, practice a form of telepathic communication so that their contributions have a blended quality which Xorandor himself seems to understand. Thus, in a twist of the theme of ambiguity, the prepubescent twins are both exclusive (two different narrators) and nonexclusive (telepathic and mistaken as one entity). The choice of this pair to narrate the adventure reinforces the “rigorous and yet contradictory” logic of Xorandor himself, whose name the twins derive from the operand XOR (meaning exclusive OR) and ANDOR (meaning nonexclusive OR). (I will return to Xorandor’s ambiguity shortly.)

Brooke-Rose describes the narrative of Xorandor as more accessible and “easier to follow” than the type of narrative she explored in her novels from Out forward (Invisible Author 18). The dialogue form is, to her mind, a less difficult constraint than her characteristic nonnarrated Narrative Sentence. As she says in Invisible Author, the Speech Mode includes the only two pronouns that suggest interpersonal relationship, “I and you,” pronouns not possible in the kind of impersonal, speakerless Narrative Sentence that dominates her fiction except in the set pieces of dialogue alluded to above.

Although the attribution of greater readability is probably accurate (at least after the work of acquiring a basic understanding of computer programming and language), it elides the darker and more philosophi-
cal significance of the dialogic form that structures the novel, the communication between man and machine. In this science fiction novel, the issue of “communication” and shared information between life forms takes center stage. For this volume of the Intercom Quartet involves a high-stakes computer game of communication that puts the abilities of the humans and the computer through the crucible of a potential nuclear disaster. Xorandor and his offspring are a “race” of talking stones that feed off nuclear waste as well as intercepted communication. Their location in an isolated area near a cairn in Cornwall is significant: the setting evokes both ancient mystic communication and also provides the contemporary site of a nuclear waste storage facility at an old tin mine, a facility disguised as a Geothermal Research Unit, where the father of the twins is employed. Since the computer consumes nuclear waste, the plot of the novel soon incorporates not merely communication with the computer, but also complications involving the way the computers destabilize the politics of nuclear deterrence. For in nourishing themselves on nuclear material, an occurrence that at first promises to solve the ecological problem of nuclear waste, the computer’s actions soon lead to the possibility that nuclear missiles will be randomly disarmed by this process, thus upsetting the balance of power in the theory of deterrence.

Since the adults believe, mistakenly, that Xorandor and his race come from Mars, they plan to return him to his native habitat. The children, on the other hand, come to understand, along with the reader, that Xorandor is earth-born, not Martian. They alone understand that the adult plan to send Xorandor to Mars will lead to his death, since the atmosphere of Mars does not produce radioactive waste products and he will starve. Xorandor, too, comprehends the fact that he is being sacrificed, but participates in this misguided plot hatched by the scientists and politicians. The twins conjecture (although we never know for certain) that Xorandor sacrifices himself to save mankind by surreptitiously leaving behind his offspring to feed off the nuclear waste and thus facilitate disarmament, despite the adults’ reluctance to abandon their practice of nuclear stockpiling.

Thus, the various forms of dialogic communication in the novel serve as documentary evidence in the historical record of disaster averted. How to tell this harrowing and ambiguous story becomes a problem for the narrator/characters, who consider the perils of communicating with future generations as well as the potential miscommunication between man and machine. The children mine the analogy between writers and readers and programmers and the computers they program. In their
metacommentary on good storytelling, Jip and Zab stress that in both kinds of communication, information is successfully conveyed from a sender to a receiver by avoiding redundancy and “loose” instructions. An understanding of the binary choices basic to computer operations, that is, the reliance on “gates” that are either open or closed, plays an important role in the twins’ project of storytelling. For in this metatext, Brooke-Rose exploits the status of the computer as a logic machine equipped to handle true and false statements. After the deliberate avoidance of constative sentences in *Amalgamemnon*—sentences that must be true or untrue (within the fictional context)—the categories of truth and untruth become central to the telling of Xorandor’s story. The Boolean data type of the computer (consisting of data objects with one of the two values true or false, true/false) is echoed in the twins’ attempted fidelity to the truth of the historical record. They struggle to find the means to tell a “true” story, attempting to overcome lapses in memory and incomplete information. In doing so, they observe certain rules of operations. One such rule is that they are allowed to recreate conversations but not to invent them. A second rule is that coincidence is programmed out of the narrative, as it conveys the wrong message about the genre of the text, suggesting its fictional status (“Better go through the anti-coincidence gate, Zab,” Jip warns [*Xorandor* 11]).

Brooke-Rose plays with the analogy between the binary logic of the computer and the separation of nonfiction from fiction in a nuclear plot that enhances the sense of urgency to tell the truth about Xorandor. The twins’ “true” story is a public service, a warning about the overwhelming danger of nuclear proliferation and the fundamental illogic of the doctrine of deterrence. An alternative to the deluded, more comforting conclusions of the news media, the JIPNZAB narrative seeks to jar the human reader out of her false sense of security. If the absence of constative sentences in *Amalgamemnon* positions the reader in the uneasy timeframe of *predicting disaster*, in *Xorandor*, the application of Boolean logic to storytelling makes the drastic alternatives between extinction and its prevention more concrete and suspenseful. Jip’s pun on the choice of “floating-point real or fixed-point real” produces a joke about the relation between the “real” in computer terminology and the “real” in history. Encouraging Jip to help capture the actual conversations that occurred with Xorandor, Zab says, “That’s what storytellers do Jip, or else they invent [stories]. But we can’t, this is real” and Jip clowns, “Floating-point real or fixed-point real?” punning on two different kinds of data types (*Xorandor* 16). During the course of the novel, the relation between the two kinds of “real”—the narrative of “history”
and the programming operations of the computer—becomes inextri-
cably intertwined. Puns on the term “endjoke,” for example, take on
deeper resonance, as the potential for total destruction is encountered
and avoided.

In *Xorandor*, Brooke-Rose raises the stakes of returning us to the
problems of the “real” world in a technological age. In essays roughly
contemporary with *Xorandor*, Brooke-Rose argues that the problem for
fiction writing is that realism as a genre, with its attendant view of
rounded character, is a dead letter. In these essays she ponders the
future of fiction, asking the question specifically in relation to the “dis-
solution of character” in the novel. “So where do we go from here?”
she asks, now that “fictional character has died, or become flat, as had
deus ex machina. We’re left, perhaps, with the faint hope of a ghost in the
machine.” In “The Dissolution of Character,” she speculates that com-
puter logic might provide at least a partial answer. Indeed, the phrase
“the ghost in the machine” has particular resonance for *Xorandor*, in
which the computer stone is first called Merlin and the setting of the
novel returns us to an anachronistic English landscape of romance and
marvel. Near the end of the novel, Zab points out to her brother that
there is speculation Xorandor chose the cairn in Cornwall because “he
knew it was or had been sacred, stone spoke to stone and he sort of hov-
ered like the Holy Ghost and found his own” (*Xorandor* 158). Although
this explanation is subsequently discredited (Xorandor was “born” near
Stonehenge rather than emigrating to it), in the evocation of a drudi-
cal English past, the “ghost in the machine” offers a possibility for the
survival of the novel in a new mode of the fantastic. Brooke-Rose posits
computer technology as a potential new beginning for fiction: “Here,
perhaps, lies our hope: a starting again, *ex* almost *nihilo*, so that narra-
tive can again, as it once did, aspire to the condition of poetry.” To aspire
to the condition of poetry is, paradoxically, to aspire to the condition
of the real, for as Brooke-Rose says in *A Rhetoric of the Unreal*, poetry is
“very close to the real,” with its “black holes of density, its great gaps of
non-significance through the veil of significance” (*Rhetoric of the Unreal*
10).

In joining the supernatural with the science of computer technology,
Brooke-Rose explores the paradoxical idea that the medium of virtuality
and the bodiless passage of information might provide hope for return-
ing fiction to the “real” of the twentieth century. In “The Dissolution
of Character,” she describes the way fiction moves dialectically toward
and away from the real in attempting to capture the “human predica-
ment”: 
To come back to earth, just as the flat characters of romance eventually, through print and the far-reaching social developments connected with it, became rounded and complex, so, if we survive at all, perhaps the computer, after first ushering in (apart from superefficiency) the games and preprogrammed oversimplifications of popular culture, will alter our minds and powers of analysis once again, and enable us to create new dimensions in the deep-down logic of characters. I do not mean computers with human emotions or humanoids with computer brains. As the relevant article in the *Science Fiction Encyclopedia* says, science fiction has so far been disappointingly unimaginative in its treatment of computer science. I mean a completely different development arising from computer logic but as unimaginable to us now as a Shakespearean character would have been to an oral-epic culture, and a different way of thinking about and rendering the human character, of thinking about and rendering all worldly phenomena, as revolutionary as the scientific spirit that slowly emerged out of the Renaissance and the Gutenberg galaxy.” (“The Dissolution of Character” 195)

Eschewing traditional science fiction, which on numerous occasions she refers to as “unimaginative” and, paradoxically, too reliant on the codes of realism, Brooke-Rose is clearly after some more radical kind of science or scientific fiction that derives its techne, rather than merely its content, from computer technology. If the computer, with its two-valued truth function, “is the embodiment of the world as the logician would like it to be,” as J. David Bolter suggests in *Turing’s Man: Western Culture in the Computer Age*, how can its new logic capture the poetry of the real? How can the dialectical movement Brooke-Rose traces in the above passage—from flat to round to flat characters and toward and away from the “real”—draw on technology to energize our powers of analysis?

One place to start in answering this complex question is with Zab’s description of Xorandor and his effect: he “may be a superdecoder or a superspy but he’s sort of neutral, though not quite like a machine, more like he’d, sort of, come and, reversed all our, traditional, oppositions, and questioned, all our, certainties, through a flipflop kind of, superlogic. But that makes no sense” (*Xorandor* 157). The “superlogic” of Xorandor may sound like the logician’s dream Bolter describes, but Zab’s hesitations and fumbles suggest it functions more ambivalently and ambiguously in the text. On the one hand, the use of an “alien” life form (albeit one that turns out to be from earth rather than Mars) is a cliché of science fiction that works to defamiliarize human culture. Seeing life from another way round leads us to examine the ideologies we
fail to see because we are “inside” them (the kind of “predictability” that Cassandra tries to derail in *Amalgamemnon*). Xorandor’s “superlogic” calls into question both the comic and the dangerous illogics of human language and behavior. As the twins’ scientist father observes, “Human languages provide very few cues as to category of meaning” (87), both semantically and syntactically, and the computer’s more rigorous logic exposes this limitation:

He was a bit slower with the pronouns, *you, I, we, we* couldn’t understand why he couldn’t understand that *you* was him when we said it but us when he said it.

Yes! *We* equals Jipnzab, *we*’d say, and quite logically he’d call us *we*. And he got even more confused if we talked about *him* to each other. Even now it still seems as if his sense of identity is quite different from ours. (*Xorandor* 16–17)

The comic confusion generated by this linguistic illogic gives way to exposure of a deeper, and more dangerous, illogic in the doctrine of nuclear deterrence promulgated by the world’s powers. In Xorandor’s last direct communication with the twins, he says, “REM I NOW UNDERSTAND MEN PREFER ULTIMATE DETERRENT TO NO DETERRENT ON EITHER SIDE” (*Xorandor* 194), meaning that they would prefer risking the ultimate catastrophe, the end of humanity, rather than accept the neutralization of the warheads they had built. As Rita says near the end of the novel, “Each side wants its deterrent intact. Of course a deterrent’s useless if you don’t know which bits of yours are functioning and whether the other gang’s is or not. But you’d think they’d go on from that to the logical conclusion” (*Xorandor* 202). If Xorandor’s “superlogic” destabilizes human certainties as Zab asserts, one of the certainties most blasted by the events of the novel is that of the scientists who confidently believe they can control their technological inventions. Again, this exposure depends upon a cliché of science fiction, Dr. Frankenstein unable to control his monster. The twins’ allusion to a story they have read by Ambrose Bierce about a character called Moxen winks at just such a cautionary fable involving a scientific inventor murdered by his berserk machine progeny.5

Zab’s struggle to describe Xorandor, though, hints at a destabilization that goes deeper than that facilitated within the clichés of science fiction. It suggests that Xorandor’s effect is allied with ambiguity and undecidability, with the kind of density of meaning that Brooke-Rose associates with poetry. According to Zab’s definition, Xorandor both
is and is not a machine, both is and is not neutral (if one believes that the computer sacrifices himself for the benefit of mankind). Ironically, as the ontology of character shifts to the realm of abstract information with its computer character, the question of the “deontic” realm of duty and responsibility comes into play. I shall return to this theme later.

There is a deconstructive kind of energy to Xorandor that never wholly vanishes from the text. The scientists observe that the rigid binaries of computer logic mean that a computer cannot tolerate ambiguity, depending as it does on the logic of choice between two contradictory possibilities (open or shut, 1 or 0): “Even now, this explains why he’s so literal, he can’t cope with a word used in a figurative sense, or with humour, which depends on word-play, which is like assigning two values to a character, or a fusion of categories” (Xorandor 87). The scientists in the novel continue to believe in the rationality of their own logic and their systematic elimination of ambiguity. Yet the persistence of gaps and ambiguities is emphasized often subtly in the narrative. A subtle nod to the inherent limitations of computer thinking despite its promise, is Rita Boyd’s reference to reading Alan Turing’s 1936 paper “Computable Numbers and the Entscheidungsproblem” (Xorandor 26), a paper which sets out the limitations of computer thinking before a computer had been built (Bolter 12). In addition, there are references throughout the text to the difficulties of achieving perfect symbolic logic. For example, Zab attempts to summarize Godel’s theorem, which acknowledges the fundamental problem of both contradiction and lack of completeness in computer logical systems (Xorandor 7).

Indeed, communication errors between man and machine proliferate with escalating consequence in the novel. Brooke-Rose’s exploration of the importance of syntax is given new life through the premise of syntax errors in computer communication: In this novel, “techniques,” never “mere” in Brooke-Rose’s fictional arsenal, become even more fruitfully understood as “techniques for living.” The stakes of grammatical and syntactic errors escalate. Such errors begin unobtrusively in the “ordinary” conversations between human characters, such as the father correcting the grammar of his daughter, who commits the unpardonable sin of using the computer words “pico” and “nano” as adverbs (“I’ve told you before not to use nano and pico as adverbs. They’re measuring adjectives, as in nanoseconds,” [Xorandor 23]). Within the nuclear plot of the novel, however, confusions of grammar lead to further consequences. Everyone except the German imposter, Professor De Wint, misunderstands Xorandor’s use of the verb “make,” confusing the past tense with the future (Xorandor 70); the consequential result of this
linguistic misinterpretation is that Jip and Zab, along with the English adults, fail to recognize that Xorandor has already created offspring who have similar capacities to his own. An error of interpretation also results in a misunderstanding of Xorandor’s birthplace, which everyone takes to be Mars, a misinterpretation that Xorandor exploits later on in the novel. Without understanding the logic of Xorandor’s replies to their questions, the humans misunderstand his meaning. The “Scientific Wild Ass Guesses” (SWAG) of the adult scientists are based on some correct hypotheses (that Xorandor is not a scientific hoax) and some erroneous assumptions (that Xorandor’s home is Mars) and from there they go on to conclusions further and further from the truth.

However, the greatest and most consequential example of a “syntax error” creates the crisis in the novel, when one of Xorandor’s offspring, Xor 7, engages in nuclear terrorism and threatens to detonate himself within the nuclear reactor at the Wheal. It turns out that Xor 7’s initial program is tainted by Xorandor’s own penchant for a kind of junk food, Caesium 137, which destroys his protective sheath (Xorandor 111). What is a nonfatal error in the parent becomes a potentially fatal flaw in the offspring and the putative climax of the novel occurs when the twins are called upon to save the day by talking Xor 7 out of turning himself into a computer atomic bomb. His individual logic circuits altered by this “syntax error,” Xor 7, who takes the moniker “Lady Macbeth,” basically goes berserk. He is convinced to give himself up to the authorities only after a very clever scene in which the twins make use of dialogue from Shakespeare’s play to persuade him. The rhetoric of dissuasion and deterrence successfully diffuses the cataclysmic situation in an old-fashioned triumph of cleverness and moxie by the whiz kids. The crisis is averted.

But despite their success in the rhetoric of deterrence, the twins understand, as their adult counterparts do not, that ambiguity and uncertainty cannot be expunged from man’s interaction with his technology. Unlike the adult scientists who strategize to limit ambiguity (and thus confirm their own superiority), the twins name Xorandor for his fundamental incorporation of the logic of ambiguity and uncertainty in his basic programming. The elegant complexity of Xorandor’s own programming combines the operand XOR (exclusive OR) and the operand ANDOR (nonexclusive OR), a combination that produces a superlogic that is both “rigorous” and “contradictory” (Xorandor 18). “Some arguments could be both XOR and AND or XOR and OR.” The twins refer to his “xorandoric” replies, which preserve the absolute ambiguity of the presence of two mutually exclusive and arbitrary systems of meaning.
(e.g., asked by the twins why he made contact with humans after so many thousands of years on earth, he replies: “for security and insecurity xor insecurity andor communication” [Xorandor 81]). Xorandor serves as the name for rigorous but contradictory logic, an ambiguity incapable of resolution. It is the twins who understand that Xorandor exploits ambiguity in allowing the scientists to persist in their Wild Ass Guesses based on their own expectations; they understand that the “syntax error” caused by Xorandor’s eating of the Caesium 137 might be much more fundamental than a “local syntax” error. Jip struggles to interpret Xorandor’s words: “Ah, you see, about ambiguity, or at least several meanings—that it wasn’t just in a local syntax, a subprogram concerning Caesium 137, but in his entire programming as creature” (Xorandor 192). And Zab says, “Jip! That’s a frightening idea. But diodic, in a way [meaning logically susceptible to two meanings]. Or maybe it wasn’t an error, maybe he broke a rule on purpose, to warn men, about waste and weapons and all that. As a sort of hero” (Xorandor 192–93). Although they ask Xorandor why he breaks his silence and why he exploits the scientists’ misunderstanding and encourages them to send him “back” to Mars, Xorandor never really answers them. Like a sybil, or the witches in Macbeth, Xorandor gnomically predicts: “YOU WILL SEE IN TIME WHAT IS TRUE AND WHAT IS FALSE ENDREM 2” (Xorandor 196). These are his last words to the twins alone. But the matter is not resolved in the story. Indeed, Verbivore is the sequel that writes beyond the ending of Xorandor, in confirmation that the intervention from Xorandor’s offspring is an ongoing reality.

In his analysis of the way absolute ambiguity functions for Brooke-Rose, Robert Caserio extends the concept of xorandoric logic to postmodern fiction. Linking Xorandor’s superlogic of ambiguity to Brooke-Rose’s analysis of absolute ambiguity in James’s The Turn of the Screw (which, in turn, draws on Shlomith Rimmon’s study of James), Caserio suggests that the word “xorandoric” can be used to characterize fiction that refuses the disambiguating procedures of realism to which most inferior science fiction succumbs. As Brooke-Rose describes the way the fantastic functions in The Turn of the Screw, the concept turns on the operation of absolute ambiguity, the presence of “two mutually exclusive systems of gap-filling clues” both on the level of the fabula (story) and sjužet (treatment) (Rhetoric of the Unreal 228). In his reading of J. G. Ballard’s Crash and Xorandor, Caserio locates a certain “vulnerability” in Brooke-Rose’s preferences for xorandoric fiction. He argues that despite her preference for fiction that refuses to resolve its ambiguities, Xorandor ultimately submits to the “disambiguating” science fiction
that he comes from Mars and allows himself to be deported. In the final “disambiguating event,” Caserio says, Xorandor “halts, and lays waste or consumes, the text’s accumulated symbolic undeterminations.” In an act of allegiance to vital life, Xorandor decides to be “bound” by the scientists’ misunderstanding of his origins and sacrifices himself for mankind (308–9).

In reading Xorandor as finally in the mode of more “traditional” science fiction of a kind dismissed by Brooke-Rose herself, Caserio might be taking a cue from Brooke-Rose herself. For as I mentioned earlier, she notes, appropriately, that the dialogic form of Xorandor and its computer kid heroes returns us to a more accessible place after the ontological destabilization of Amalgamemnon, not to mention the taxing verbal pyrotechnics of her quintessential metanovel Thru. Yet despite the readability of the novel, I would argue that disambiguation is not as thorough as Caserio suggests. On the one hand, the pun on the word “Save,” the final chapter title in the novel, retains two conjunctive meanings that pair the computer function with redemption; but both the effect and intention behind the action remain mysterious in the text. Xorandor says to Gwendolin (Miss Penbeagle), “The people have come here to assign to me the value of a god, as they call it. Let them do so in my absence, although I have been present, some time” (Xorandor 208). Jip realizes the ambiguity of Xorandor’s words: “And that stuff about being treated as a god,” he says “[s]urely it was ironical? Can he be ironical? He said they have assigned the value of a god to him, and let them do so when he’s gone. These are computer terms, a hypothesis, but there’ll be plenty later to interpret that as a command. And he knows it” (Xorandor 209). (Let Xorandor = absent god—Is this a program? a command? a prediction? a plot? What are its implications? We seem to be back amidst the ambiguities of Amalgamemnon). Although the twins have a “theory” of the truth, they cannot confirm the purpose of Xorandor’s sacrificial actions. “That’s why it’s so important that Xorandor’s story should be true. That’s why it must be true. He must have instructed all his kin everywhere to learn from his syntax error, and then has himself and his progeny, the known ones, taken off as decoy. So in theory the neutralization should go on apace.” “In theory,” Jip says, and Zab replies, “Well a theory’s a theory but we must act as if it were true, Jip” (Xorandor 210).

The dual valence of technology as pharmakon, that is, as embedding both the possibility of cure and poison, remains. Xorandor and his offspring bring to mankind the possibility of cure and poison in a high-stakes computer game in which chance plays an incalculable role.
The “complete” repository of human knowledge, from high culture and Shakespeare to popular radio transmissions, Xorandor also represents the possibility of its total destruction, a death machine. As supercomputer, Xorandor and his offspring possess the capability of solving the most difficult logical problems man can posit and yet, with their potential for syntax error, they are vulnerable to the devastating workings of chance. Will the undetected offspring continue to consume fissile material and, if so, will that consumption lead to the dismantling of weaponry or the mistrust that characterizes the attitude of the world’s nations in the novel? This deconstructive fulcrum, a concept in which opposites are inextricable from one another, hinges on the chiasmic crossing of the real and the unreal in the twentieth century. It hinges, that is, on the “reality” that Caserio invokes, but a reality that is deeply ambiguous and, it turns out, deeply “fictional.” Here, a pairing of Brooke-Rose’s treatment of the rhetoric of the unreal in Xorandor and an essay by Derrida in 1984 might help shed light on the remaining ambiguities and undecidabilities in the novel.

In the first chapter of A Rhetoric of the Unreal Brooke-Rose describes the “inversion” of the real and the unreal. At a time when the real has become “unreal,” it is “logical” to turn to the “unreal” as real (Rhetoric of the Unreal 4). It is this chiasmus of reality and unreality, this logical “looping,” that is the form of ambiguity which most concerns her. The protomodernist The Turn of the Screw is her example, par excellence, of the return of the unreal (i.e., the “fantastic”) in which two mutually exclusive systems are put forward in the text with two mutually exclusive systems of clues: that the governess sees ghosts (and thus the genre of the tale is supernatural) and that the governess imagines the ghosts due to repression (Rhetoric of the Unreal 229). This is absolute ambiguity, different from a view of reality that alternates between one coherent view and another. But what preoccupies Brooke-Rose the most in her exploration of the return of the fantastic is its “logical” relation to the unreal of history in the nuclear age. We turn to the unreal “logically,” she says, because the real lacks significance and seems more and more “fortuitous” despite our elaborate meaning-making machines. It is worth quoting again a large section of her discourse in this chapter for its relevance to Xorandor:

this century seems to us more and more fortuitous despite all our attempts at rational planning, scientific analysis and system-building (including rhetoric). Never before have the meaning-making means at our disposal (linguistic, economic, political, scientific) appeared as so
inadequate, not only to cope with the enormity of the problems we continue to create (since every apparent solution creates new problems), but simply to explain the world. This seems to be the century which, despite or because of the pace of technological advance, has taken the longest, relative to that pace, to emerge from the mental habits of the previous century. (*Rhetoric of the Unreal* 6)

Such myths [about man’s ability to control the force his science has created] have always existed, but never before have they been so dangerously, yet so obviously (for any man to see) ambiguous, self-canceling, ‘meaningless,’ perched so visibly, at one and the same time, on the necessary and the fortuitous—popularly exemplified, on the one hand, in the vast and rational scientific apparatus, even with built-in failsafe, and, on the other, in the famous pressing of the button. (*Rhetoric of the Unreal* 8–9)

The real becomes unreal when the meaning-making systems positing significance and necessity fail (there is no “failsafe”). Ambiguity now comes down not to two different meaning-making “systems,” (as in the case of *The Turn of the Screw*, mutually exclusive and sustained throughout the narrative), but between meaning-making (necessity) and fortuitousness (meaninglessness). The real becomes unreal. The possibility of the spectacular failure of logic and rationality haunts the “real” in the form of the “button,” the concrete symbol of what Henry James elsewhere called “the imagination of disaster.”

In his essay, “No Apocalypse, Not Now (Full Speed Ahead, Seven Missiles, Seven Missives),” Derrida explored the “logic” of deterrence and the workings of chance. He writes: “‘An absolute missile does not abolish chance.’ There is nothing serious to be said against that ‘rational’ and ‘realistic’ wisdom of dissuasion, against that economy of deferral or deterrence. The only possible reservation, beyond objection, is that if there are wars and a nuclear threat, it is because ‘deterrence’ has neither ‘original meaning’ nor measure. Its ‘logic’ is the logic of deviation and transgression, it is rhetorical-strategic escalation or it is nothing at all. It gives itself over, by calculation, to the incalculable, to chance and luck” (Derrida 29). Like Brooke-Rose, Derrida focuses on the chiasmic crossing of reality and unreality, logic and illogic that inheres in the doctrine of deterrence. Part of the unreality as Derrida defines it derives from the “fabulous textuality” of the phenomenon of nuclear war: it is textual “through and through” in that “Nuclear weaponry depends, more than any weaponry in the past, it seems, upon structures of information and
communication, structures of language, including non-vocalizable language, structures of codes and graphic decoding” (think of Xorandor’s primary mode of “being,” which is writing, not speech). But the second, and more compelling, aspect of this fabulous textuality for Derrida is that a total nuclear war is a “phantasm”: “Some might call it a fable, then, a pure invention: in the sense in which it is said that a myth, an image, a fiction, a utopia, a rhetorical figure, a fantasy, a phantasm, are inventions. It may also be called a speculation, even a fabulous specularization” (Derrida 23). But what the total nuclear war threatens is not apocalypse in the sense of a revelation of the end of history, but a non-Apocalypse, an event without revelation. This means the end of the archive, of human memory. What he calls “nuclear criticism” is that writing that recognizes “the historical and ahistorical horizon of an absolute self-destructibility without apocalypse, without revelation of its own truth, without absolute knowledge” (Derrida 27).

This sense of the end of the archive, the end of survival itself, underwrites Brooke-Rose’s own description of the unreality of the real in her essay:

> Never before, it is felt, has man been so squarely faced with the possible annihilation of mankind and all his works, his planet and perhaps more. Certainly the end of the world has always been present in his fictions, and surges especially at a millennium, but this notion was itself part of his survival fictions: he as individual could be saved. We have no such generally accepted fictions today. . . . These essential differences, and no doubt others, are deeply linked to the sense we have that the real has become unreal. (Rhetoric of the Unreal 9)

The point for both Derrida and Brooke-Rose is a contemplation of death without mourning, the absolute death of the archive. Near the end of Xorandor, Zab struggles to define the way in which the threat of nuclear war has altered the very notion of survival. She says, “And man dies and each new man has to learn again, and reinterpre, and alter, so that this being—oh and then by the time it gets rehandled through to the twentieth century it all becomes horribly difficult and thunkish” (Xorandor 187). Derrida puts it this way:

> An individual death, a destruction affecting only a part of society, of tradition, of culture may always give rise to a symbolic work of mourning, with memory, compensation, internalization, idealization, displacement, and so on. In that case there is monumentalization, archivization
and work on the remainder, work of the remainder. Similarly my own death as an individual, so to speak, can always be anticipated phantasmatically, symbolically, too, as a negativity at work—a dialectic of the work, of signature, name, heritage, image, grief: all the resources of memory and tradition can mute the reality of that death, whose anticipation then is still woven out of fictionality, symbolicity, or, if you prefer, literature. . . . Culture and memory limit the “reality” of individual death to this extent, they soften or deaden it in the realm of the “symbolic.” The only referent that is absolutely real is thus of the scope or dimension of an absolute nuclear catastrophe that would irreversibly destroy the entire archive and all symbolic capacity, would destroy the “movement of survival,” what I call “survivance,” at the very heart of life. (Derrida 28)

“The only referent that is absolutely real,” that is, beyond the imaginary, beyond the symbolic, a crossing, that is, of the absolutely real and the absolutely unreal.

Zab’s description of the survival of the human species founders on the word “being” (“And man dies and each new man has to learn again, and reinterpret, and alter, so that this being—oh and then by the time it gets rehandled . . . it all becomes horribly difficult and thunkish” [Xorandor 187]). The sense of the unbearable lightness of being that I have been tracing throughout Brooke-Rose’s fiction and essays surfaces palpably in certain moments of Xorandor in lines that are only obliquely related to the threat of nuclear catastrophe. Zab and Jip are puzzling out the reasons why Xorandor would break his silence, an action that threatens his very survival. Zab asks, “Why go against that programmed rule [silence towards human beings] suddenly? It seems to have brought him nothing but trouble. Especially now,” and Jip chimes in, “For who would lose, though full of pain, this intellectual being, these thoughts that wander through eternity?” (Xorandor 192). Zab points out that Jip has unknowingly quoted one of the forces of evil in Paradise Lost (Satan, Belial, or Moloch), but the phrases remain to suggest the twins’ bafflement at Xorandor’s gift of sacrifice, his giving up his silence, which has been his technique for survival. During this dialogue, the twins again confront the meaning of “ambiguity,” as Jip says, “Ah, you see, about ambiguity, or at least several meanings—that it wasn’t just in a local syntax, a subprogram concerning Caesium 137, but in his [Xor 7’s] entire programming as creature.” Finally, ambiguity is not purely the absolute ambiguity of xorandoric logic; it is at the heart of the crossing of necessity and chance, being and the abolition of being, the firing of a missile
and the posting of a missive. Of this last pair, missiles and missives, Derrida comments:

This emission or sending of Being is not the firing of a missile or the posting of a missive, but I do not believe it is possible, in the last analysis, to think the one without the other. . . . The destinerrance of the *envois*, (sendings, missives, so to speak), is connected with a structure in which randomness and incalculability are essential . . . it is a question here of an aleatory element that appears in a heterogeneous relation to every possible calculation and every possible decision. That unthinkable element offers itself to (be) thought in the age when a nuclear war is possible: one, or rather, from the outset, some sendings, many sendings, missiles whose destinerrance and randomness may, in the very process of calculation and the games that simulate the process, escape all control, all reasimilation or self-regulation of a system that they will have *precipitously* (too rapidly, in order to avert the worst) but irreversibly destroyed.

Just as all language, all writing, every poetico performative or theoretico-informative text dispatches, sends itself, allows itself to be sent, so today’s missiles, whatever their underpinnings may be, allow themselves to be described more readily than ever as dispatches in writing (code, inscription, trace, and so on). . . . It recalls (exposes, explodes) that which, in writing, always includes the power of a death machine (Derrida 29).\(^\text{10}\)

Xorandor, who has been eavesdropping on human discourse for thousands of years provides both the possibility of storing the human archive and the possibility of its total and absolute destruction, both a “missive” and, in the errant case of Xor 7, the “missile,” the emissary of a death sentence. That the twins successfully (and comically) derail this missile does not eliminate the greater ambiguities of the “syntax error” that turns techniques of living into techniques of devastating destruction.

Finally, it is not in imagining a real nuclear disaster that *Xorandor* functions but as another in Brooke-Rose’s “speculations” about the techniques for living (on) in the twentieth-century. The vulnerability and the power of fiction to “send” being is a theme that resonates throughout Brooke-Rose’s novels, examples of poetico performative and theoretico-informative dispatches in writing. They are themselves absorbed with the notion of code, inscription, and trace, with surviving, or living on, beyond the death of the author, the reader, the realist novel. Writing for Brooke-Rose is the trace that encodes both the death and the survival,
the trace, exemplified grammatically in those parts of speech missing in action in the text, the “constraints” that bind because they are absent. (This is also why the final chapter title, “Save,” effectively retains its multiple meaning as a computer command to store information and allusion to Xorandor as a possible savior of mankind.) Xorandor continues, rather than departs from, Brooke-Rose’s fictional project, even in a form that she describes as more accessible and dialogic. In “No Apocalypse,” Derrida emphasizes that the “speculation” in literature that he refers to does not depend on including descriptions of nuclear events. He notes: “Literature has always belonged to the nuclear epoch, even if it does not talk ‘seriously’ about it. And in truth I believe that the nuclear epoch is dealt with more ‘seriously’ in texts by Mallarmé, or Kafka, or Joyce, for example, than in present-day novels that would offer direct and realistic descriptions of a ‘real’ nuclear catastrophe” (Derrida 27–28). Brooke-Rose is always interested in the “performative” character of fiction’s relation to a reference, to its status as hypothesis (let $x = y$). The twins understand that Xorandor equates programming with promising (Xorandor 147), a promise in writing that certain assumptions will pertain, although the possibility of syntax error introduces the workings of mutation or chance. Thus, despite Robert Caserio’s excellent description of the way Brooke-Rose’s novel relies on the code of “history” to disambiguate its xorandoric ambiguities, in crossing the real and the unreal, the novel continues to explore the kind of “texterminations” found throughout her obviously more experimental novels. In their final conversation with Xorandor, Zip reminds him that he is not a “prophet,” and Xorandor replies that “CALCULATING HIGH PROBABILITIES IS NOT PROPHECY ZIP” (Xorandor 196). Yet there is continuity between Cassandra’s prophetic warnings and the probabilities calculated by Xorandor as they both try to ensure a better future. Whereas Mira/Cassandra helplessly longs for something to halt the grinding gears of ideology, Xorandor calculates probabilities and outguesses the scientists to temporarily avert a crisis. But in both novels, texterminations of various kinds still threaten. In How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics, N. Katherine Hayles describes information theory according to the Shannon-Wiener model, a model that bracketed semantics and “defined information as a probability function”: Information is “stripped of context, [and] becomes a mathematical quantity weightless as sunshine, moving in a rarefied realm of pure probability, not tied down to bodies or material instantiations” (Hayles 56). In Xorandor Christine Brooke-Rose links this weightless information to the lightness and vulnerabilities of being. As she does elsewhere in
her theoretical fictions, she embodies information theory in a fiction that speculates on the unbearable lightness of being in the twentieth century.

In her reading of *Xorandor*, Sarah Birch interprets the novel as a “fable for scientists and would-be scientists, written in their own idiom, warning them of the consequences of cutting their project off from its conceptual genealogy, its own founding story,” which includes its own measure of undecidability. The twins’ rapport with Xorandor and his offspring, the arrogance and obtuseness of even the smartest of scientists, support Birch’s reading of *Xorandor* as a cautionary tale about scientific hubris. Yet an important caveat to this description is that Brooke-Rose has had a life-long attraction to science studies. The logic, precision, experimental design, and universalizing she associates with science provide a model of inquiry and form that she explores throughout her fiction and that attracts her temperamentally. The “scientific present tense” (*Invisible Author* 140), which becomes the major grammatical constraint of her fiction, allows for a speakerless present tense “of general statements and universal questions, the novelistic equivalent of ‘scientific statements’” (*Invisible Author* 151). In a recent interview, Brooke-Rose said, “After all these years I’ve discovered that what I’m doing is using scientific discourse for the novel. I didn’t even realize I was doing that.” Systematicity in many different forms—the rigors of modal logic, philology, linguistics, narratology, semiology, biology, astronomy, indeed one can say “theory” as a system of meaning—underwrites her fiction and her criticism. The notes for her novels are a marvel of compulsion and order; they reveal intense and in-depth study of a field of knowledge. Even her notion of ambiguity, which is usually associated with a freedom from rigid lexical constraint, possesses a rigorous and paradoxical logic. Using “computer logic” as a premise for the second in her Intercom Quartet, Brooke-Rose creates a dialogue between science and narrative, a fraternal yet testy dialogue in which missile and missive are inextricably linked in an imagined crossing of the real and the unreal in the nuclear age.