

## “Packaging” Chernobyl: The Manufacture of Meaning from a Transnational Ecological Disaster

On Saturday April 26, 1986, an unprecedented event happened. A severe explosion tore apart a nuclear reactor at the Chernobyl atomic power station in the Ukraine, killing two people and releasing fissionable materials into the environment. The meanings attached to this event, however, remain complex, diverse, and contradictory. None of them exists as such—they have had to be manufactured in both the East and West. As they are produced, the broader reception of such meanings is rarely clean or complete. Consequently, one might consider this chapter as an exercise in “product semantics,” unwrapping some of the thoughtlines manufactured into the packaging of Chernobyl as an ecological disaster.

Against the backdrop of first-order events in the reactor itself and their ongoing secondary implications for the economies and ecologies of Western and Eastern Europe, the meaning of Chernobyl has been continually reconstructed by Moscow, the news media, the nuclear power industry, and the OECD nations to convey many other third-order ideological meanings. In this regard, Chernobyl is an excellent example of how “spectacles” develop and are managed in advanced industrial societies. “The spectacle,” as Debord affirms, “is not a collection of images, but a social relation among people, mediated by images.” As it is produced, consumed, and reproduced as a social relation, “the spectacle presents itself simultaneously as all of society, as part of society, and as an *instrument of unification*.”<sup>1)</sup>

When the West German Greens claimed that “Chernobyl is Everywhere,” they ironically identified how nuclear disaster, both as an image and as global fallout patterns, does unify everyone in new social, political, and economic relations mediated by images. Although Chernobyl is everywhere, it has acquired different meanings in different places to suit the expectations of many different groups. How the images are presented

and received—or coded and decoded by corporate managers, technical experts, or state bureaucrats facing often resistant mass publics—renders spectacles like Chernobyl intrinsically political. In order to create consent, reaffirm legitimacy, underscore managerial prowess, or contain mass protests, Chernobyl had to be reprocessed and repackaged in more tamperproof containers lest the concrete tomb over reactor no. 4 become the entire nuclear power industry's headstone. In the USSR, the repackaging was done in the wrapping of glasnost. In the West, its reprocessing was organized to deflect criticism from each OECD nation's nuclear power industry as well as to reflect the conventional negative images of Soviet totalitarianism.

In the advanced industrial societies of North America, Japan, Western Europe, and Australasia, such ideologies are generated continuously "from a mass of minor hypotheses: news, culture, city planning, advertising, mechanisms of conditioning and suggestion ready to serve any order, established or to come,"<sup>2</sup> in order to contain or channel mass resistance to managerial control. This ideology usually speaks through the mass media in new myths and mythologies that abolish "the complexity of human acts." And "it gives them the simplicity of essences, it does away with all dialectics, with any going back beyond what is immediately visible, it organizes a world without contradictions because it is without depth."<sup>3</sup> Yet a great deal of effort must constantly be expended by corporate capital, agencies of the state, or technocratic experts to guarantee this "blissful clarity" in such new myths and to revitalize the larger ideology of technological progress that these mythologies legitimate.

Thus far, the news of Chernobyl has fit well within the "mechanisms of conditioning and suggestion" in both the East and the West. State agencies and technocratic experts have redefined it in mythic terms, reducing this nuclear disaster to a tragic retelling of the myths of Faust or the sorcerer's apprentice. *Newsweek's* issue on Chernobyl, for example, stated, "So nuclear power turns out to be a bargain with the Devil," and "the Devil always sets his own fee."<sup>4</sup> According to these official fables, the post-Hiroshima world has made a fateful wager: in order to enjoy the immense but dark powers of the atom, nuclear society either has made a pact with Mephisto for its soul or it has created an ever-more-threatening servant that can easily evade human control. Even General Secretary Mikhail Gorbachev felt the need to repeat these myths when he claimed that at Chernobyl "for the first time ever, we have confronted in reality the sinister power of uncontrolled nuclear energy."<sup>5</sup> Therefore, "in this Faustian bargain," as Alvin Weinberg claims, "humans in opting for nuclear energy, must pay the price of extraordinary technical vigilance if they are to avoid serious trouble."<sup>6</sup>

Such mythologies are quite useful: they can simplistically summarize the intrinsic complexity of the Chernobyl events. When causation is assigned to the Chernobyl reactor operators' or designers' technical blunders, the disaster can be attributed to inept magicians, who rightly paid their price of "serious trouble" for lacking "technical vigilance." As a result, the nuclear magic basically remains sound. On April 30, 1986, for example, a *New York Times* editorial reaffirmed the myths: "The accident may reveal more about the Soviet Union than the hazards of nuclear power . . . behind the Chernobyl setback may lie deeper faults of a weak technology and industrial base."<sup>7</sup> Furthermore, such media mythologies suggest that the immediately visible image of Chernobyl can be taken as meaning something in itself without contradictions by reassuringly linking it up with existing mythologies about the USSR as an industrial power.

All the correct myths shared by Western publics thereby are revalidated. The nuclear bargain is not flawed—the USSR is simply too weak for Mephisto; Chernobyl is only a setback, revealing nothing about the hazards of atomic energy; the deeper fault is in (Soviet) man, who lacks a firm industrial base and strong technology; or Soviet nuclear sorcerers lack adequate magic, so their atomic apprentice ran amok. Moreover, the sorcerer's apprentice was unleashed only in the USSR. Western nuclear sorcerers are much more crafty, just as a *Los Angeles Times* story on April 30, 1986, claimed: "Minimum safety standards . . . clearly have not been met in the Soviet Union, where most nuclear reactors—apparently including the ill-fated plant at Chernobyl—do not have containment structures of the sort that are almost universal outside Russia."<sup>8</sup> However, to understand Chernobyl more fully these myths must be challenged and criticized. The real complexity of human actions and the inherent contradictions in the world must be restored. Things never mean something by themselves. Instead, their ideological and mythological packagings are revealed through attempts to rationalize the experience in question. Although this discussion cannot presume to disclose "what Chernobyl really means," it will instead discuss how it has been "packaged" to fit into larger political agendas.

#### THE CHERNOBYL ACCIDENT AND ITS AFTERMATH: THE EVENTS

In February 1986, *Soviet Life* featured an article on the growing nuclear power station at Chernobyl, where six massive Russian Graphite Moderated Channel Tube (RBMK) nuclear reactors ultimately would generate six megawatts (MW) of electricity. The Ukrainian Republic Power Minister, Vitali Sldyarov, said that of the four reactors already on line, "the odds of a meltdown are one in 10,000 years," and that despite these odds,

plant engineering designs guaranteed that "the environment is also securely protected."<sup>9</sup> A month later, however, a local resident, Lyubov Kovalevska, wrote in *Literaturna Ukraina* that work on the Chernobyl power station suffered from a "low quality of design and costing documentation," "defective material," "lack of organization," "weakened discipline and responsibility," and "a large number of unresolved problems."<sup>10</sup>

The Soviet RBMK-type reactor employs graphite as its moderator and uses boiling water as a coolant by circulating it through the core to extract heat. At the close of 1985, the USSR had 27.8 gigawatts (GW) of operational nuclear capacity; 15.6 GW of this national capacity was generated by 28 RBMK-type reactors, while 7 units more with 8.1 GW of capacity were under construction and 8 more with 10.6 GW were in the planning stage.<sup>11</sup> Chernobyl no. 4 was one of fourteen operating RBMK-1000-class reactors. All RBMK reactors are direct derivations of the ones at the USSR's first nuclear station at Obninsk (commissioned in 1954) and the six plutonium-producing units (made operational from 1958 to 1964) in Troitsk.<sup>12</sup> For this reason, Moscow does not export its RBMK units because weapons-grade plutonium is one of their immediate by-products.<sup>13</sup> Even so, Soviet authorities considered the Chernobyl atomic power station on the Pripjat River one of their safest plants. They argued that the RBMK's graphite moderation, which enables refueling without shutting down and also disperses fissionable material into more than one thousand primary circuits, "increases the safety of the reactor system" and that "a serious loss of coolant accident is practically impossible."<sup>14</sup> Unfortunately, Lyubov Kovalevska's on-site warnings proved more prophetic than the official mythologies repeated by Vitali Sklyarov or Boris Semenov in touting the ultimate safety of the Chernobyl power station.

The world's worst nuclear accident, then, was the product of a poorly conducted reactor operations test staged on April 25–26, 1986, during the planned decommissioning of Chernobyl's reactor no. 4 for maintenance. A similar test was staged in 1984 but proved inconclusive because of inadequate electrical equipment.<sup>15</sup> According to the official Soviet report to the International Atomic Energy Agency in Vienna, this second experiment was to have tested how long the plant's steam turbines would generate electricity after being cut off from their steam supply. The test's goals were to show that the turbines could produce enough power to keep the station's safety systems operational.<sup>16</sup> Yet in conducting these experiments, the plant's technicians, as the official review of the accident found, "were not adequately prepared for the tests, and were not aware of the possible dangers."<sup>17</sup>

As a result, normal operating protocols were purposely ignored or overridden. In staging the test, Chernobyl's operators committed six ma-

or errors that collectively and progressively contributed to catastrophe. First, they needlessly switched off the reactor's emergency core cooling system, which did not cause the accident but aggravated its consequences. Second, in response to a grid control instruction, they incorrectly set a power regulator that then dropped the reactor's power output drastically. The output stabilized at a point too low for the test. Fearing bureaucratic reprimands for botching a test that could not be repeated for at least an entire year, the operators frantically tried to boost the reactor's output. In their attempt they violated operational rules for the reactor's control rod settings by pulling out all but six to eight rods from the core, even though plant norms dictated that thirty should be the norm and that fifteen was the minimum to maintain control. This third mistake boosted power but led to their fourth mistake: With the reactor's output increasing, the operators turned on two extra cooling water pumps as part of the test program. This action radically altered the equilibrium of water and steam in the circuit, destabilizing the reactor. Fifth, in response to these fluctuations in steam and water levels, they blocked the automatic shutdown system for the reactor. Now they started their experiment—and committed their sixth and last mistake. They turned off the last safety systems, which should have engaged when the turbines were shut down.<sup>18</sup>

After these actions were taken, the reactor essentially was running by itself without any outside control.<sup>19</sup> Recognizing the crisis, the operators dropped the scram rods into the core. The rods fell, but did not completely seat because of heat distortion. In the ensuing power surge, output rose from 7 percent to several hundred percent over normal levels in seconds as part of the core went "prompt critical." Two explosions blew off the reactor's one thousand-ton, steel-and-concrete containment lid, and tumbled a two hundred-ton refueling crane into the core, which destroyed many cooling circuits. With its containment barriers destroyed, the reactor's fuel rod cladding broke down, generating hydrogen in the steam that exploded into fire. Over thirty fires broke out all over the reactor complex, and the reactor's graphite core also caught fire. Within minutes, reactor no. 4's core cracked open, its coolant flow was interrupted, the reactor building roof collapsed, and an intense graphite fire spewed deadly radioactive isotopes into the atmosphere.<sup>20</sup>

From April 26 to May 11, 1986, the Soviet regime struggled to douse the disastrous radioactive fires and protect the remaining three reactors at the Chernobyl complex. Within hours, the population of Pripjat and the immediately surrounding countryside within 2.5 kilometers (20,000 and 26,000 persons, respectively) was mobilized for evacuation. The authorities began evacuating a ten-kilometer zone around the plant on Sun-

day, April 27. On May 3, a much broader zone within 30 kilometers of the reactor was evacuated, including over 30,000 people from Chernobyl itself.<sup>21</sup> By May 6, more than 95,000 persons (and over 17,000 cattle) had been relocated.<sup>22</sup> A fleet of military helicopters and teams of scientists—both under the guidance of Yevgeny Velikov, vice-president of the Soviet Academy of Sciences—took charge of containing the dangerous graphite fire in reactor no. 4. From April 29 to May 13, 1986, over five thousand tons of boron, lead, sand, clay, and dolomite were dropped by helicopter to quench the fire.<sup>23</sup> To contain the damaged reactor permanently, cleanup teams tunneled underneath reactor no. 4 to lay a concrete foundation for an immense new enclosure structure, or "tomb," which was built around the entire reactor complex. This building will serve as a high-level radioactive waste dump for many centuries to come.

The ultimate costs of the Chernobyl accident are hard to quantify accurately. Beyond the 31 "prompt deaths" (2 immediately and 29 more slowly, through March 1987) and the hospitalization of nearly 300 people with radiation sickness, "estimates" and "projections" come into play. In direct cash terms, Chernobyl is believed to have cost the USSR over \$3 billion.<sup>24</sup> By 1988, the cost of the cleanup had risen to \$13 billion. Agricultural production has been disrupted and prime farm land contaminated across the western USSR. Vegetables in Kiev were tested after the accident and found to have thirteen times the level of radiation at which they should have been destroyed. In Byelorussia, checks in Gomelskaya showed that 40 percent of the meat, 30 percent of the milk, 15 percent of green vegetables, and 90 percent of all fish exceeded radiation standards. International conversion formulas suggest that 30,000 to 50,000 additional people in European Russia and 3,000 people in Western Europe will die of cancers due to Chernobyl radiation.<sup>25</sup> Similarly, 2,000 to 15,000 mutations and genetic diseases are forecast to develop per million live births over the next generation.<sup>26</sup> And around the world in the aftermath of Chernobyl, the whole nuclear power industry was called into question, if only for a few months. Yugoslavia dropped its plans to build a second nuclear power station at Prevlaka; Mexico delayed operations even longer at its troubled Laguna Verde plant; and the Philippines mothballed a nearly completed reactor in Bataan.<sup>27</sup> Global output from pressurized water (PWR) and boiling water (BWR) reactors dropped 15 percent in 1986 as nuclear utility managers sought to play it safe after the accident. Undoubtedly, current and future reactor costs will rise from new regulatory oversights prompted by Chernobyl.

At this juncture, however, one must move from the actual events at Chernobyl and their immediate aftermath into the ideological repackag-

ing of Chernobyl in the USSR and abroad. This detailed technical account of the accident itself only came to light four months later in a voluminous official report made by Moscow to the International Atomic Energy Agency.<sup>28</sup> By that time, most media attention had shifted elsewhere. The official story only could wrap another layer of meaning around the many other ideological packages already set out for display in the global mediascape.

#### "PACKAGING" CHERNOBYL IN THE EAST AND WEST

Nuclear accidents have happened before, but always in bureaucratically enforced secrecy.<sup>29</sup> In October 1957, Great Britain's graphite-moderated Windscale no. 1 pile caught fire, spreading radiation but causing no explosion or immediate deaths. During the winter of 1957-58, a radioactive waste dump apparently overheated and exploded like a volcano outside the plutonium-producing Soviet city of Kyshtym in the Ural Mountains. A vast area was devastated, and many people were killed and injured. In January 1961, three technicians were killed in the SL-1 military reactor in Idaho after incorrectly manipulating its control rods. During October 1966, the experimental Fermi no. 1 breeder reactor in Detroit partially melted down, forcing it to be decommissioned. And in March 1979, Three Mile Island (TMI) unit 2 lost its coolant due to equipment malfunction and operator errors and experienced a partial meltdown with some radioactivity release.

Chernobyl no. 4, however, was the first reactor in a disaster to breach its containment structures and actually spew large amounts of radioactivity into the environment (up to 3 percent of its fissionable materials). As the reactor fire spread dangerous isotopes downwind, sensors in Sweden triggered the alert. Once detected, the global media all turned on Chernobyl in order to produce ideologically appropriate images and mythically correct information for popular reception worldwide. The TMI crisis of 1979 now guarantees that what could have been concealed in the 1950s and 1960s would now be put on mythically limited display in both the USSR and the world. The substantive meanings and spectacular forms of Chernobyl, therefore, were generated by Geiger counters, meteorological models, fallout dispersion tables, radioactivity sensors, expert opinions, half-life charts, television cameras, news organization special reports, ham radio intercepts, and LANDSAT, SPOT, or KH-11 satellite photos. From this mosaic, the USSR, the media, the international nuclear power industry, and the leadership of the OECD nations fabricated their ideological packaging of Chernobyl.



### In the East

In the USSR, on one level Chernobyl enabled Moscow to reiterate the common Faustian myths of technical progress of "Humanity Tragically Trapped by Its Own Runaway Technology." General Secretary Gorbachev's May 14, 1986, address clearly was guided by such myths in explaining to the world and the USSR one meaning of Chernobyl. On another level, however, Chernobyl served Gorbachev by expressing his break with the cultural and political stagnation of the Brezhnev era. It is unclear whether Gorbachev chose this glasnost for himself or whether the crisis forced glasnost upon him. Still, Chernobyl was eventually packaged in Moscow: first, as a subtle sign of cleaning out the Brezhnev era bureaucracy, and second, as an indicator of Gorbachev's commitment to frankness, openness, and effective publicity.

Neither one of these packaging strategies has been easy to follow. The traditional prejudice favoring secrecy and the practice of misinforming higher organs still prevails throughout the Soviet state in the wake of Chernobyl. Deputy Chairman of the USSR Council of Ministers, B. Y. Shcherbina, reported on national Soviet television that the information received in Moscow "was not the same that we obtained when we were in the area" and that "local experts had not made a correct assessment of the accident."<sup>30</sup> *Novosti's* V. M. Falin told *Der Spiegel* interviewers that "the first reports from the Chernobyl nuclear power plant were incomplete and ultimately turned out to be incorrect" and that "the first objective, detailed information came in before the Monday meeting of the Politburo" two days later.<sup>31</sup> At that meeting Gorbachev apparently ran into considerable resistance from members of the Politburo. Roy Medvedev maintains, "Gorbachev tried to assert a policy of lucidity and correct information within the Politburo. . . . He was backed only by [V.I.] Vorotnikov, chairman of the Russian Republic Council of Ministers, and [KGB head, V. M.] Chebrikov, whereas the rest apparently wanted a containment of information."<sup>32</sup> Gorbachev prevailed only when the scale of the accident and Western inquiries about it made a cover-up essentially impossible.

Although Gorbachev did not directly criticize Chernobyl's management by local officials in his May 14 address, *Pravda* reported on June 15 that the party organization at the Chernobyl site was "sharply condemned" by the local territorial apparatus.<sup>33</sup> The plant director and chief engineer were discharged for irresponsibility, inefficiency, poor discipline, and inadequate leadership, while the shift supervisors and plant foremen were described as being on the run. This administrative purge continued up the line in the Ukrainian party apparatus throughout 1986. Therefore, Moscow shifted the blame for the accident, the delay in evac-

uations, inefficient relief reports, and tardiness in reporting the accident for three days onto the Brezhnevite old regime in the local and regional party apparatus.

This concern with cleaning house and punishing lax workers was affirmed the following spring, and the policy of glasnost has continued since the accident. In March 1987, the chairman of the State Committee for Atomic Energy of the USSR told a visiting Nuclear Regulatory Commission (NRC) delegation that the persons responsible for Chernobyl would be put on trial soon in Kiev.<sup>34</sup> Members of the delegation also visited the Chernobyl power station and were shown its operating units and the two under construction or development. But glasnost was not total: the team learned some minor details, but basically the NRC delegation was told "nothing really new since Vienna."<sup>35</sup> Nevertheless, as the *Economist* noted, Chernobyl gave Gorbachev a unique opportunity. Already one year in office by April 1986, he had not changed Soviet society very dramatically: "Yet if he wants a new stick with which to bully his more cautious colleagues into reforming faster, Chernobyl has given it to him. Using it will be risky. Not using it means courting greater failures in the future. That is the Chernobyl choice, and Mr. Gorbachev's chance."<sup>36</sup>

In seeking to package Chernobyl at home and abroad in the new look of glasnost, Gorbachev has been somewhat more successful. During his May 14 speech he stressed the "accuracy" of Soviet accident reports versus the "veritable pack of lies" in the Western press and official commentary. While he portrayed his regime's open press policies on the Chernobyl disaster as relatively more frank and truthful, Gorbachev noted how it was overshadowed by false Western reports of "thousands of casualties, mass graves of the dead, desolate Kiev; that the entire land of the Ukraine has been poisoned."<sup>37</sup> At the same time, he linked Chernobyl to the danger of nuclear arms, calling for a summit with President Reagan to negotiate a test moratorium and announcing a continuation of suspended Soviet nuclear testing.<sup>38</sup> By lashing back at overdrawn Western criticism, Gorbachev sought to cast the USSR in the most favorable light as an honest, open, great power wrestling with the unknown mysteries and sinister forces of nuclear energy. He recounted why the accident happened, admitting to 13 deaths and 299 hospitalized casualties. He also emphasized that Soviet scientists had contained the threat and were capable of meeting the formidable technical challenges ahead. To prove he was serious about glasnost, Gorbachev apparently approved greater access to Chernobyl for the Soviet press, permitting unprecedented on-site interviews, dramatic close-up TV footage of reactor no. 4, and critical reporting on the local authorities' response to the crisis.

In the process, glasnost has perhaps hidden as much as it has revealed.

Like Khrushchev, Gorbachev might be moving much too fast, alienating and threatening the Moscow bureaucracy, which can effectively throttle the practice of glasnost.<sup>39</sup> The basic premise of nuclearization is not being challenged, nor have reporters questioned the Politburo about the USSR's previous atomic accidents, like the disaster at Kyshtym. The whole truth about radiation and its effects has not been told. Instead, glasnost has developed as an amalgam of self-criticism and self-praise made from the traditional idioms of collective strength and Soviet nationalism. Glasnost was used here to expose the corruption of the few for the progress of the many, but reaffirm the heroic, self-sacrificing spirit of individual Soviet citizens when faced with danger.

In packaging Chernobyl, the USSR stressed its "progressiveness" as a nation, fearlessly facing new technological frontiers with a new international openness. Even though it failed miserably to warn or assist its Eastern European allies and Western European neighbors in coping with Chernobyl's nuclear and economic fallout, the USSR has gotten away with its negligence—perhaps because these inconsiderate behaviors were almost "expected" from Moscow. Gorbachev's packaging, to a degree, has pinned this aspect of Chernobyl on "the old regime," while he holds out the much more promising image of himself and Raisa spurring the Soviet Union toward a more open, image-driven future of prosperity, reform, and peace. Overall, it seems to be working. The Western press has been quite favorable toward Gorbachev's program. At times, the Western media have even suggested that the general secretary with his stylish new pizzazz surpasses America's "Great Communicator." In the USSR, as Gorbachev's apparent successes at restructuring the party and state structures illustrate, glasnost also seems to be overcoming some of the intelligentsia's disaffection with the regime, giving them a reason to contribute to Gorbachev's badly needed new plans for playing technological catch-up with the West. Despite the negative aftershocks from the crisis, Chernobyl clearly has produced some positive fallout for the international image-makers in Moscow.

### *In the West*

In the OECD nations, Chernobyl also acquired mythic dimensions. As *Newsweek* asserted, "The disaster has exposed glaring weaknesses in the Soviet system: its backward technology, its sloppy safety standards, its inability to admit failure."<sup>40</sup> Thus, the accident was used, first, to assign fresh sources of meaning to the commonly circulated images of the USSR as a barbaric slave state with little regard for human life and, second, as new evidence of the Soviet Union's continuing backwardness as an industrial power.

Moscow did little to forestall these interpretations. The first admission of an accident was not made until two days after the reactor explosion, and then the Radio Moscow report from TASS only stated: "Measures are being taken to eliminate consequences of the accident. Aid is being given to those affected. A government commission has been set up."<sup>41</sup> On April 29, the "Vremya" evening news program reported two deaths, a portion of the reactor building destroyed, and the evacuation of Pripyat. The following day TASS denied Western reports of massive casualties, and not until May 4 (when film clips shot from a helicopter indicated the limited extent of severe damages at Chernobyl) did Moscow broadcast convincing images on "Vremya."<sup>42</sup>

On May 6, *Pravda* published comprehensive coverage of the accident and its aftermath; however, the Soviet government also stated in a news conference, "In our opinion, there was no direct threat to the population either of our own areas which are far enough away . . . or foreign countries" despite an increase in background radiation levels.<sup>43</sup> The next day TASS reported "a negligible portion of small radioactive particles was also distributed together with airflows over large distances and fell on the territory of Poland, Romania, and of a number of Scandinavian countries. Here a slight increase in background radioactivity was observed, likewise not a danger to the population."<sup>44</sup>

In fact, Byalystock and Wegorzew in Poland recorded radiation levels 1,500 to 1,700 times greater than normal background levels. Special iodine solutions were distributed to the nomenklatura of the PUWP (Polish United Workers Party) on April 28–29, 1986,<sup>45</sup> to counteract the radioactive iodine 131 in the Chernobyl fallout. In Stockholm on April 28–29, the level of iodine 131 was measured at 10 becquerels per cubic meter of air, while on the Swedish coast they were monitored at 190 becquerels per cubic meter.<sup>46</sup> On Gotland Island, 40,000 becquerels per square meter of grass were monitored, and levels of 8,000 per square meter were found in Great Britain. Throughout Europe, large stocks of vegetables, fruit, and milk were destroyed for weeks to prevent more radiation from entering human food supplies.<sup>47</sup> Still, a Soviet overview of the crisis was not given until Gorbachev's address on May 14 during the "Vremya" broadcast. By that time, the United States and the OECD nations had already assigned the usual meanings to the USSR, using Chernobyl as additional proof.

Following a UPI report, for example, the American media claimed a death toll figure of at least two thousand. Similarly, Secretary of State George Shultz said that he bet ten dollars that the deaths were far in excess of the two initially reported by Moscow. Kenneth Adelman, head of the U.S. Arms Control and Disarmament Agency, also decried Soviet

casualty reports, calling them "frankly preposterous."<sup>48</sup> In the seesaw of superpower arms negotiations, the accident was also portrayed as meaning that Washington could not trust Moscow to verify nuclear treaties because of the Soviets' inadequate disclosures about Chernobyl. A May 1 *New York Times* editorial argued: "Gorbachev cannot win confidence in his pledges to reduce nuclear weapons if he forfeits his neighbor's trust over the peaceful uses of nuclear energy."<sup>49</sup> President Reagan also used Chernobyl to cast doubt on Soviet credibility at the Tokyo economic summit, while *Time* reported one American official to have said: "Imagine what they do to national security items if they handle themselves like this with just a civilian power plant."<sup>50</sup> In a similar vein, the London *Sunday Times* asked editorially, "Who would trust the Soviet Union to allow proper verification of its nuclear missile sites when it does not even tell its own citizens of a fatal accident in one of its own nuclear power stations?" The image of the USSR as a totalitarian monolith with little regard for individual human life gained fresh momentum in the Chernobyl afterglow. Although Soviet government, military, and party leaders displayed great concern for the local citizens of Pripjat and Chernobyl, and despite the way individual firemen, technicians, and helicopter pilots displayed incredible bravery and selflessness in containing the reactor fire, the bureaucratic confusion between Kiev and Moscow practically verified the cynical Western packaging of Chernobyl.

The Soviet Union surely deserves no praise for its handling of Chernobyl. As Hoffman concludes, "Any government, socialist or capitalist, that withholds from its citizens information about the dangers of nuclear energy or fails to help citizens protect themselves before and after a nuclear accident at home or abroad diminishes its legitimacy and effectiveness."<sup>51</sup> Nevertheless, as Bernstein recounts, when it comes to U.S. nuclear information policies—from the Manhattan Project to TMI—Americans must recognize that "their own government, at various levels, has sometimes suppressed information and deceived its own citizens about the safety and purposes of the U.S. nuclear program."<sup>52</sup>

Chernobyl also was employed as a fresh citation to the Soviet Union's deepening technological backwardness. By Tuesday, April 29, Soviet government officials were asking Sweden and West Germany for advice on fighting graphite fires.<sup>53</sup> Two West German robots were dispatched to explore the reactor, and with Armand Hammer's aid, an American doctor named Robert Gale, a UCLA bone marrow transplant specialist, was dispatched to Moscow to help Chernobyl's victims.<sup>54</sup> Moreover, White House press spokesman Larry Speakes announced that poor Soviet design and engineering were at fault in the crisis. To forestall comparisons with U.S. reactors, he assured the world that "ours are quite different from the

Soviet system and have a number of redundant safety systems built in."<sup>55</sup> Even though such claims were somewhat false, numerous Western experts came forward to assure the public that the Soviet reactor was antiquated, poorly designed, and lacked a containment structure. In Donald Regan's assessment, Soviet industrial backwardness was to blame, and *not* atomic energy itself: "Nuclear power is a good thing for the future of many nations, including our own—we shouldn't throw out the baby with the bath water and condemn all nuclear power plants because of this."<sup>56</sup>

To reinforce this picture of Soviet industrial inefficiency and incompetence, the Nuclear Energy Agency (NEA) of the OECD met twelve days after Chernobyl to assess its meaning for the West. They concluded that the NEA should study how to improve cooperation in future nuclear accidents, but that the designs of Western reactor types were quite superior to Soviet designs (Soviet reactors could not even be licensed in the West). Therefore, no reconsideration of OECD nuclear energy programs was necessary. Since 30 percent of Western Europe's, 16 percent of the United States', and 20 percent of Japan's electricity is nuclear-generated, the Tokyo economic summit affirmed the OECD's joint support of "properly managed" Western nuclear power.<sup>57</sup> *Time* boldly concluded that the key difference between East and West on nuclear energy was political: "The U.S. industry operates in an open society, subject to laws that give the public considerable say over where nuclear plants are located and some input as to when and even if they will go into operation. The same cannot be said of the Soviet Union, where the government makes all such decisions without consulting the public."<sup>58</sup> This, of course, will be news to many American nuclear activists fighting the Diablo Canyon, Seabrook, or Palo Verde units.

The American media, in particular, actively participated in packaging Chernobyl in terms of Soviet callousness and backwardness. In its typical style, the *New York Post* ran headlines (lifted from a New Jersey Ukrainian-language weekly) that bellowed "MASS GRAVE—15,000 reported buried in Nuke Disposal Site."<sup>59</sup> More reputable news operations did not do much better. For days—on the basis of an unconfirmed report from Kiev—UPI, AP, NBC, ABC, CBS, *The New York Times*, and *The Washington Post* used the figure of 2,000 deaths, with varying degrees of qualification, in reporting on Chernobyl. When put in context with official Soviet reports of 2 to 31 deaths, these reports implicitly "exposed" the USSR as the lying, untrustworthy dictatorship it had always been. For most of the week following the accident, news reports consistently overestimated casualties, claimed two or even more reactors might be on fire, and suggested the rescue and cleanup were going very slowly. Reports of Western aid—like the West German robots, Swedish technical



consultants, and the American bone marrow transplant team—were also highlighted to stress the Soviet Union's technical inabilities in coping with the disaster. Yet, beyond buying SPOT or LANDSAT photos for visual confirmation of their dire dispatches, most news organizations relied on Western spokesmen and official handouts for most of their copy rather than any on-the-spot reporting.

This tendency undoubtedly was accentuated by the unusual press access to official spokesmen afforded by President Reagan's Far East tour leading into the Tokyo summit. Overall, as Dorman and Hirsch observe, "the initial Soviet statements turned out to be largely correct on a number of significant concerns—for example, the number of casualties, the number of reactors on fire, and whether or not the fire had been contained—while those of the Reagan Administration, which were taken by journalists at face value, proved not to be."<sup>60</sup> The American press also was remarkably slow about correcting its earlier sensational and inaccurate packaging of Chernobyl. By May 19, 1986, *The New York Times* and *The Wall Street Journal* ran stories reporting that the USSR had built substantial containment structures in its reactors and that American complacency about its own reactor designs was unwarranted. Yet these insights were mainly drawn from an NRC briefing given nearly two weeks earlier on May 8 and from NRC Commissioner James Asseltine's testimony before the House on May 5. While titillating inaccuracies were given front-page, first-column spreads in late April, the sober realities were tabled for two or three weeks, only to end up later as minor sidebars or back-page, second-section fillers. In the end, both the Western press and Washington flatly claimed that if some media reports had been inaccurate, "this was the inevitable result of the extreme secrecy with which the Soviet authorities dealt with the accident in the days following it."<sup>61</sup>

Beyond the Western nation-states, the most highly motivated Western group working to redefine the meaning of Chernobyl was the U.S. nuclear power industry. *Time* reported that from 1980 to 1986, over 60,000 MW of planned nuclear power plant capacity had been canceled or indefinitely postponed. Chernobyl threatened the industry with an even larger exodus of customers. A White House official echoed the industry's concerns: "We don't want the hysteria building around the Soviet accident transferring over to the American power industry."<sup>62</sup> Given the industry's political problems at Indian Point, Seabrook, Shoreham, Browns Ferry, Zion, Diablo Canyon, Palo Verde, and Three Mile Island, as well as problems with the TVA and WHOOPs reactor programs, its concerns were quite significant.

The week before Chernobyl the U.S. Committee for Energy Awareness

was running public service ads decrying, "Nuclear Energy—Is America Being Left Behind?" and showing Old Glory at the bottom of a nuclear-power bar graph under a heap of other OECD nations' flags.<sup>63</sup> The Soviet accident, of course, cast a long shadow over such lobbying efforts by the nuclear power industry. Therefore, Chernobyl's meaning in the packaging by the Western nuclear power industry was simple—it had "no meaning" because the RBMK reactor was radically different than all Western PWR or BWR reactors. The Atomic Industrial Forum sent out mailings claiming that Chernobyl had no containment structure and that all U.S. reactors had the extensive steel and concrete protective barriers most Soviet units lacked.<sup>64</sup> A public relations blitz mounted by the Electrical Power Research Institute similarly claimed that Chernobyl was poorly designed because it lacked steel and concrete containments common in the United States.<sup>65</sup> The Edison Electric Institute simply stated that "we have not and will not have a Chernobyl-type plant accident here."<sup>66</sup> With no orders for new plants since 1978, the U.S. nuclear companies were justifiably worried. Before the Chernobyl accident, some experts saw orders for new plants by 1991 or 1996; Chernobyl's aftermath threatens to pull the plug on the United States' dying nuclear technology industry.

Subsequent revelations about the Chernobyl reactors' design, as well as the design of U.S. reactors, underscored the importance of assigning a negative, irrelevant meaning to the Soviet accident when it was headline material in the United States. By May 1986, it was revealed that the United States was operating two graphite-moderated reactors, one water-cooled and one gas-cooled, in Washington and Colorado respectively.<sup>67</sup> Theoretically, and contrary to the Edison Electric Institute's claims, a Chernobyl-type, graphite-fire accident could occur in either troubled-plagued unit. Moreover, the graphite-moderated N-reactor at Hanford, Washington, and four other similar units at Savannah, Georgia, which produce plutonium and tritium for the Department of Energy's nuclear weapons program, all lack adequate containment structures.<sup>68</sup> If their safety systems failed, highly toxic plutonium could be widely dispersed in the resulting reactor accident. After the immediate Chernobyl crisis had passed, the Atomic Industrial Forum admitted to "a little simplification" in its initial claims. By then, the threat to nuclear power's public image was contained as the negative meaning of Chernobyl settled on Moscow and a measure of reassurance stuck with the U.S. nuclear power industry. With problems like the questionable containment designs in General Electric's boiling-water reactors or Westinghouse's inadequately tested pressure-suppression systems, U.S. nuclear power seriously needed positive comparisons with the negative example of Chernobyl.<sup>69</sup>

This need to reclaim legitimacy for the nuclear project continued into



1987. For example, Steve Delaney anchored an hour-long NBC News special report, "Nuclear Power: In France It Works," which was broadcast in the United States on March 12, 1987. After opening with a review of the passionate controversies raised in the United States and West Germany by TMI, WHOOPs, and Chernobyl, the documentary looked at France's extensive nuclearization program. Since France has no gas, no oil, and no coal, it is shown as having "no choice" other than nuclear energy. As our gas, oil, and coal dwindle, we implicitly also have no choice. As a result, the report claimed, objective journalistic examination of nuclear power in France might restore reasonable good sense to a United States energy policy now terribly divided by passionate anti-nuclear emotions.

NBC News painted quite a positive picture of Paris and the atom in its "objective examination." The images were ones of precise safety, aesthetic design, and sophisticated control: France's standardized reactor designs; the tough training of skilled operators at the *École Polytechnique*; 49 working reactors, with 15 under construction, providing 70 percent of the nation's electricity and lighting; Paris, the City of Light; French villagers welcoming reactors as clean, safe places of employment; *Électricité de France* managers assuring all that accidents in France are virtually impossible and that the nuclear waste problem has been solved; France pushing into new dominance internationally as a supplier of nuclear reactors, fuel, and technology; French nuclear power generating money in electricity and high-tech exports; and the French willingly accepting nuclearization, as a mark of national pride and technical accomplishment, with little serious protest. The report stressed that France has an advantage over the United States, namely, government intolerance of dissent (which was also presented as usually coming from misinformed or ignorant malcontents) and unshaken public faith in the technocratic acumen of France's nuclear establishment.

The report did not point out how France's small size and population densities make such centralized systems of power generation somewhat more feasible than in the United States, nor did it discuss the numerous accidents that the French have experienced but rarely report. NBC News also neglected Paris's lack of nuclear glasnost about Chernobyl. Fearing a backlash about the fallout from the Soviet *Atomstaat*, the French *Atomstaat* claimed the radioactive cloud by-passed France in May 1986. Later Paris admitted the fallout did indeed hit France but did not call for public precautions because the levels of radiation were too low. Yet radiation in food and on the ground in some regions was four hundred times greater than background levels.<sup>70</sup> In sum, NBC News essentially presented a perfectly pro-nuclear package; nuclear energy means, as it does in contemporary France, many "good" things: freedom from OPEC oil, more jobs,

greater shares of foreign markets, national consensus for a high-tech energy policy, and the silencing of troublesome environmentalists. It must be noted that these curious "elective affinities" for nuclearization in NBC's journalistic stance might have some connection with General Electric's takeover of the Radio Corporation of America and its media division, the National Broadcasting Corporation, in 1986. While one should not necessarily reduce this NBC special report to a crude capitalist or public relations conspiracy, General Electric prides itself on "bringing good things to life," which includes serving as one of the United States' main nuclear reactor designers and a major supplier of advanced nuclear technology at home and abroad.<sup>71</sup>

#### CONCLUSIONS

In the last analysis, the packaging of Chernobyl in both the East and the West has proven fairly effective. Within days after the accident, it was clear that many of its threatening meanings had been contained. As more and more information was provided, it became clear that Chernobyl had not really called the future of nuclear power into question. The mythologies of advanced industrial ideology instead used Chernobyl to reaffirm the impossibility of future human progress without *more* nuclear power. For example, Gene Pokorny of Cambridge Reports, a public opinion firm that has tracked American attitudes about nuclear power for nearly fifteen years, maintains that "a massive shift in public opinion is just not there."<sup>72</sup> During the aftermath of Three Mile Island, hard-core opponents to nuclear power jumped up to 18 to 20 percent of the adult population from 10 percent in early 1979 and has stayed at that level. By February 1987, Chernobyl had failed to make a permanent impact on anti-nuclear public opinion. "By and large," Pokorny reports, "American public opinion is where it was before the accident."<sup>73</sup>

Such polls do not measure the delayed, long-term effects of Chernobyl on worldwide opposition to nuclear power. But in the short term it appears that the diverse but competing packaging teams of the East and West in state agencies, the private sector, and nuclear professional forums have achieved their goal of assigning appropriate meanings to Chernobyl and framing its political reception among various mass publics worldwide. The mass reception of Chernobyl's repackaging apparently was quite positive. In the United States, the Cambridge Reports' February 1987 poll also revealed that 79 percent of the respondents described nuclear power as an important future energy source, up from 73 percent in the 1984-85 period. That same percentage of the February poll also believed that the United States would increase its use of nuclear energy,

and 67 percent agreed that it was a "very good" or "realistic" source of power for the United States' large-scale electrification needs.<sup>74</sup> These diverse discourses by those-in-power, then, are the active speech of apparent order continuously speaking to reduce those-not-in-power to passive silence about the real disorder undergirding nuclearized societies.

Still, such ideological campaigns are not easy, nor are they guaranteed to prove successful. Images of reassurance must be presented directly enough for mass publics to coproduce their own affirmations of nuclear energy after considering the various trade-offs and the allure of its high technology. Images are manufactured, but the terms of their consumption or the nature of their reception are often incomplete. Chernobyl is so shocking because it is the unlikely statistical improbability suddenly become an immediately real, transnational, ecological disaster. It starkly contradicts images of technical precision and positive cost-benefit comparisons with coal, oil, or gas consumption that the nuclear power industry usually packages into its image advertising. The catastrophic meltdown that had been predicted to happen only once in ten thousand years took place less than ten years after the first unit at the Chernobyl power station came on line. (In fact, the entire RBMK system probably had only 250 reactor years of operation.) In certain respects, the ideological reprocessings of Chernobyl by the USSR, the Western media, the leadership of the OECD nations, and the Western nuclear power industry were interconnected. Each of them, working in its own fashion, sought to reaffirm the legitimacy of high technology and the authority of technological competence from an episode of high-tech disaster and clear technological incompetence. Chernobyl flashed "transmission interruption," "technical difficulties," or "broadcast interference" across the screens of power. It had to be repackaged as a warning to everyone "not to adjust their sets." Those with access, competence, and control of the codes were stalling those without access, competence, or code command, reassuring them "to remain calm and await further instructions" rather than increase their resistance.

Despite their best efforts, the nature of the reception of these images is open to question, given the growing resistance to nuclear power and nuclear weaponry. For the ecological opposition, Chernobyl served well as the fulfillment of its dire prophecies of nuclear disaster in deadly fact.<sup>75</sup> As the explosion spread dangerous isotopes across the entire Northern Hemisphere, Chernobyl seemed to revitalize the anti-nuclear movement throughout North America, Western Europe, and Japan, but especially in West Germany.<sup>76</sup> By mid-May 1986, West German protesters were clashing violently with police at the Wackersdorf site of Bonn's new nuclear-waste reprocessing plant.<sup>77</sup> Their concerns are very real: in addition to

being sandwiched between the heavily nuclearized Soviet Union and France, West Germany operates twenty reactors within its territory, and another eighteen are within one hundred kilometers of its borders.<sup>78</sup> When a Chernobyl-style thirty-kilometer evacuation zone is placed over West Germany's five major northern and southern nuclear plants, the major cities of Bremerhaven, Hamburg, Mainz, Darmstadt, Worms, Ludwigshafen, Mannheim, Karlsruhe, Stuttgart, Heidelberg, Heilbronn, Würzburg, and Schweinfurt fall directly into a high-risk zone.<sup>79</sup> It is not at all surprising, then, that West German Greens first recognized that Chernobyl is everywhere, nor that a *Der Spiegel* poll showed that only 29 percent of West Germans supported building new nuclear plants versus 69 percent against in mid-May 1986.<sup>80</sup> Similarly, one year after Chernobyl, the Worldwatch Institute claimed the accident was the final blow needed to "collapse in country after country" the existing "pro-nuclear consensus."<sup>81</sup>

For the advocates of nuclear power, Chernobyl is simply another (albeit quite serious) variety of industrial accident, which actually took less lives in one event than most coal mining accidents, hydroelectric dam failures, or ordinary pollution from fossil fuels. Many shrugged it off, pointing out that the Bhopal chemical plant disaster, for example, was "much worse" in terms of human deaths. This "naturalization" of nuclear disaster seems to be one of Chernobyl's worst legacies. After the accident, many tough-minded exponents of nuclear power flatly announced that "within 30 years an accident like Chernobyl or Three Mile Island might be happening every year. We will get used to them, and newspapers will report them on page 37."<sup>82</sup> A poll of American nuclear scientists in April 1987 revealed that 77 percent saw a Chernobyl-scale nuclear accident as improbable, 82 percent saw U.S. reactors as safer after Chernobyl, and 66 percent saw U.S. reactors as quite safe overall.<sup>83</sup> Apparently, the image advertising of Chernobyl, like most expensive advertising campaigns, simply reinforced already existing attitudes, providing new reasons for individuals to continue to hold onto their anti-nuclear or pro-nuclear stance.

These reactions among many nuclear scientists, however, even among those opposed to nuclear power, still run down mythological tracks. Nuclear power here is reduced to a "complex technological system" that is "inherently fallible" because of the complexity, scale, centralization, hierarchy, or inaccessibility of the control systems needed to manage them.<sup>84</sup> In mythic form, once again, as Mephisto or the sorcerer's apprentice, "Technology" looms over "Man and Society" as a sinister threat. In fact, these control systems' attributes are not facts of nature, nor should their failure be regarded as natural; instead, they are the result of

the purposive creations of peculiar bureaucratic structures in the state sector or corporate sector of the superpowers. Abstract naturalized forces, like fallibility, complexity, hierarchy, centralization, inaccessibility, and scale are, in fact, very political and totally artificial traits. They express the specific social relations of production embodied in the USSR by the State Committee for Utilization of Atomic Power, the Ministry of Medium Machine Building, the Ministry of Power and Electrification, and the Ministry of Power Machine Building, and in the U.S. by the Department of Defense, the Department of Energy, the Nuclear Regulatory Commission and various private nuclear utilities. Nuclear power and its flaws are not naturally necessary: They have simply become political necessities as nuclear power has become a vital means of production for states with these bureaucratic relations of nuclear production.

This military/political connection to the superpower state is essential. It is what the packaging of peaceful nuclear power continually obscures. Although no one has solved the intrinsic dangers of the nuclear fuel cycle or the problems posed by nuclear waste, safe reactors are feasible. The West German modular high-temperature gas reactor (MHTGR) and the Swedish-designed process-inherent, ultimately safe reactor (PIUS) seem to overcome the instabilities of current PWR, BWR, or RBMK designs.<sup>85</sup> But their technology originated in civilian design bureaus in the smaller, non-nuclear nations of West Germany and Sweden. Most existing reactors are based upon much older U.S. or Soviet military designs. Nuclear power reactors using the PWR systems favored in the West are derived from naval technologies first developed to power nuclear submarines. Likewise, nuclear reactors employing the Soviet RBMK technology are based upon plutonium production units for atomic bomb manufacture.

Nuclear power advocates mystify and obscure the real sources of fallibility behind complex technologies by blaming it on the technology itself. To a very significant extent, nuclear power generation was initiated in the 1950s as a partial atonement by nuclear weaponry designers for first using the atom for war. To compensate for Hiroshima, they sought to legitimate their work by turning nuclear energy to peaceful purposes such as generating electricity for peacetime consumption. The technology, in turn, is simply a material product of the overly complex and inherently fallible military-scientific bureaucracies that initially produced and managed it. If the handmill creates societies with feudal lords and the steam mill leads to societies with industrial capitalists, then it would appear that the nuclear power stations at Chernobyl and TMI follow from societies with the Ministries for Medium Machine Building, Power Ma-

chine Building, and Defense, as well as the Departments of Defense and Energy.

Given these power-producing technologies' original roots in weapons production and their less than meticulous management by large complex bureaucracies, the nuclear accidents at Chernobyl and TMI are not hard to understand. Nuclear energy, at the bottom line, is essential for these bureaucracies because it makes possible the nuclear powers of the superpower state. The tendency among nuclear power supporters, in turn, to naturalize tremendous nuclear disaster only reflects, in a distorted form, the disaster of superpower states naturalizing nuclear supports for their tremendous power. In the end, the mythologists of nuclear energy in both the East and the West have had to repackage Chernobyl mythically in such ideological terms as humankind's saga of "no price is too high" to have nuclear power. Yet the deeper realities of Chernobyl belie all of its packaging and call the ultimate myths of nuclear energy into open question—the safe, clean source of energy too cheap to meter is finally shown to be a dangerous, dirty kind of power with costs too immense to measure.

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