The Formation of the Rocket-Nation: Abstract Systems in *Gravity's Rainbow*

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Gravity's Rainbow begins with the sound of a rocket that blasts London near the end of the Second World War, and ends with the scene of a Los Angeles theater on which a rocket is falling in the middle of the Cold War. Rockets do not respect national borders. Gillian Beer explores how the advent of the technology of the aeroplane early in the twentieth century significantly affected the idea of the British nation. Although its emphasis is on Woolf, Beer's study includes insightful comments on other modernist writers as well. Gertrude Stein, for example, understood "the formal reordering of the earth when seen from the aeroplane—a reordering which does away with centrality and very largely with borders" (Beer 265). Moreover, Beer observes, the military use of the aeroplane unsettled the British idea of the nation as a "safe fortress" or "fortress-island" (266).

How, then, does the advent of the V-2 influence the idea of the nation? What is the age of the V-2 like? In *Gravity's Rainbow*, the change brought about by this new technology leads Oberst Enzian to disavow belief in the state as a protective institution in the age of the V-2 that disregards national borders:

> "They have lied to us. They can't keep us from dying, so They lie to us about death. A cooperative structure of lies. What have They ever given us in return for the trust, the love—They actually say 'love'—we're supposed to owe Them? [. . .] Before the Rocket we went on believing, because we wanted to. But the Rocket can penetrate, from the sky, at any given point. Nowhere is safe." (728)

Many characters in the novel try to cope with the uncertainty surrounding the state's role and the individual's relation to it in an emergent order based on the technology of the V-2.

To examine the emergent order in *Gravity's Rainbow*, I will draw on Anthony Giddens's sociological study of risk society. The new environment being shaped in Pynchon's novel can be called, after Giddens, the risk environment. The unbridled forces of capitalism, industrialization and technology produce risk on a massive scale. Giddens warns against the intensification and globalization of risk in the

contemporary world driven by potentially destructive technology. He underscores the "*[g]lobalization of risk* in the sense of *intensity*" in the risk of nuclear war. He also reminds us of the vast reach of risk, since we are faced with "the *expanding number of contingent events* which affect everyone or at least large numbers of people on the planet" (Giddens 124). The disastrous potential of nuclear power, once unleashed, goes beyond local control. In *Gravity's Rainbow*, emergent ideas of the nation are shaped during and immediately after the Second World War, when the national formation becomes inseparable from the development of rocketry. The driving force behind the formation of the postwar nation is what Pynchon calls "the System" or "They"—the large-scale agglomeration of business, the military and the state, whose enterprise revolves around the development of rocket technology.

Pynchon's "System" can be compared to what Giddens calls the "abstract system." According to Giddens, abstract systems are modern economic, political and military institutions that are "disembedded" from local, face-to-face contexts because of their vast reach. And they are "expert systems," driven by highly specialized knowledge and technology (79–80). Relying on such sociological concepts as risk and trust, I will examine how Pynchon's characters establish relations in a society entangled with an agglomeration of abstract systems.[1] In so doing, I will put special emphasis on the space of the city in the novel. As a fortress, the city protects citizens from outside threats, and as a machine of governance, the city administers and rules citizens. In that space, the complex relation between the individual and the nation in the risk environment becomes clearly observable.

In the opening section, "Beyond the Zero," scientists and military personnel in London are distraught with fear of V-2 bombardment. The safe fortress of Britain, based on maritime power, has ceased to provide its citizens with a strong sense of security. In a nightmare, Pirate Prentice finds himself among evacuees seeking shelter: "They have begun to move. They pass in line, out of the main station, out of downtown, and begin pushing into older and more desolate parts of the city. Is this the way out?" (3). In these marginal districts, Prentice shares the feeling of helplessness with the inhabitants and shares the fate of his fellow evacuees. An important lesson he learns from the nightmare is that "There is no way out" (4), no salvation, no escape from the V-2. Every evacuee hears the same voice saying, "'You didn't really believe you'd be saved. Come, we all know who we are by now. No one was ever going to take the trouble to save *you*, old fellow'" (4). The message reminds the evacuees of the impossibility of their election and urges even a military elite like Prentice to recognize his own preterition.

Pynchon's description of the destruction of London implies that the bombardment can open up a democratic space where everybody is a preterite. Compare the apocalyptic fantasy of Lord Blatherard Osmo, which Prentice in his role as fantasist-surrogate for the Firm once shared. At the time, Osmo was preoccupied with the Balkan question, when, in the aftermath of the First World War, regional conflicts threatened to trigger another world war. Osmo fantasizes a giant Adenoid, a "lymphatic monster" (14) that attacks London with an inscrutable design:

> [B]efore long, tophats are littering the squares of Mayfair, cheap perfume hanging ownerless in the pub lights of the East End as the Adenoid continues on its rampage, not swallowing up its victims at random, no, the fiendish Adenoid has a *master plan*, it's choosing only certain personalities useful to it—there is a new election, a new preterition. (15)

As Steven Weisenburger observes, "the Adenoid moves due east and with no regard to social classes" (GRC 23). The monster freely moves from the fashionable to the marginal district, dismantling the old divisive structure, just like the German V-2s, which hit London randomly, disregarding the spatial segregation of the city.

Weisenburger comments further on the question of class, "Lodged as he also is in the pharynx of Lord Blatherard Osmo, the Adenoid satirizes the nasal characteristics of upper-crust British speech; at least, he satirizes how that speech sounds to preterite ears" (GRC 22). Osmo's class is inscribed into his body; magnified and hyperbolically emphasized, these traits assume ugly, monstrous qualities. Similarly, at the end of the novel, Richard M. Zhlubb, a parodic representation of Richard Nixon, "suffers from a chronic adenoidal condition" (GR 754). The condition makes articulation difficult, and thereby Pynchon reinflects the master's speech. As the V-bombardment undermines the spatial segregation of the city, the adenoidal condition undermines hierarchical relations by means of linguistic twists.

In the city ravaged by the Adenoid and the V-2, there is a sense that everybody is a preterite until a new election or new hierarchization takes place. As the statistician Roger Mexico cynically claims, "'Everyone's equal. Same chances of getting hit. Equal in the eyes of the rocket'" (57). Mexico's comment is based on a purely statistical calculation, divorced from economic or social relations. To be sure, according to Mexico's Poisson distribution, every part of the city has the same chance of getting hit; but Thomas Gwenhidwy points out that rockets are falling "'all over the fucking *East End*.'" He theorizes that the privileged and the dispossessed are distributed, respectively, in the

West and the East because of "'the Threat From The East, you see.
And the South: from the mass of Eu-rope, certainly'" (171–72). That
the dispossessed in the marginal area suffer most proves that Mexico's
idea of equality is only partially true.

Nevertheless, the old hierarchical structure is dismantled as the
society reshapes itself out of the depths of destruction, the destruction
and the reshaping both driven by new technology. To acquire
information about the rocket and to master it are important for surviving
the war and for joining the elect in the postwar world. Edward
Pointsman laments that

> this war, this State he'd come to feel himself a citizen of, was to be
> adjourned and reconstituted as a peace—and that, professionally speaking,
> he'd hardly got a thing out of it. With funding available for all manner of
> radars, magic torpedoes, aircraft and missiles, where was Pointsman in the
> scheme of things? (75)

Pointsman realizes that the scheme of things is entering a new phase
and that he is being left behind. Khachig Tölölyan comments that the
end of the Second World War is a decisive period for the construction
of a new order. As he points out, "Pynchon 'dramatizes the
manufacture' of the Rocket because, as society builds it and makes
war, so these activities shape society" (52). In the transitional period
between war and (so-called) peace, Pointsman is filled with anxiety,
trying to cope with the changing circumstances—new research and
different flows of funding. There is no guarantee that the previously
favored citizen can remain on the side of the elect after the
restructuring of the relation between science and economics involved
in the development of new technologies. Thus characters such as
Pointsman are obsessed with the new election being brought about by
rocketry, attempting to learn the master plan behind the war's
destructiveness.

The nation that emerges during the war is closely akin to
Weissmann's Oven State. The idea of the Oven State is introduced in
the episode in which Weissmann, Katje and Gottfried form a sado-
masochistic triangle based on the German folktale of Hansel and Gretel
at a V-2 launch site in Holland. The Oven State is always haunted by
"[t]he improvidence of children . . . and the civil paradox of this their
Little State, whose base is the same Oven which must destroy it" (GR
99). In the community of sadomasochists, the symmetrical and "formal"
relation between victim and victimizer gives them a sense of security
against "the War, the absolute rule of chance" (96). The apparatus that
is supposed to guarantee protection from enemy invasion is the rocket.

Yet the launching of rockets often fails, so that those who use them are always in danger of being destroyed by their own weapons. The Oven State reveals itself to be profoundly paradoxical: its means of protecting life and property have become so powerful and uncontrollable that the state can turn violence on its own citizens. The possibility of protection the rocket offers is inseparable from the risk of destruction. Moreover, the use of the rocket (even its mere possession) raises the level of risk by inviting retaliatory or preemptive enemy strikes. Therefore, the rocket is "both organizer and destroyer" (99). As an organizer, it is the nucleus of the agglomeration of the state, business and the military, which form the basis of industrialized capitalist society; as a destroyer, it threatens its own grounds of existence.

Miklos Thanatz thinks the rocket has "'a Max Weber charisma . . . some joyful—and *deeply* irrational—force the State bureaucracy could never routinize, against which it could not prevail . . . they did resist it, but they also allowed it to happen'" (464). With its charisma, the rocket is the core around which the nation organizes itself. According to Weber, the emergence of a charismatic figure brings a reorientation in society: "It may then result in a radical alteration of the central system of attitudes and directions of action with a completely new orientation of all attitudes toward the different problems and structures of the 'world'" (53–54). In *Gravity's Rainbow*, such a reorientation takes place as the rocket nation transforms itself toward the postwar world order of the Cold War.

However, the rocket, with its charismatic force, cannot be totally routinized by the state bureaucracy, which simultaneously resists it and allows it to happen. The state cannot have total control over the rocket because of its complexity and its unpredictable behavior, and because of the large network of scientific, economic and military organizations involved in its development, deployment and use. Commenting on the complex, delicate mechanism of the rocket, Enzian expresses his

> "sharp awareness of how contingent, like ourselves, the Aggregat 4 could be—how at the mercy of small things . . . dust that gets in a timer and breaks electrical contact . . . a film of grease you can't even see, oil from a touch of human fingers [. . .] rain that swells the bushings in the servos or leaks into a switch: corrosion, a short, a signal grounded out, Brennschluss too soon." (362)

The complex machine can easily be affected by small, even microscopic elements, which can cause the rocket to behave aberrantly.

Because of the rapid pace of development and the concomitant technical problems, the V-2 does not always arrive at its intended

target. Therefore Franz Pökler can watch from Ground Zero as a rocket comes toward him, to try to determine the cause of airbursts. The more complex and advanced a technology becomes, the more uncertain its performance becomes. In *The Postmodern Condition*, Jean-François Lyotard explores paradox, uncertainty and probability in postmodern scientific knowledge. He argues that "a complete definition of the initial state of a system (or all the independent variables) would require an expenditure of energy at least equivalent to that consumed by the system to be defined" (55), suggesting that total control over a system of knowledge is impossible. Added complexity and delicacy produce more uncertainty. "It is not true that uncertainty (lack of control) decreases as accuracy goes up: it goes up as well" (Lyotard 56). The problems with the rocket point to such a paradoxical condition of knowledge. In Lyotard's theory, uncertainty does have the possibility of bringing freedom. Thus when he watches the V-2 burst in the air, Pökler becomes free, momentarily, from the system of control to which he is subjugated; the sense of uncertainty produced by the malfunction of the complex machine offers him an escape from control by technological rationality. Yet he does not remain free. He imagines, masochistically, that "the Perfect Rocket is still up there, still descending. He still waits" (426), further co-opted into the system that thrives on the drive to perfect technological control.

Technologically complex and uncertain, the rocket assumes charismatic and irrational qualities. Furthermore, once the construction is complete, the power of the V-2 exceeds the local state's control, because (to quote Giddens again) it brings about the "*[g]lobalization of risk* . . . which affect[s] everyone . . . on the planet." The state responds to the advent of the V-2's excessive force by simultaneously resisting and allowing it. In the novel, this excessive force and uncertainty call for the perfection of technology and the system that can manage it. As a result, characters such as Pökler who believe in such a grand rationalist scheme participate in the construction of state and scientific apparatuses of control.

How to deal with the power of charisma is a major concern for the characters in *Gravity's Rainbow*. Some of them believe that the construction of administrative and economic machinery is essential to checking the excesses of charisma. As focalized through Dr. Rózsavölgyi in reference to a charismatic figure like Hitler, "It was widely believed in those days [near the end of the Second World War] that behind the War—all the death, savagery, and destruction—lay the Führer-principle. But if personalities could be replaced by abstractions of power, if techniques developed by the corporations could be brought to bear, might not nations live rationally?" (81). Dale Carter remarks of

this passage that "Rózsavölgyi projects a way forward which maintains the Operation's control without the need for overt violence and without reliance on men at the center" (66). According to Carter, the wartime Oven State, dominated by the despot, is transformed into the postwar Rocket State. This new system that feeds on the military-industrial complex retotalizes society. In the Rocket State, "[t]echnical knowledge, political influence, and economic power are drawn together to serve the needs of the incipient totalitarian Operation" (Carter 46). The dream of abstractions of power and a rational system contributes to the creation of a system that maintains itself through excessively rational and thus rigid control over the citizenry.

The IG Farben salesman Wimpe is also at pains to deal with irrational socioeconomic forces. He believes that "'our little chemical cartel is the model for the very structure of nations,'" and in his comment on the effective management of society, he stresses the importance of a "'rational economy'" in order to "'*plan*'" (GR 349). Wimpe's IG is an all-inclusive global cartel comprising many corporations and institutions, as opposed to the type of state whose power is concentrated in a single charismatic figure.[2] Tölölyan points out links between corporations and the German state immediately before and during the Second World War. In reaction to the curtailment of the German army imposed by the Treaty of Versailles, "Otto Gessler, an executive [of IG Farben], observed that if the German army's General Staff was organized as a business company, it would be legal" (Tölölyan 55). Tölölyan also remarks that "the rise of this monopolistic cartel parallels the creation of the Prussian-German state" (53). His comment reminds us that the abstractions of power in the combination of corporations and the military can easily be taken advantage of by a despot. Moreover, as we will see, the abstractions of power whose purpose is to eliminate the irrational power of the despot create another form of irrational violence.

The system based on abstractions of power contains something excessively irrational: not the personality of a charismatic, but the complex structure of the system itself. When Weissmann embarks on the development of the S-Gerät, he makes each engineer work in his own specialized area without knowing what the others are doing. He assigns Pökler his "'special destiny'"; yet the assignment "made no sense to [Pökler]: he had to develop a plastic fairing, of a certain size, with certain insulating properties, for the propulsion section of the rocket" (431). Weissmann manipulates the engineers in such a way that he can keep their final product and his own purpose secret. He manages the team in an excessively efficient and rational manner. Pökler thinks of Weissmann as "a brand-new military type, part

salesman, part scientist" (401). Also a technocrat, Weissmann can administer specialized technological institutions, setting goals and skillfully controlling the psychology of engineers like Pökler. Although abstract institutions are intertwined with one another, unbridgeable gulfs open among individuals who work in the institutions. None of the engineers on the S-Gerät team has the full knowledge of what he is developing, due to the division and subdivision of work.

The S-Gerät team is what Deleuze and Guattari would describe as "overcoded." It contains "all kinds of compartmentalizations and partial processes that interconnect" (210); because of the rigid "segmentarity" of the political, bureaucratic system, communicability between different segments is lost (209–10). Each engineer working for Weissmann is given a small task without the possibility of establishing meaningful interactive relations with the others. The seemingly rational organization comes to produce irrationality, since none of the workers can be fully responsible for the device that is assembled from the parts produced by isolated workers, and none of them knows what kind of monster he is producing. An analogous critique is made by Marcus Smith and Khachig Tölölyan, who underscore "the condition of apocalyptic dread in the contemporary world," where "violence is no longer linked to the human will, but rather to a set of technocratic systems that have gained ascendancy and autonomy" (172).

To be sure, the huge system that produces weapons operates regardless of the will of the individual. Yet we cannot blame only the system for breeding violence, because a group of individuals constitute it. Pynchon reminds us how specialized work in an isolated section gives the individual an excuse for indifference to ethical questions. As the narrator remarks about Pökler, regarding his daughter's imprisonment in a concentration camp,

> For months, while her father across the wire or walls did his dutiful hackwork, she had been prisoner only a few meters away from him, beaten, perhaps violated. [. . .] Pökler's own engineering skill, the gift of Daedalus [. . .] allowed him to put as much labyrinth as required between himself and the inconveniences of caring. (GR 428)

Inger Dalsgaard stresses the loss of individual responsibility in large technological organizations: "Impossible to hold personally accountable for any disasters . . . to which they have each contributed only in part, scientists, engineers and managers retreat facelessly behind the mask of the corporation" (92). Pökler's work in an isolated, insulated segment of the system shields him from the violence that dominates the world beyond his segment. Furthermore, as Weisenburger writes, Pynchon

reminds us "that it was the inmates of Dora who built the rocket [Pökler] and his fellow technicians designed" (EH 61). The construction of the rocket is made possible by the exploitation of labor, another fact that calls into question the heroism and legitimacy of Pökler's work.

The organization PISCES, whose purpose is to expedite surrender ("Whose surrender is not made clear" [GR 34]), also has an excessively divisive structure. In that organization, "no one ever knew the complete spell—different people knew different parts of it, that's what teamwork *is*" (276). In wartime London, the British and Americans establish or refashion scores of such organizations:

> P.W.E. laps over onto the Ministry of Information, the BBC European service, the Special Operations Executive, the Ministry of Economic Warfare, and the F.O. Political Intelligence Department at Fitzmaurice House. Among others. When the Americans came in, their OSS, OWI, and Army Psychological Warfare Department had also to be coordinated with. (76)

The list goes on, making new connections to other organizations, creating a fictional space that is overcoded. Pynchon's cumulative style hyperbolically emphasizes the absurd complexity of the system. Isolated and multiple decision-making processes and other activities within institutions are essential to the divisive system.

After noting the "paper routines" of bureaucracy that separate people, the narrator comments on the divisive structure of the warfare state,

> The War, the Empire, will expedite such barriers between our lives. The War needs to divide this way, and to subdivide, though its propaganda will always stress unity, alliance, pulling together. The War does not appear to want a folk-consciousness, not even of the sort the Germans have engineered, ein Volk ein Führer—it wants a machine of many separate parts, not oneness, but a complexity. . . . Yet who can presume to say *what* the War wants, so vast and aloof is it . . . so *absentee*. (130–31)

Divisiveness and complexity are vital to the System in the novel. Its divisiveness undermines the characters' solidarity that has the potential to grow into a resistance, and its complexity defeats their understanding and thus makes them feel powerless. Thriving on war, the System achieves a large degree of autonomy, maintaining and developing itself. Again, marked by vastness, aloofness and absence, it exemplifies Giddens's abstract system, a nexus of modern economic, political and military institutions disembedded from the local context.

Driven by the accumulation of global capital and the expansion of their sphere of influence, such systems achieve a vast reach. Their abstractness inheres in their lack of strong ties to particular localities and in their diffusely effaced sources of power.

Giddens's abstract systems are expert systems, their driving forces highly specialized knowledge and technological skill. Many characters in *Gravity's Rainbow* are experts in such specialized areas as behaviorism, statistics and rocket technology. Edward Mendelson observes that "Pynchon's characters live *in their work* and in their relations to large social and economic systems. . . . In *Gravity's Rainbow*, as in life, people think about the world in ways related to the work they do much of the day" (179). Pynchon's fiction "contains major elements of our own world that, although familiar to the language of politics and economics, have not yet adequately been named or assimilated in the language of fiction" (180).[3] As Weissmann's protegé, brought from Africa to Nazi Germany, Enzian gains insight into the relation between humans and the technological system, discovering

> that love, among these men, once past the simple feel and orgasming of it, had to do with masculine technologies, with contracts, with winning and losing. Demanded, in his own case, that he enter the service of the Rocket. . . . Beyond simple steel erection, the Rocket was an entire system *won*, away from the feminine darkness, held against the entropies of lovable but scatterbrained Mother Nature: that was the first thing he was obliged by Weissmann to learn, his first step toward citizenship in the Zone. (324)

In this context, the Zone is the space of an abstract, technological system where one can acquire citizenship by understanding the Rocket and by becoming an expert in the community of scientists. The illumination brought by the expert knowledge of technology, and the abstract human relations bound by contracts are essential to the rational system as opposed to the irrationality and uncertainty of Nature. Mastering technology by constructing the highly complex machine of the rocket exemplifies "an entire system *won*, away from the feminine darkness." Expertise in the most advanced form of technology confers citizenship in the abstract institution of specialists; however, as we have seen, Enzian later comes to disbelieve that this privileged status offers any real refuge or protection: "'They have lied to us. They can't keep us from dying[. . . .] Before the Rocket we went on believing, because we wanted to. But the Rocket can penetrate, from the sky, at any given point. Nowhere is safe.'"

Giddens's sociological concepts of risk and fortuna will help us clarify Enzian's vacillation between belief and disbelief in the system.

According to Giddens, fortuna prevails in the condition in which humans are at the mercy of "cosmic forces or spirits" (111). Pitting the technology of the rocket against the uncertainties of Nature implies a positive sense that technology can at least partially overcome fortuna. However, if on the one hand the development of technology diminishes the irrational power of fortuna, on the other hand the development of technology culminates in the production of the rocket, which brings risk on a massive scale. Giddens notes that when an artificial risk becomes extremely high, it starts to assume the quality of fortuna. "To recognize the existence of a risk or set of risks is to accept not just the possibility that things might go wrong, but that this possibility cannot be eliminated" (Giddens 111). In a risk society, the anxiety deriving from the impossibility of eliminating disasters (accidental and otherwise) haunts the citizens. Thus the destructive power of the rocket can be compared to the cosmic force of fortuna.

"The more comprehensive the structure," writes Molly Hite of the system in *Gravity's Rainbow*,

> the more likely it is to look like fate, so that humanity finds itself serving an antihuman Higher Purpose. . . . The implicit model for all such totalizing systems is the myth of the providential plan, which purports to account for all aspects of human life by directing history to a predetermined end. (98)

The providential plan offers people otherworldly salvation, whereas the secular plan of the system offers them security and opportunities in technological society. In pre–V-2 Germany, Enzian could believe in the system and the nation as a fortress that provided protection from fortuna, while in the post–V-2 order, he recognizes the impossibility of protection. Recognizing widespread high risk, citizens experience anxiety, and yet, at the same time, the system offers them opportunities: "[M]ass death's a stimulus to just ordinary folks, little fellows, to try 'n' grab a piece of that Pie while they're still here to gobble it up" (GR 105). To Giddens, the risk produced by the system, and trust as one form of individual response to such a system are characteristic of the industrialized, militarized nation of the modern era.

Pynchon delves into the intricate relation between the individual and the abstract system especially in surrealistic and SF episodes dealing with the emergence of the Raketen-Stadt, Pynchon's city-state image of the postwar hypertechnological nation, and with Slothrop's entrapment in it. Pynchon's vision of the future hyperbolically underscores high risks, rigorous surveillance, oppression and deep anxiety. In the episode involving the Floundering Four, Slothrop and his comicbook-character friends inhabit

a giant factory-state [. . .] a City of the Future[. . . .] Travel here gets complicated—a system of buildings that move, by right angles, along the grooves of the Raketen-Stadt's street-grid. [. . . C]ertain paths aren't available to you. They are available to others, but not to you. Chess. Your objective is not the King—there is no King—but momentary targets such as the Radiant Hour. (674)

The structure of this city of the future is based on the grid pattern of the chessboard, and inhabitants or locales are considered pieces on the board. The city moves buildings with institutions and corporations inside them according to its purposes that defeat the characters' understanding. Travelers' paths are limited, their routes predetermined, and their actions regulated by those who manage the abstract system. Similarly, in "The Occupation of Mingeborough," the narrator suggests the impossibility of Slothrop's returning home. The space of his hometown is defined by "the State highway," and there is a suspicion that "They may already have interdicted the kids' short cuts along with the grown-up routes. It may be too late to get home" (744). Since the kids' freedom to disregard and wander from official routes is denied, no new, unexpected discovery in other areas outside official routes is possible.

The strategy of regulating movement on the grid is not the only one figured in *Gravity's Rainbow* in images of the chessboard and chess pieces. IG salesman Wimpe extends the principle even to organic chemistry:

> "Think of Chess," in his early days around [Moscow], looking for a comparison that Russians might take to, "an extravagant game of chess." Going on to show [. . .] how each molecule had so many possibilities open to it, possibilities for bonding, bonds of different strengths, from carbon the most versatile, the queen, "the Great Catherine of the periodic table," down to the little hydrogens numerous and single-moving as pawns. (344)

Chess pieces and atoms are both manipulated on the board, as characters are manipulated on the grid of the geometrically structured urban spaces in the novel.

Vaslav Tchitcherine is said to be "a giant supermolecule" with "a way of getting together with undesirables, sub rosa enemies of order, counterrevolutionary odds and ends of humanity" (346). Nevertheless, he is not free: he must recognize his position in "that city of the future where every soul is known, and there is noplace to hide"; "the Rocket is its soul" (566). On the other hand, Gerhardt von Göll as Der Springer ("'the knight who leaps perpetually [. . .] across the chessboard of the

Zone'" [376]) and Slothrop as Rocketman can make some exceptional moves. A major figure in the postwar black market, Springer appears to be more manipulator than manipulated. And although Slothrop is the most tightly controlled character in the novel, he becomes the nucleus of a revolutionary counterforce after his disappearance. However, as Deleuze and Guattari write,

> Chess is a game of State. . . . Chess pieces are coded; they have an internal nature and intrinsic properties from which their movements, situations, and confrontations derive. They have qualities; a knight remains a knight, a pawn a pawn, a bishop a bishop. (352)

Although molecule-like bonding offers the possibility of free-association and comradeship, and can lead to the creation of subversive compounds, that bonding will most likely be used for the benefit of the system. As we have seen, the simultaneous bonding and compartmentalization of engineers such as Pökler and Klaus Närrisch are vital to the development of the tightly controlled group of experts. The distribution and manipulation of functionaries given one essence and one role are necessary for the efficient management of the system. Molecules with different essences and bonding capacities of different strengths are distributed, combined and regulated on the grid pattern.

In addition to its control over movement on the horizontal axis, the Raketen-Stadt extends its dominion over the vertical axis. The gigantic city of the future "is grown so tall that elevators are long-haul affairs, with lounges inside: padded seats and benches, snack bars, newsstands where you can browse through a whole issue of *Life* between stops" (GR 735). This description reminds us of Fredric Jameson's description of the inward-looking postmodern building that aspires to be "a total space, a complete world, a kind of miniature city" (40).[4] Pynchon's city of the future, like Jameson's building containing all kinds of shops and offices, is the building as city. The comfortable space of the elevator assumes the quality of a dwelling place.

The highly industrialized consumer society provides its citizens with ease and comfort, and yet the hypertechnological infrastructure of the city of the future can break down at any moment. But the system is ready to deal with characters' anxiety: "For those faint hearts who first thing on entering seek out the Certificate of Inspection on the elevator wall, there are young women [. . .] who've been well-tutored in all kinds of elevator lore, and whose job it is to set you at ease" (GR 735). As Giddens observes, "Encounters with the representatives of abstract systems . . . can be regularized and may easily take on characteristics of trustworthiness associated with friendship and intimacy." One

characteristic of these representatives' behavior is "stereotypical cheerfulness" (85). Pynchon's young women in the elevator, representing the system, exhibit such stereotypical cheerfulness to maintain a comfortable environment and appease the deep anxiety of laypersons who do not understand how the machinery works or do not have complete confidence in its safety. When a passenger insinuates the threat of the rocket to the hypertechnological city, the cheerful atmosphere in the elevator changes, and one of the attendants tries to silence the troublemaker. As the narrator remarks, "the subject is under a curious taboo, and polite Mindy has brought in now a chance for actual violence, the violence of repression" (GR 735). In the risk society of the city of the future, the cheerful young women turn into terrible mothers to repress anxiety for the sake of smooth functioning.

People are torn between the comfort of life made possible by technology and the high risk of the rocket. Therefore, something in the system must keep the balance between security and danger. In *Gravity's Rainbow*, the Schwarzgerät, an "absolutely unique" device (391), may hold that balance. The novel does not fully reveal the mystery surrounding the Schwarzgerät, but we know it is, in part, an insulation device that makes possible the marriage of Gottfried and the rocket. Its purpose seems to be to transcend mortality, "'to break out — to leave this cycle of infection and death'" (724), although its effect may be only to bring more death. It is the key component in either "a good Rocket to take us to the stars" or "an evil Rocket for the World's suicide" (727).

Anonymous workers in different sections of the system produce and maintain technological devices like the S-Gerät. As the narrator remarks in the Floundering Four episode, "there is no king" or single leader, charismatic or despotic. The system is not run by a powerful figure who imposes the law from above and who monopolizes the means of violence. The center of power is diffused into different parts of the complex structure. The rational system gets rid of the oppressive figure of the despotic leader, but at the same time it eliminates the possibility of the emergence of a figure from the margin who could overthrow it. Such heroes as Rocketman and the Floundering Four are powerless and doomed to live in ignorance, without being allowed to catch a glimpse of the world of experts. (Even the members of the Counterforce, who may be granted occasional glimpses of the rich and powerful, are impotent [GR 713].) The heroes have lost their edge because of the illusion of comfort and security they enjoy. As Herbert Marcuse points out, one of the contradictions of the industrialized warfare state is that the sense of comfort deriving from goods and services masks the potential for violence. He argues that "there is no

reason to insist on self-determination if the administered life is the comfortable and even the 'good' life" (49). Furthermore, pseudo-saviors such as Rocketman and Plasticman are products of the rocket industry and the chemical cartel. The heroes' role is to stress the opportunities brought by technology and to mask the negative side of the risks.

In the Floundering Four episode, when Slothrop raids a refrigerator that contains "food-cities of Iceboxland," the narrator comments on the terrible scheme of the icebox city,

> look out, it can get pretty Fascist in here, behind the candy-colored sweet stuff is thermodynamic elitism at its clearest—bulbs can be replaced with candles and the radios fall silent, but the Grid's big function in this System is iceboxery: freezing back the tumultuous cycles of the day to preserve this odorless small world, this cube of changelessness. (677–78)

The system divorces both people and natural products from the organicity of the earth by the maximum use of technology, energy and chemicals, aimed ideally at eliminating death from a hermetically sealed world. Even though there is a plenitude of food, goods, services and comfort in it, the hypertechnologized world is a seemingly inorganic vacuum. A version of Slothrop, a model citizen of such a world, dreams of living forever, disembodied, in a "Machine[. . . .] Dope never gave *you* immortality. *You* hadda come back, every time, into a dying hunk of smelly *meat!* But *We* can live forever, in a clean, honest, purified Electroworld" (699). The evolving city of the future, driven by hypertechnology and using the maximum of energy, comes to be perverted into a fridge-like space—perhaps even a kind of cyberspace. As we have seen, the city of the future is a vast system represented by the all-inclusive total space of the building; yet in reality, its citizens, subjected to excessive control, occupy the suffocating space of the small fridge.

However, as long as there are human residents, the clean space of the rocket-city cannot actually eliminate organicity, especially waste and death. Throughout the novel, repressed feelings about waste come to the surface through various images of the toilet. For instance, the Toiletship episode (GR 448–56) depicts an entire naval vessel— explicitly a microcosm—as an agglomeration of toilets, underscoring the impossibility of repressing waste. Similarly, the memory of the toilet in the Roseland Ballroom repeatedly returns to Slothrop. The toilet is a privileged place in the pure city, because there the clean and the waste —the elect and the preterite—converge: "Well there's one place where Shit 'n' Shinola do come together, and that's in the men's toilet at the Roseland Ballroom" (688). The elect are at pains to eliminate waste and

the preterite from their space, yet the preterite can penetrate the most private space of the elect, as the presence of shoeshine boy Red Malcolm (X) in the ballroom's toilet indicates.

In his drug-induced hallucination of the ballroom toilet, Slothrop, a descendent of Massachusetts Brahmins, discloses his mixed feelings toward the oppressed people of his country: He fears being sexually assaulted by blacks; at the same time, the episode hints at his desire to be united with them through sexual transgression (GR 64–65; cf. 688–89). Contradictions in society prevent Slothrop from forming friendships with those outside the community of the elect. In his classic study *Love and Death in the American Novel*, Leslie Fiedler describes how Huckleberry Finn and Jim leave society for the wilderness to achieve intimacy and trust. The Mississippi River as the democratic location of the Other, without any hierarchical structures, induces them to transgress prescribed racial boundaries. In *Gravity's Rainbow*, the American wilderness does not seem to be a plausible alternative: it is already mapped rigorously, and its history is filled with violence, as seen in the episode of Crutchfield, the Westwardman (67–70). Instead of the wilderness, the toilet in the urban space serves as the location of the Other, where Slothrop and Malcolm X can become intimate, abruptly and violently.

The black figure in "An Incident in the Transvestites' Toilet" raises questions concerning the strained relations between the elect and the preterite. "A small ape or orangutan" (688), thus a figure associated with King Kong, hands Slothrop a bomb. (The novel also documents the Hereros' process of arming themselves by assembling their own rocket from fragments of German hardware; the British plan to "'destroy the blacks'" [615] to prevent their arming—a plan of which Slothrop is both an unwitting agent and a conscious opponent—fails.) In the transvestites' toilet, Slothrop himself assumes the role of one of his society's many Others, who are ordinarily outside his community. Can he trust the Other with the bomb? Trust in the abstract system entails trust in the Other, because the technology the system develops can be copied and spread beyond one's own system. Slothrop has mixed feelings toward non-Westerners engaged in the development of repressive state apparatuses. He does not know how to act in the face of the black as a possible enemy or ally. The black could form an alliance with Slothrop, who has also been victimized by the system. In this scene, however, the ape turns out to be an agent of the murderous "Father-conspiracy" (679) against Slothrop.

The world of *Gravity's Rainbow* is dominated by abstract systems and the assemblage of those systems referred to as They, into which the characters are inescapably incorporated but in which they cannot

fully trust. Characters vacillate between harsh critique of the system with its repressive state apparatuses and trust in the same system that can offer them security and opportunities. In addition to the critique of and trust in one's own system, trust in the Other, who may have equally powerful repressive apparatuses, comes to be an important issue. Thus the open space of the German Zone immediately after the Second World War is set in opposition to the closed, insular space of the Raketen-Stadt. The Zone is without clear national borders or overarching jurisdiction. In that vacuum of authority, Slothrop interacts with characters of many nationalities—Germans, Russians, Argentine anarchists,· Hereros and so forth—and gets involved with a variety of individuals and their communities, albeit temporarily. Pynchon inscribes the concreteness of the carefully researched cultures and histories of his multinational cast of characters into a space dominated by the powerful, abstract systems that divide the characters and undermine the trust they place in the Other.

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Notes

[1]In "Is It O.K. to Be a Luddite?" Pynchon describes the combination of abstract systems in the United States—the military-industrial ·complex: The legacy of Eisenhower is that

> there is now a permanent power establishment of admirals, generals and corporate CEO's, up against whom us average poor bastards are completely outclassed. . . . We are all supposed to keep tranquil and allow it to go on, even though, because of the data revolution, it becomes every day less possible to fool any of the people any of the time. (41)

Pynchon finds possibilities of challenging the systems in the Romantic tendency of the Luddites and in the development of technology itself, as seen in the data revolution that enables us to have access to the expert knowledge of the system. But, as a member of the nation under the machinery of such systems, Pynchon remains deeply anxious as he tries to establish a relation with it.

[2]We need to distinguish between Rózsavölgyi's and Wimpe's visions of rational systems. Rózsavölgyi's vision is rooted in idealism. He dreams of rational economic and political institutions in the hope that such systems can eliminate the irrational power of the despot. Wimpe's rational system is directly linked to the economy. One of his aims in creating such a system is to have control over the processes of production and consumption. Regarding Wimpe's comment on the use of "'real pain'" (GR 348) as a means of control, Eric Cassidy writes,

> The cartel system supports rational control through the selective use of pain, the measured quantity of stimulus-response, to regulate illusions,

dreams, chaos, or such "surplus cost(s)" as addiction created by pleasure, curiosity or eroticism, elements that have "nothing to do with real pain, real economic needs, unrelated to production or labor." (116)
The key to Wimpe's vision is what Cassidy calls the selective use of pain. Wimpe emphasizes the importance of the real pain of productive labor as opposed to the irrationality of the unproductive pleasure principle. His fear of irrationality is based on the fear of unproductiveness and of unpredictable markets.

[3]The incorporation of bureaucratic and scientific working lives into fiction provides "an enormous segment of the data which, in our own daily lives, is essential to our knowledge of self and others" (Mendelson 179). The highly trained and specialized professionals in institutions are deeply involved in the development and the decision-making processes of the system. In a highly systematized and tightly controlled society, fictional works focusing on the lives of the experts are of great importance. Characters in *Gravity's Rainbow* relate to the institutions they work for in a variety of ways, resisting or succumbing to the power of the system. For instance, seeking more funding, Pointsman first negotiates with Brigadier Pudding and eventually, to get what he wants, conditions him psychologically. Work gives Pökler an excuse for his indifference to ethical questions, whereas his colleague Fahringer tries to reintroduce ethics into rocketry (GR 403, 454).

[4]Jameson believes that the transformation of the building into the total space reflects "the incapacity of our minds, at least at present, to map the great global multinational and decentered communicational network in which we find ourselves caught as individual subjects" (44).

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