WAKING FROM THE APOLLONIAN DREAM: CORRESPONDENCES BETWEEN THE BIRTH OF TRAGEDY AND GRAVITY'S RAINBOW1

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The "disparition" of Thomas Pynchon and the quasi-absence of peripheral data about him make it rather difficult to trace the sources of the Pynchonian luxuriance. It is therefore hazardous to claim to have identified any source, direct or indirect. Nevertheless, it is likely that Friedrich Nietzsche's The Birth of Tragedy was known to Pynchon when he wrote Gravity's Rainbow. Not only is it one of Nietzsche's most famous and most accessible books, but it is also the one dealing directly with what is clearly a concern for Pynchon: opera. My hypothesis is supported by remarkable similarities between the two books, not the least of which is the reductionism both have had to suffer.

Going counter to Pynchon's own implicit warnings against all attempts at totalization or synthesis, critics of <u>GR</u> have too often reduced the book's tremendous richness to oversimplified patterns. Most commonly, it has been (mis-)read according to a scheme of binary oppositions that imposes a dichotomous, or even Manichean, reading frame upon a book which rejects precisely such modes of narrow rationality. <u>BI</u>'s critical history is also marked by a misleading impulse to simplify which, in spite of its possible pedagogical relevance, cannot help betraying the complexity of Nietzsche's first work. The book is fairly small in bulk, but its scope is immense. Though primarily the work of a philologist, it combines aesthetic with metaphysical and ethical concerns.³

Writing at once as a poet and as a philosopher, Nietzsche based his conception of the genesis and development of Greek philosophy and thought on a study of ancient Attic tragedy. His mythic tale is one in which two principal forces, at once antagonistic and complementary, dominate by turns: Dionysian musical rapture and the Apollonian dream of plastic perfection alternate in a pendulum-like movement. The first prehistoric phase of life, as Nietzsche claimed the Greeks saw it, was the age of the Titans. The cornerstone and condition of their domination was the terror they inspired, which humans exorcised in the ecstasy induced by the orgiastic Dionysian celebrations of wine, music and dance. Fundamentally, Nietzsche's Dionysos must be understood as the divinity of universal fear and suffering in the face of cosmic terror. The second age saw Apollo overthrow the Titans and replace their rule of organic violence with a dream of formal and individual harmony. Whereas the Dionysian longing to exorcise fear found its main outlet in the music associated with dance and drink in the Dionysian festivals, the Apollonian genius of secure harmony and balance found expression in the plastic arts of architecture and

sculpture, which provided a "veil of Maya" to conceal the frightful reality. Nietzsche's thesis in BT is that pre-Socratic Greek culture achieved a perfect synthesis of these two poles in its tragedies, with Apollo embodied in the text and Dionysos in the chorus. Nietzsche explained "The birth of Tragedy out of the spirit of music" as a victory of the Apollonian illusion of form and rationality over the blind and incomprehensible terrors inspired by an unblinking survey of nature and history. Ancient Greek tragedy is "an artistic conquest of the horrible," in which life is affirmed as beautiful in spite of everything. This definition illustrates Nietzsche's conception of art as the supreme metaphysical activity.

Socrates is the third major figure of <u>BT</u>. For Nietzsche he embodied the corruption of the Apollonian spirit, which no longer merged with Dionysian frenzy in a perfect poise. Instead, Socrates' ethical optimism led to a substitution of the illusion of Apollonian harmony for the reality of Dionysian terror, which Socrates denied altogether. Socrates' absolute faith in rationality and his ignorance of Dionysian mysticism, according to Nietzsche, made him a depraved figure who contributed to the decadence of the Greek tragic spirit. In this view, those posterity called the pre-Socratic philosophers were not precursors of Socrates at all. Nietzsche discerned a clear historical and philosophical break between the essentially tragic philosophy of the pre-Socratic thinkers and the "over-Apollonian" doctrine of Socrates.

Neither denouncing this evolution (without which Greek civilization and culture might have perished altogether) nor advocating a return to the pre-Apollonian age of Dionysian terror, Nietzsche called for a modern and German version of the synthesis achieved in the ancient tragedies of Aeschylus and Sophocles. He saw in himself this kind of "artistic Socrates" and in Richard Wagner the composer most likely to father, in his operas, the fully integrated art form in which Apollonian and Dionysian energies would merge again. 5

BT is, of course, a problematic text, rich and suggestive to several generations of readers, but not a work one could accuse of an excess of clarity. Nietzsche established oppositions between Apollo and Dionysos and between the Attic (tragic) and Socratic spirits; at the same time, he seems not to have trusted the duality fully. As a result, he tried to circumvent the difficulty by turning his antitheses into syntheses. In later works, Dionysos is no longer the "twin" of Apollo, but a synthesis of both divinities, i.e., the embodiment by himself of the tragic spirit, whereas Apollo more and more appears as a totally negative (anti-life) force. Understandably, therefore, BT is often read in the shadow of later works and consequently misconstrued, reduced to a Manichean opposition between Dionysian life energies and Apollonian artificiality. For my argument, it is essential to

bear in mind that in Nietzsche's early thought concerning Greek culture, the two gods are as inseparable and as "valuable" as the two sides of a coin.

To a certain extent, this problematic ambiguity repeats itself in GR. Pynchon also appears uneasy with the oppositions he constructs but does not fully control. The reductionism his work is often subjected to is not always and entirely the critics' fault. One essential pole in the various binarisms that have been discerned in Pynchon's work is cause-and-effect visions, to which Nietzsche too devoted considerable thought.

In BT, the Socratic spirit is defined in terms of uncompromising rationalism (i.e., a rejection of the mysterious, the mystic) and blind faith in the virtues of cause-and-effect. Socrates is the ominous figure announcing the decadence and eventual death of the organic spirit of ancient tragedy, and its replacement by the Apollonian spirit of rational control:

Let us now imagine Socrates' great Cyclops' eye—that eye which never glowed with the artist's divine frenzy—turned upon tragedy. Bearing in mind that he was unable to look with any pleasure into the Dionysiac abysses, what could Socrates see in that tragic art which to Plato seemed noble and meritorious? Something quite abstruse and irrational, full of causes without effects and effects seemingly without causes, the whole texture so checkered that it must be repugnant to a sober disposition, while it might act as dangerous tinder to a sensitive and impressionable mind. (BT 86; my emphasis)

Earlier in \underline{BT} , this concern occurs in an interesting evocation of Schopenhauer, who "described for us the tremendous awe which seizes man when he suddenly begins to doubt the cognitive modes of experience, in other words, when in a given instance the law of causation seems to suspend itself" (BT 22).

 \underline{GR} privileges such "events without cause" promised by "The first star" (GR 253). Although they may (and often do in \underline{GR}) generate a really gothic (or Dionysian) terror comparable to Schopenhauer's "tremendous awe," these inexplicable, irrational events testify that there is much more to our universe than just the rational phenomena science and reason can account for.

Ned Pointsman, the Pavlovian head of PISCES is one of GR's cause-and-effect men. Like Socrates he firmly believes in the unlimited potential of science. He represents Nietzsche's "archetype of the theoretical optimist, who, strong in the belief that nature can be fathomed, considers knowledge to be the true panacea" (BT 94). His scientific creed of total belief in the complete understandability of nature's most intricate mysteries is stated forthrightly: "The ideal, the end we all struggle toward in science, is the true mechanical explanation.

. .] No effect without cause, and a clear train of linkages" (GR 89; my emphasis). This blind faith in knowledge is the very essence of the Apollonian dream. Instead of helping to face the Dionysian reality of the inexplicable--which Nietzsche thought was terrifying and Pynchon does not always regard as such--"Socratic" optimism covers it with a secure veil of illusion.

Pointsman's simplistic attitude also leads him to generalize his own views, as when he takes for granted that all scientists necessarily endorse his ideal of ultimate cause-andeffect explanation. In fact, Pointsman is simply incapable of considering any alternative to his causal conception of the world. When Roger Mexico, the proof in himself that Pointsman is wrong--that there is an alternative scientific perspective-dares question the validity of his boss's method, Pointsman categorically rejects the possibility of any other approach:

"It's not my forte, of course," Mexico honestly wishing not to offend the man, but really, "but there's a feeling about that cause-and-effect may have been taken as far as it will go. That for science to carry on at all, it must look for a less narrow, a less . . . sterile set of assumptions. The next breakthrough may come when we have the courage to junk cause-and-effect entirely, and strike off at some other_angle."

"No--not 'strike off.' Regress. [...] There are no 'other angles.'" (GR 89)

The opposition between these two characters epitomizes the evolution of modern science from a Newtonian humanistic faith in absolutes to a probabilistic approach that takes contingency into account. But they do not differ from a methodological point of view only; they oppose each other as human beings. While Pointsman is exclusively concerned with the mechanics of rocket falls, thus discarding feelings and emotions altogether, Mexico worries about the victims. The causes and effects he cares about exclude those that lead to war, maiming, destruction. Of all the "positive" characters in GR, Mexico may come closest to Nietzsche's "artistic Socrates," Though he can hardly be defined as an "artistic scientist," he does combine a scientific mind with a great emotional power, which latter Pointsman lacks. Pointsman seeks and finds his own "veil of Maya" in Pavlov's theories, which comfort him, assuaging the pain caused by his reductive world-view. For him, as for master, reality is limited to the poles of a binary system: "Pointsman can only possess the zero and the one. He cannot [...] survive anyplace in between" (GR 55). This space "in between" opposite poles—or the "Ellipse of Uncertainty" (GR 422) is precisely what orimarily interests Pynchon. But pain caused by his reductive world-view. For him, as for his 427)--is precisely what primarily interests Pynchon. But Pointsman, walking again in his master's footsteps, defines it as the domain of mental illness:

Pavlov thought that all the diseases of the mind could be explained, eventually, by the ultraparadoxical phase, the pathologically inert points on the cortex, the confusion of ideas of the opposite. He died at the very threshold of putting these things on an experimental basis. But I live. I have the funding, and the time, and the will. (GR 90)

Here Pointsman's typically Socratic optimism and determination (amounting to ruthlessness) are once again made clear.

Far from equating the "confusion of ideas of the opposite" with madness, Nietzsche advocated a surpassing of traditional dichotomies, most notably good and evil, in order to regain a fresh awareness of the Dionysian reality concealed behind Apollonian illusions. This surpassing should enable us to regain a real power to cope with the "unknown," which, " which, frightening though it may be, constitutes our ultimate reality. For Nietzsche, Apollonian culture was never a way of dealing with Titanic terror, but only an illusive escape. He considered Attic Tragedies, by contrast, not only better mirrors of that reality (i.e., more truthful and therefore more "realistic"), but also artistic ways of actually coping with it. He hoped to find the same virtues in Wagner's operas, though he was soon disappointed. Of course, this is a very exacting conception of art. The main difficulty for us is that in our conception of drama, opera and art in general there is usually a clear-cut separation between actors and audience. Whereas we have become mere spectators, participating emotionally at best, participants in the Bacchanalia were, in Nietzsche's view, so deeply involved, physically and spiritually, that they literally lost themselves in collective rapture, which enabled them to survive the terrifying confrontation with reality.

Several voices in GR echo this Nietzschean aspiration to resolve dichotomies and oppositions. One of them declares, "'Forget frontiers now. Forget subdivisions. There aren't any!" (GR 294). This important motif recurs with even greater clarity in the character of the Herero Enzian, who conceives of God in terms of universal union of opposites: "God is creator and destroyer, sun and darkness, all sets of opposites brought together, including black and white, male and female" (GR 100). But in spite of such straightforward statements, and in spite of the plausible characterization of Roger Mexico, Pynchon cannot eschew the problematic evoked above in relation to BT. On the one hand, he rejects the dichotomous world-view embodied by Pointsman, but on the other, he cannot help counterpointing the two scientists, going as far as describing Mexico as "the Antipointsman" (GR 55). Like Nietzsche in BT, Pynchon seems not to be satisfied with the oppositions he establishes, which creates a sometimes puzzling ambiguity. He is ironically aware that the exigencies of representation force him to create the binary pairs; but he is also uneasily aware, from a philosophical point of view, that the abandonment of opposites

in favor of a continuum does not resolve the philosophical and narrative issues.

Pynchon is commonly thought to be a prophet of doom, or, at best, a black humorist, because what I define as Apollonian forces seem to dominate in his fiction. They are undeniably overwhelming in GR, but the novel provides a strong, complementary Dionysian life-affirmation as well. Throughout the book the tropics symbolize life in its Dionysian sense: primitive, pagan, colored, warm, luxuriant—like Pirate's celebrated banana breakfasts, counter—entropic enclaves of life within the winter desolation of cold, northern, wartime London. The fragrance of the tropical fruit recreates "a southern island well across a tropic or two from chill Corydon Throsp's mediaeval fantasies" (GR 10). They take over "not so much through any brute pungency or volume as by the high intricacy to the weaving of [their] molecules, sharing the conjuror's secret by which—though it is not often Death is told so clearly to fuck off—the living genetic chains prove even labyrinthine enough to preserve some human face down ten or twenty generations...so the same assertion—through—structure allows this war morning's banana fragrance to meander, repossess, prevail" (GR 10).

The vision of Dionysian life in GR is twofold: it always appears to be dominated, crushed by formidable powers, but it also possesses an almost inextinguishable strength due to its luxuriant complexity. "[T]he never-sleeping percolation of life [is] too finely labyrinthine" (GR 681). No matter how strong, efficient and destructive the technological metropolis may be, "some vestige of humanity, of Earth, has to remain. No matter what has been done to it, no matter what it's been used for" (GR 693). Hope in GR lies in this complexity behind the apparent frailty, and faith in the possibility of slowing down the entropic process instead of accelerating it. An interesting instance of such a motive occurs in the episode of the church choir presenting a Jamaican corporal singing among white companions (GR 128-29). Although he seems lost among the "many [white] faces," and although he is being used for "the intricate needs of the Anglo-American Empire," he constitutes an enclave of decreasing entropy in the overall system.

In spite of the frequent Manichean oppositions in GR, Pynchon, like Nietzsche, insists upon the primeval unity of the creation and of humanity. The rhetorical question "Are we not all one?" (GR 454) is reminiscent of Nietzsche's "gospel of universal harmony [in which] each individual becomes not only reconciled to his fellow but actually at one with him—as though the veil of Maya had been torn apart and there remained only shreds floating before the vision of mystical Oneness" (BT 23). Dionysos is the master figure of this fundamentally mystic, vital unity, this "luxuriant, triumphant existence, which deifies the good and the bad indifferently" (BT 29). In Pynchon's vision, everything—"the good and the bad"—is likely

to be "deified." Again, however, not all oppositions disappear; both \underline{GR} and \underline{BI} are problematic. In \underline{BI} , we have the Dionysian vision of terror, with Dionysian intoxication as a response to it, followed by an age of Apollonian rationalism. Finally, tragedy emerges as the balancing act between the two, for which Nietzsche hoped Wagnerian opera would become a modern counterpart. \underline{GR} can be read as such a balancing act, though in a different way. One possible formulation of the problem can be found in Pynchon's own terms: paranoia and anti-paranoia, between which \underline{GR} tries to establish a poise. 10

Though correspondences do exist between Nietzsche's study of tragedy and Pynchon's novel, looking for systematic and absolute parallelism would be beside the point. GR is much more complex than a series of variations on a triadic pattern (as is BT). Whereas various pairs of antitheses can easily be discerned (Pointsman vs. Mexico, for example), syntheses are not "embodied" in one single character. Instead, the various elements of what might constitute the Synthesis are scattered among several characters (Mexico, Enzian, Gwenhidwy, to name only a representative few) and activities or attitudes (singing, drinking, kindness, etc.). Ultimately, GR suggests, if not a solution, then a possibly viable response to the situation it depicts. That response is permanent revolution, a subversive resistance to the Apollonian "culture of death." Not through violence, mind you, but in all sorts of apparently futile ways, among which singing, to drown out the noise of airplanes, and drinking are not the least remarkable. But not just any kind of drinking; life-affirming drinking (quite Dionysian this), the kind Thomas Gwenhidwy, Pointsman's colleague, practises:

His singing voice is incredible, in his spare time he strolls out past the wire-mesh fighter runways looking for bigger planes—for he loves to practice the bass part of "Diadem" as the Flying Fortresses take off at full power, and even so you can hear him, bone-vibrating and pure above the bombers [...]. Gwenhidwy likes to drink a lot [...], whatever's to hand really. His is the hale alcoholic style celebrated in national legend and song. [...] None of your sedentary drinkers though. Pointsman has never seen Gwenhidwy off of his feet or standing still—he fusses endlessly pitch—and—roll avast you scum down the long rows of sick or dying faces, and even Pointsman has noted rough love in the minor gestures. (GR 169-70)

Gwenhidwy's portrait offers an interesting pendant to Pointsman's. Though both are men of science and co-owners of "The Book," they are fundamentally different. The former believes in original oneness, which the latter, to put it mildly, questions:

"What if we're all Jews, you see? all scattered like seeds? still flying outward from the primal fist so long ago. Man, I believe that."

"Of course you do, Gwenhidwy."

"Aren't we then? What about you?"

"I don't know. I don't feel Jewish today."

"I meant flying outward?" (GR 170)

The difference is fundamental between a Pointsman, "with all his mean heart," and a Gwenhidwy, "radiating like a sun," forever smiling when Pointsman "has been too shy, or proud, ever to've smiled at Gwenhidwy without some kind of speech to explain and cancel out the smile" (GR 171).

Other "subversive" powers in the novel are drugs, the black market (which counters the official white market They impose and rule), and sex. Sex has the power to transform even Pointsman, though only for a very brief moment, when Maudie Chilkes leads him to a closet during a Christmas party to give him "this sudden tropics in the held breath of War and English December, this moment of perfect peace" (GR 169), a moment allowed to the loveless Pointsman, who usually "masturbate[s] himself to sleep [...]. A joyless constant, an institution in his life" (GR 141).

The urge to recover the primitive unity with nature through drink, dance and song is central to BI: "we are in a position to apprehend the essence of Dionysiac rapture, whose closest analogy is furnished by physical intoxication. Dionysiac stirrings arise . . . through the influence of those narcotic potions of which all primitive races speak in their hymns" (BT 22). Nietzsche advocated a return of instinct over dry rationalism, of passion over indifference, as Pynchon does. In GR, one major danger threatening humanity is the absence of passion (also figured as "the routinization of charisma" [GR 325]), which is Their most characteristic trait: "'They're so cruel. I don't think they even know, really. . . . They aren't even sadists. . . . There's just no passion at all'" (GR 216). GR's antidote to the poison of indifference is warmth, "mindless" human touches, and, above all, love, togetherness par excellence. GR pleads for "decent impulses to conspire, however marginally, whenever possible, against power and indifference" (GR 209), in spite of all, because, as "'With Rossini, the whole point is that lovers always get together, isolation is overcome, and like it or not that is the one great centripetal movement of the World. Through the machineries of greed, pettiness, and the abuse of power, love occurs'" (GR 440). Even in the moments of climactic terror, "There is time, if you need the comfort, to touch the person next to you" (GR 760).

Pain and terror are two essential traits Nietzsche associated with the figure of Dionysos, "the suffering Dionysos of the mysteries. He of whom the wonderful myth relates that as a child he was dismembered by Titans" (BT 66). Nietzsche

explicitly defined dismemberment as the truly Dionysiac form of suffering and described this "truly Dionysiac suffering" as "a separation into air, water, earth, and fire" (BT 66). GR's principal sufferer is, of course, Tyrone Slothrop, whose individual identity is progressively shattered until he mysteriously vanishes, having perhaps undergone a gradual metamorphosis into "air, water, earth, and fire." If he cannot exactly be defined as the Dionysian figure of the novel, he is identified with another mythological victim of Dionysian suffering more closely associated with dismemberment: Orpheus, the lyre player (Slothrop's lyre is a harmonica) who, during a Dionysian orgy, was literally torn apart.

But pain has a twofold status in both <u>BI</u> and <u>GR</u>. For Nietzsche, pain can also generate (sensual) pleasure: "a delight born of pain" (BT 35). Similarly, various characters in <u>GR</u> affirm—or reassure themselves about—their humanity through masochistic suffering: "[Katje's] masochism [...] is reassurance for her. That she can still be hurt, that she is human and can cry at pain" (GR 662). Near the end of the book, in a short scene entitled (coincidentally?) "Strung into the Apollonian Dream ...," we read: "Your skin aches. At last: something real" (GR 754). Masochistic pain as lever of revelation recurs in the portraits of Brigadier Pudding and of the aging actress Greta Erdmann, who begs Slothrop to be cruel to her: "'Could you be? Please. Find something to whip me with. Just a little. Just for the warmth!" (GR 396).

Fear arises from the tearing of the Apollonian veil of secure illusion behind which incomprehensible mysteries stretch. Those standing on the verge of that frightening otherworld resemble the "pneumatic toy frog [that] jumps up onto a lily pad trembling: beneath the surface lies a terror" (GR 152). Like the ancient Greeks who, "In order to live at all . . . had to construct these deities" (BT 30), modern man has to create an Apollonian illusion of order, of security, of deliberate patterning: "'We are obsessed with building labyrinths, where before there was open plain and sky. To draw ever more and more complex patterns on the blank sheet. We cannot abide that openness: it is terror to us [. . .] that anarchic oneness'" (GR 254).

Nevertheless, GR advocates a break with the Apollonian spell, a tearing of the veil of illusion hiding the "World just before men. Too violently pitched alive in constant flow ever to be seen by men directly" (GR 720). The voice in Pynchon's text urges us to plunge into and join the Dionysian Whole, its face "too beautiful to bear" (GR 720). Yet we must remain attentive and not, like Gottfried, mistake a fall into the abyss of death for the quest for Dionysian life. In spite of the novel's sometimes puzzling ambiguity, there must be no doubt that \underline{GR} 's hope is "for life to win out" (GR 24). The novel constantly reminds us of the danger of seeing Eros perverted into Thanatos. "Now it is time to wake, into the breath of what

was always real. Come, wake" (GR 754), Gottfried thinks, or the narrator says. Read in the light of the whole novel, this passage cannot be misunderstood as a victory, either for Weissmann/Blicero or for Gottfried himself. Surrender to Death in \underline{GR} is always a defeat, an acceleration of the entropic process leading to the extinction of life. But the temptation of this surrender, indeed the whole Freudian theorization of it, owes a great deal, not just to the slaughter Freud saw in the First World War (the precedent, of course, of the Second World War), but also to Nietzsche, whose words were equally familiar to Freud, to Rilke and, I surmise, to Pynchon.

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Notes

- 1 Friedrich Nietzsche, The Birth of Tragedy and The Genealogy of Morals, trans. Francis Golffing (Garden City, NY: Doubleday, 1956), and Thomas Pynchon, Gravity's Rainbow (New York: Viking, 1973; London: Picador, 1975; New York: Penguin, 1987): BI and GR in the text.
- 2 Opera is an important element in GR, but I have not dwelt on this subject since it has been discussed competently by, among others, David Cowart; see his Thomas Pynchon: The Art of Allusion (Carbondale: Southern Illinois UP, 1980).
- $^{\rm 3}$ In BI already, Nietzsche defined art as "the metaphysical act par excellence."
- 4 The German title is <u>Die Geburt der Tragödie</u> aus dem Geiste der Musik.
- 5 Wagner was both a poet and a musician. He set his own texts to music, which enabled him to achieve a degree of organic coherence and unity not always achieved in operas written and composed by two different persons. It is therefore no surprise that BI, written when Nietzsche and Wagner were still on good terms, should be emphatically dedicated to the German musician. The rupture between the two men occurred when Nietzsche came to see Wagner as having gradually succumbed to Socratic moralism (especially in the later operas, which are of definitely Christian inspiration), thus shattering Nietzsche's hopes of seeing recreated in modern Germany a spirit comparable to that of Attic drama.
- 6 Most notably in <u>Beyond Good and Evil</u> and in <u>The Genealogy of Morals</u>.

- 7 Gwenhidwy (see below) corresponds to this description much better.
 - ⁸ Cf. the later Beyond Good and Evil.
- 9 Pynchon's abundant—but never random—use of capital letters is revealing here: "Go ahead, capitalize the T on technology, deify it" (GR 521).
- 10 I have mentioned the problematic nature of GR as far as binary oppositions are concerned. The question is a difficult one, especially if one looks for an answer in what can conveniently be called the content of the book, which is what a good part of Pynchon criticism keeps dealing with—and stumbling upon. I am convinced that a more satisfactory solution can be found in the form and language of GR, and am currently directing my research towards these matters rather than towards thematic issues (i.e., sociological, historical, or scientific issues, to mention only the main trends).
- 11 These two characters can be seen as antithetic, but I tend instead to consider Gwenhidwy as a synthesis of dry scientific rationalism (Pointsman) and some anti-scientific mind which does not appear as such in the book. Pynchon never rejects science out of hand, and neither does he reject technology; but he implicitly distinguishes between good and bad science, just as he explicitly distinguishes between good and bad technology, i.e., between life-promoting and life-destroying technology.