War, Optics, Fiction

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> Question: *What connects World War II aerial reconnaissance to Shakespeare studies?*
> Answer: *One of the great swords-into-plowshares narratives of the twentieth century.*

Richard Altick tells the story in his engrossing book *The Scholar Adventurers*. During World War II, aerial photographic interpreters had experimented with optical shortcuts for evaluating possible targets, monitoring enemy troop and supply movements, and assessing bombing damage. Placing "before" and "after" photos of a location into adjacent slide projectors, intelligence workers superimposed the two images by aiming the projectors at a single screen and then caused the images to oscillate rapidly. The hope was that any variations between the images—discrepancies caused by a ground object's having been moved, damaged, or repaired—would appear as flickers or wobbles as the projectors toggled on and off in quick alternation. Owing to the difficulty of taking perfectly aligned photos from high altitudes, this optical comparator was never widely used during the war. But a young naval intelligence officer named Charlton Hinman heard about the technique, and it set him thinking about—what else?—disparities in the Folger Library's many copies of the First Folio of Shakespeare. Hinman had recently completed his doctorate in English at the University of Virginia and would spend most of the war in Australia under the command of his dissertation director, Fredson Bowers, in a code-breaking unit that produced several other bibliographers of note. After the war, with backing from the Veterans Administration, the Bureau of Standards, and the Folger, Hinman pursued his dream of an optical collator that would aid the early modern textual scholar. He built the prototype out of bindery cardboard, a wooden apple crate he found in the alley outside the library, and pieces of an Erector set scavenged from a friend's son (Smith 139). Later versions, using mirrors and light bulbs to juxtapose actual texts instead of photographs of those texts, revolutionized bibliographic studies by ushering in the era of mechanized collation. Hinman had used reconnaissance to illuminate the renaissance.

The sort of buoyant meliorism with which I've retold the story of the Hinman collator is the house style of a familiar popular history of technology that celebrates the convergence of problem, serendipitous hint, and plucky inventor, the triumph of the bright idea over the setback. A public radio series called "Engines of Our Ingenuity," sponsored by the University of Houston's College of Engineering, says that Hinman "had managed to beat a flawed sword into—a most unexpected plowshare" (Lienhard). Such a voice seldom tells you about how the plow dreams of its sword days or how it gives the farmer an excuse to keep blades around to the ready. Instead, it naturalizes the distinction between wartime and peacetime, insisting that war was back then and peace is now, that civilian applications are the benign

destiny of military technologies. Histories of aerial photography and imaging, I've found, lean especially hard on this standard-issue narrative: they take us from reconnaissance in the world wars to peacetime applications in archaeology, map making, agriculture, civil engineering, and city planning, then to satellite weather reconnaissance and global positioning systems (GPS), and finally to that iconic cosmopolitan image of the earth from space, fragile and boundaryless. In response to this terminus, one might insist that the famous "earthrise" photos returned by Lunar Orbiter I in 1966 and later by the Apollo missions cannot be excised from the military context of the space race; the earth became photographable at the precise moment that it became targetable, photographable largely due to the very geo-strategic pressures and the ballistic, positioning, and guidance technologies that had made it a target. The scholarship that elaborates this skeptical point of view unearths the military origins of a range of civilian technologies, reminding us that our personal computers' CPUs descend from the brains of intercontinental ballistic missiles, that the Internet began life as the nuke-hardened military ARPANET, that GPS is a partially declassified Department of Defense satellite technology. These reminders ask us to recognize and to confront, as Rey Chow puts it, the "terror that is the basis of our everyday life" (30). They insist, with Caren Kaplan, that "for people in the US, war is not at all elsewhere but is, in fact, deeply imbricated in everyday life as a 'military-industrial-media-entertainment network'" (694). And they build on Paul Virilio's sense that twentieth-century visual culture cannot be thought apart from the history of targeting optics, a history in which the conditions of visibility and destroyability become practically indistinguishable—or, in former under secretary of defense W. J. Perry's frequently cited words, "once you can see the target, you can expect to destroy it" (Virilio 4).

This new work by Kaplan, Chow, Samuel Weber, and others is both timely and compelling, and I wish to declare my sympathies with it at the outset. Yet if we object to the Polyanna determinism of the swords-into-plowshares narrative, with its tendentious claim that wartime technology is destined for peaceful application, we should also note the danger of a mirror-image determinism in the skeptical riposte. This takes shape as a confidence that technologies have recoverable and singular origins (e.g., the origin of the video game in the cold war targeting interface). It bestows on those it most suspects—the military-industrial-media-entertainment elite—an inexorable power to determine the valence of a technology and its offshoots, in turn imagining the citizen as *only* a passive funder and target of the war machine, the consumer as *only* a militarized subject fixed in the crosshairs of target marketing. It might say of the Hinman collator that Shakespearean textual study is simply war by other means; it might aver that by using Hertz NeverLost we form part of a citizenry that is at once perennially combat ready and fully complicit in its status as a pinpointable ground zero. At its limit, it can demote peace to a mystified special case of war, in the process consecrating war as the key to all mythologies. In this it can curiously resemble the far-right positions of some of the early theorists of total war, such as the *Action Française* writer Léon Daudet, whose 1918 book *La Guerre Totale* described "the extension of war . . . to political, economic, commercial, industrial, intellectual, juridical, and financial realms. It is no longer just armies that fight, it is also traditions, institu-

tions, customs, laws, spirits, and above all banks" (8). One does not, of course, have to be on the far right to argue that twentieth- and twenty-first-century warfare targets all these dimensions of human society, and the new war and conflict studies would make the wider aperture of the target a reason for ending war. But even as it deplores the universalization of targeting, that project runs the risk of replicating the premises of its adversary—namely that the targeting field is the principal locus of interconnectivity, the only field on which a portrait of the social totality can be conceived.

Here, I think, is one place visual culture studies can come in: not just by helping to recover the links between military and civilian uses of still photography, cinema, and digital imaging but also by demonstrating how targeting relies on and exploits optical differences on the one hand while on the other hand effacing a range of differences, including those among varieties of human target—this practically goes without saying—and, less obviously, the internal discrepancies among seeing, targeting, and destroying. One can imagine what this approach would look like vis-à-vis militarized visuality itself. But what about the relationship between targeting optics and the *novel*? If the age of bombing marks nothing less than an epistemic shift—if, as Chow writes, "the world has been transformed into—is essentially conceived and grasped as—a target" (31)—we should expect the novel at least to register this transformation. Moreover, if visibility is highly correlated with destruction in the age of the world target, we might expect to find changes in the novel as a field, and as a technique, of visibility. In what ways might the form, distribution, and social function of the novel be implicated in the logistics of targeting? Do these implications ever become part of the novel's self-understanding? And do novels make any rejoinder to the becoming universal of the target? I won't undertake here to survey the novel since 1945 as a way of addressing these broad questions; instead, I examine a limit case, Thomas Pynchon's *Gravity's Rainbow*, to suggest that even this encyclopedia of targeting, set at the hinge moment between conventional and nuclear warfare, calls attention to the ineliminable differences its own bombardier's optics seems bent on effacing. As a result of focusing on a single, canonical western text, my discussion lacks the sort of comparative approach Chow has eloquently called for; I hope to compensate for this monocularism a little, however, by highlighting the novel's circuits of decentering and binocularism—what we might think of as its internal comparativity.

Gravity's Rainbow would seem to be, more than any other, the novel of our becoming targets. The figures in the dream evacuation with which the novel begins are seen as "half-silvered images in a view finder" (3), and Tyrone Slothrop, the main character, is a kind of walking ground zero—a US officer whose sexual encounters in London almost invariably happen at future V-2 explosion sites, as if his sex drew down the rockets. Over the course of the novel, Slothrop is the target of everything from early childhood sexual implantation and tracking experiments to seduction plots orchestrated by intelligence cabals to rescue attempts by the sympathetic Counterforce; he embodies the convergence of the target or mark whom others plot against and the mark who is spatially plotted on a map—in Slothrop's case, the map of Europe in the final months of World War II. But as *Gravity's Rainbow* reminds us by alluding to Hiroshima and Nagasaki, to the postwar US employ-

ment of German rocket scientists through Operation Paperclip, and to Cold War mass culture, these are also the dawning months of the nuclear condition during whose apogee, in the balance of terror, the securities of cities and citizens were paradoxically grounded on their status as nuclear targets. The novel's final scene gives us front-row seats in the Orpheus Theater on Melrose Avenue where we await, indistinguishably, the replacement of a burned-out movie projector bulb and the arrival of World War III's first missile.

If the inception of the world target is at the diegetic heart of *Gravity's Rainbow*, it is also at the core of its technical self-understanding as a novel, as if the book were the sort of integrated perception-and-weapons system in the face of which, as Virilio puts it, "what is perceived is already lost" (4). The Baedeker city guides on which Pynchon relied heavily for details about the novel's European urban settings had served during World War II as a kind of propaganda and targeting aperture: in the so-called Baedeker Raids of 1942, the Luftwaffe looked to avenge the R.A.F.'s firebombing of the historical city of Lübeck by blitzing culturally hallowed but strategically unimportant English cities such as Exeter, Bath, Norwich, York, and Canterbury—by, as German propagandist Baron Gustav Braun von Sturm put it, "bomb[ing] every building in Britain marked with three stars in the Baedeker Guide" (Grayling 51). Thus in its very construction the novel implicates itself in the wartime reengineering of tourism for the purposes of targeting. Regarding specifically visual techniques, no other novel knows as much as Pynchon's about the history of twentieth-century reconnaissance and bombing, treating obscure techniques as if they were common knowledge. If we don't know about the stereoscopic reading of aerial images during both world wars by highly trained photographic interpreters, we are likely to misrecognize the novel's references to "parallax" as Joycean allusions. Slothrop, in Berlin during the Potsdam Conference that would establish the postwar order, begins to suspect that his new black-marketeer friends are just paid extras in a simulacral, movie-set Berlin meant to ensnare him. But the faked image is less matte painting than reconnaissance stereophoto: says the narrator, "Someone here is cleverly allowing for parallax, scaling, shadows all going the right way and lengthening with the day" (374). *Parallax* here is the differential displacement of foreground objects with respect to background ones that makes stereovision possible; *scaling* is the practice of rectifying stereopairs so they are congruent; and *shadows* have to lean away from the interpreter's light source in order to prevent the misreading of convexities as concavities and vice versa (see Saint-Amour 360–63). The narrator treats this recondite knowledge as if it were common enough to ground metaphors and analogies: describing a post-war performance of Haydn's suppressed "Kazoo" Quartet in G-Flat Minor, the narrator says that "after a while the listener starts actually hearing the pauses instead of the notes—his ear gets tickled the way your eye does staring at a recco map until the bomb craters flip inside out to become muffins risen above the tin, or ridges fold to valleys, sea and land flicker across quicksilver edges" (Pynchon 713). The reader's community with the narrator gets constructed repeatedly through the supposedly shared arcana of the intelligence workers who surveyed images of one day's damage and determined the next day's targets. As the narrator says in another passage, this one about an 1856 aerial daguerreotype depicting a fanciful

retro-futurist "Rocket-City," the techne behind the narratorial gaze can seem "no more than an extension, really, of the techniques by which Constance Babington-Smith and her colleagues at R.A.F. Medmenham discovered the Rocket back in 1943 in recco photographs of Peenemünde" (726). It's as if the Asmodeus flight, the nineteenth-century realist trope that pictured omniscience as a form of benevolent aerial trespass in writers from Thomas Carlyle to Nathaniel Hawthorne to Charles Dickens to Arthur Conan Doyle, had finally found its technological correlative in military reconnaissance.

But so far this is a monocular view of *Gravity's Rainbow* as the novelistic equivalent to what it calls "the fussy Norden device" (151)—the top-secret Norden bombsight the Allies claimed was so accurate it enabled air crews to "drop a bomb into a pickle barrel" (McFarland 5). Caren Kaplan has described the Norden as an early fetish object in the religion of precision bombing that survives in our own age of real-time televised surgical strikes. The native idiom of this smart bomb airpower, Kaplan adds, is a certain realist documentary tradition that imagines a series of one-to-one correspondences between targeted object, target image, firing event, and destroyed object. The high-tech hawk-propagandist claim that "once you can see an object, you can expect to destroy it" assumes that these phenomena always synch up—that there is an unmediated relationship between locating and identifying an object on the one hand and eliminating it on the other. But notice how little this portrait—realist documentarism, precisionism, unmediated chains of correspondence—squares with the loose, baggy, eruptive, lyrical, superheated, multivoiced excess of Pynchon's novel. In fact, at the very places where *Gravity's Rainbow* seems to install itself within the history and logistics of targeting optics, it insists on the fallibility of those optics, whether by referencing the "fussiness" of the Norden device whose imprecision helped cause the death of many thousands of civilians or by laying out the susceptibility of stereoscopic reconnaissance images to misreading, distortion, and falsification. This is because Pynchon's novel is finally less interested in invisibly deploying some novelistic version of targeting optics than in making that optics an object of scrutiny, newly available to debates about militarized visuality. We might say that *Gravity's Rainbow* seeks the declassification of formerly shrouded techniques: its hailing the reader through highly specialized language as a member of an intelligence elite, far from inducting us into a world we will help keep secret, sets us to work annotating the strange history of those elites and their practices. It alerts us, too, to the novel's central binocularism, which is all about the differences that the geopolitics of the target produces, exploits, and effaces.

I'm thinking here about the plot, parallel to Slothrop's, involving the Zone Hereros, fictional survivors of the historical Bantu Hereros who were the victims of genocide at the hands of Von Trotha's army in German Southwest Africa between 1904 and 1907. The Zone Hereros in Pynchon's novel were supposedly brought to Europe as servants of German officers and have now gathered into two factions: the "Empty Ones" bent on committing tribal suicide through a zero birthrate and the Schwartzkommando, whose quest to assemble a rocket of their own from spare parts is both a "Diaspora running backwards" (737) and an alternative to tribal suicide. Placing the Herero among the bombed-out cities of Germany in the

birth-months of the nuclear age does several things: it forcefully reminds us that the mass killing of civilians can occur through so-called colonial policing practices, such as Von Trotha's genocidal extermination order, without recourse to the optical precision of wars between metropolitan nation states; it disrupts the implication that if you can destroy whatever you can see then all acts of destruction are perforce visible, and thereby calls attention to the invisible targeting that goes on in, for example, peripheries, camps, and military prisons; and it gestures toward the occlusive functions of reconnaissance in the world wars—namely, to indemnify states against the fact of airpower's indiscriminate civilian killing through a rhetoric of precision that those same states felt no need to invoke in respect to colonial policing. But if the victims of colonial genocides are in some sense targets without optics, targets who are not *under* surveillance but rather *beneath* it, targets the state does not bother to see before eradicating, then an exploitable gap opens in the field of weaponized visibility.

The subvisibility of the colonial émigré, the genocide survivor, the internally displaced, the nonstate actor becomes an advantage in a project that is oppositional but non-violent: the Schwartzkommando are building a rocket not in order to launch it as a "revenge-weapon" or *Vergeltungswaffen* (Hitler's term for the V-1 and V-2) but in order to survive. With their reverse diaspora grounded in a reverse-engineered war technology, the Zone Hereros are the fictional precursors of actual First Nations groups such as Cree-Tech, who use GPS to lend precision to their land claims against the state and to make "traditional values inventory" maps in opposition to state maps of exploitable natural resources (Piper 148). They are also precursors of civil rights projects like the Cedar Grove Institute, which uses GPS to expose the correlations between municipal annexation, infrastructure, and race—in effect, to target the racist practices of the state. These are not swords-into-plowshares narratives; they understand the range of hostilities that persist in peacetime but do not allow that war is therefore coextensive with culture or with civil society. They preserve the oppositional and tactical aspects of their central technology while demonstrating its transferability to groups who oppose the dominance of military-industrial-media-entertainment elites. Call them swords-into-megaphones narratives. *Gravity's Rainbow*, with its prescient sympathy for such cross engineering, understands that one might oppose or improve, rather than destroy, what one sees. But it also insists that however much we might *destroy* everything, we can never, never *see* everything, and a visual culture studies that took its cue from Pynchon's novel would always place beside the fantasy of a sovereign power of vision these things: the glitch, the mote, and the vanishing point.

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