On January 11, 1920, Siegfried Kracauer revealed something that must have surprised his then friend and mentor, Margarete Susman: “More and more, my thinking is approaching higher mathematics.” Against the intellectual doubt and skepticism that plagued the postwar era, “higher mathematics” and, in particular, geometry offered Kracauer a framework to evaluate and compare the systems of thought that attempted to fill the void of meaning that war, revolution, and the collapse of an empire had left behind. However, for another of Kracauer’s friends, Theodor W. Adorno, the equation of “thinking” and “higher mathematics” by the logical positivists meant, just over a decade later, the expulsion of language from philosophy and threatened a wholesale “liquidation of philosophy” itself. The idea of excluding language from philosophy was deeply troubling for Adorno and Horkheimer, because language’s contribution to philosophy—philosophical style—constituted an irreducible element of thought, often reflected in the
tortuous prose that describes their version of critical theory (see chapter 1). And yet a new philosophical style was exactly what geometry, the mathematical study of space, presented to Kracauer in the early 1920s. For Kracauer, the ways that different branches of geometry, such as Euclidian geometry, combined a logically rigorous study of space with a sense for the concrete materiality of space offered a novel approach to negativity—namely, the divide increasingly separating the experience of modernity from the available cognitive tools to grasp modern existence. As a metaphors of space and method of projection, geometry, I contend, transformed in Kracauer’s Weimar-era writings into an aesthetic program that took the space of the text, the composition of theory itself, as a means to intervene in cultural debates. The material composition of thought—the aesthetics of theory—held the potential, at least for Kracauer, to realize the promise of the Enlightenment and create a society based on reason.

This chapter explores the development of a metaphors of space and interpretive method based on geometric projection in Kracauer’s writing and their implications for his vision of cultural critique and critical theory as a whole. Kracauer’s reputation in critical circles has often rested on his pioneering work as a film theorist, his studies on propaganda, and his friendship with and erstwhile mentorship of Adorno. Here I turn to the critical potential of his earlier work as a sociologist and feuilletonist for the Frankfurter Zeitung, in which he reveals himself as a keen cultural observer and critic of modernity in the early Weimar Republic. These early texts developed what is known as Kracauer’s method of cultural critique, which blended a criticism of material objects with a theory of their function in society. For Kracauer, geometry’s approach to negativity helped him think through an intellectual crisis, in which, at the advent of a new century, inherited modes of analysis such as academic philosophy and cultural practices such as religion no longer addressed modern life. Where the philosophy of mathematics indicated for Scholem a language lacking representation and infinitesimal calculus offered representational tools for Rosenzweig, geometry reconnected the material and the logical world for Kracauer, lest materiality abandon reason altogether or reason disappear into the obscurity of pure thought. In particular, a set of spatial metaphors drawn from geometry
pointed Kracauer to the interstitial region between rule-bound logic and the contingency of experience. To be sure, scholars have noted such geometric motifs in Kracauer’s writing. Here, however, I examine the moment at which the interstitial area opened up by geometry translated for Kracauer into a method of cultural-critical projection that rendered legible the metaphysical meanings behind mass phenomena such as the Tiller Girls, detective novels, and the modern city. In these texts, how geometry bridged the abyss between metaphysics and materiality became a literary strategy in his writing that drew attention to the rational construction of the text and, thus, sought to promote rational thought in the mind of his readers.

Bridging the logical and material worlds, thought and being, was of the utmost importance for Kracauer, because reason and meaning were the aspects lacking in the cultural and physical expressions of modernity. For Kracauer, the modern world was, in terms he often borrowed from Georg Lukács, “abandoned by God,” the age of “transcendental homelessness,” in which neither Judaism nor Christianity offered Kracauer a viable point of intellectual orientation. For those acquainted with Weimar modernisms, this is a familiar narrative of modernity, in which, as Miriam Hansen writes, the present “appears as the endpoint of a process of disintegration, spiritual loss, and withdrawal of meaning from life, a disassociation of truth and existence.” The possibility of reconnecting this disjunction of meaning and existence was the generative negativity activated for Kracauer by the combination of logic and materiality in geometry. As a mathematical technique, geometric projection suggested ways to read the mass-produced and often ephemeral products of a society—for example, public spaces, films, and dance revues—as indicative of that society’s place in the metaphysics of history. As a mode of deciphering these metaphysical meanings, geometry thus helped Kracauer construct a vision of history in which thought could intervene in process of Enlightenment and help establish a reasonable and inclusive society. While modern culture seemed stuck within the “murky reason” (getriebte Vernunft) of capitalism, geometry’s synthesis of thought and experience suggested literary techniques that could confront readers with the contemporary stagnation of reason and, through this confrontation, further the process of history. For Kracauer, it was the job of the
cultural critic, the societal observer—indeed, of a Jew on the margins of
society—to reveal the meaning of the meaningless products of mass culture
and advance the project of Enlightenment.

The idea that the aesthetics of critique could work toward reasonable
society constitutes the contribution of Kracauer’s negative mathematics to
discussions of critical theory in the present. Although histories of critical
theory have pointed to the significance of aesthetics and aesthetic mediation
for the first generation of critical theorists, I believe Kracauer’s use of
geometry reminds us of the deeper dimensions of “aesthetics” as a critical
term.9 In the present context, the term aesthetics refers less to the pleasur-
able appearance of things or even the scientific study of beauty than to the
idea of perception as implied by the Greek term aisthesthai.10 Like geo-
metry, aesthetics was for Kracauer the liminal point of contact and interaction
between the material world and cognition. This understanding of aesthet-
ics informed Kracauer’s cultural critique, which was aesthetic in as much as
it analyzed forms of culture and art as well as performed an analysis on the
textual level of form—an idea later canonized by Adorno’s Aesthetic Theory
(Ästhetische Theorie, 1979).11 Kracauer’s negative mathematics shows how cul-
tural critique can be not just an abstract theory of culture but also an aesthetic
venture that seeks to change society through the materiality of the text.
Aesthetic critique uses its composition and presentation to confront read-
ers, on the level of form, with the problematic rationality of contemporary
society, trigger critical reflection, and, thus, work toward a reasonable soci-
ety. In the aesthetic dimension of Kracauer’s writing, we again recognize
the theological impulse of critical theory, which sees the cultural critique
offered by those on the margins of mainstream society as working in the
service of emancipation and redemption. Critique that is aesthetic can itself
be emancipatory in as much as it includes the voices of critics who lead, in
Kracauer’s words, the “extra-territorial lives” of displacement, diaspora,
and exile and perhaps, even those perspectives (such as Kracauer’s) that have
remained in the shadow of the Frankfurt School.12

In charting the emancipatory potential of critique that Kracauer found
in negative mathematics, one comes across four meanings of the term ge-
ometry that interconnect as a metaphors of space. Taken together, these
meanings constitute geometry’s approach to negativity that, for Kracauer,
traversed the rift separating thought and experience. The first meaning of the term refers to geometry—and, in particular, Euclidean geometry—as the paradigm of a strict logical system (similar to how Scholem and Rosenzweig use the term). Accordingly, our knowledge of space unfolds out of self-evident axioms in such a manner that “every proposition constructed out of the designated axiomatic concepts” is, as Kracauer’s interlocutor on the subject (Edmund Husserl) writes, “a pure formal implication of the axiom.” The second meaning of geometry refers to drafting and engineering techniques that Kracauer, trained as an architect, would have encountered and employed in his university courses on descriptive geometry (darstellende Geometrie). One such method, projection, allows us to depict three-dimensional space as a two-dimensional drawing that is more amenable to neat mathematical transformations. For Kracauer, running projection in reverse offered an interpretive method that “projects” the material products of society into the metaphysical space of history in order to decipher their meanings. On the other side of the spectrum, the third meaning of the term is the idea of a “natural geometry,” which René Descartes used to describe our innate ability to perceive direction and distance. Kracauer’s final use of the term geometry was as a metaphor to describe the rationalized spatial forms produced by modern capitalist society that embodied in material objects the troubling spirit of the age. The rationalization and scientific management of work, commonly referred to as Taylorism, expressed itself for Kracauer as the synchronized legs in dance revues and the animals in modern zoos, which moved “rhythmically” and formed “geometric patterns,” like workers in the factory (K 5.2:403). If these geometric patterns symbolized the intellectual torpor of contemporary German society in the 1920s, then they also offered an ideal point at which a specifically geometric critique of cultural products could make society aware of its defective rationality. For society today, which is all the more the product of mass and, now, digital culture, Kracauer’s negative mathematics offers a theory of cultural critique that not only accommodates the perspectives of marginalized critics but also depends on their intervention to understand and change society.
Kracauer’s negative mathematics began with his first published book, *Sociology as Science* (*Soziologie als Wissenschaft*, 1922). Written within the decades after the founding of sociology as an academic discipline, the book investigates the possibility of a “pure sociology,” an idea adapted from Husserl’s attempt to model a transcendental, “pure phenomenology” on mathematics. *Sociology as Science* asks and wrestles with the question: How is it “possible to understand social occurrences in their necessity” (K 1:9)? Can sociology come to the type of logically “necessary” conclusions that we find in mathematics, such as in Euclid’s geometry? In essence, the book argues that the study of society could build on more than just “mere experience” and construct more than just “pseudo-laws,” if it could only collect evidence such as “the foundational statements of geometry” by making “space, time, and the categories of the understanding” into the conditions of sociological knowledge (33, 36, and 44). As one expects and as the text admits, the attempt to found a pure sociology ultimately fails, because, as would become a mantra of the Frankfurt School, social life exceeds pure logical codification. And yet, even as a failed experiment, *Sociology as Science* makes a set of intellectual moves central to Kracauer’s negative mathematics. On the example of geometry, the text establishes that there are modes of thought that can synthesize logic and materiality, even if sociology itself cannot. It also reveals the emergence of a metaphorics of space in Kracauer’s thinking about mathematics that renders legible this potential synthesis of thought and experience. Finally, the book suggests a performative aspect in Kracauer’s thinking and writing, which takes the intellectual enactment of the failed merger of mathematics and sociology as its interpretive success.

In a modern world in which, at least for Kracauer, life lacked meaning, *Sociology as Science* turns to geometry as an example of how thought can make logical judgments about the world of experience. In its first section, the book goes to great lengths to categorize the present day in contrast to a now-lost “epoch filled with meaning” (*sinnerfüllte Epoche*), a term borrowed from Lukács’s *Theory of the Novel* (*Theorie des Romans*, 1921). Where meaning (*Sinn*) was immanent to life in a past “epoch,” secularization and the rise of the
modern natural sciences had cast the modern individual into “the cold infinity of empty time and empty space” (K 1:12). For Kracauer, a solution to the modern disjunction of life and meaning lay in the idea that there could be a set of logical rules that underpin and determine objects and events. “Necessity vanquishes chaos,” he writes, and “the more necessity reveals itself to the knower, the more multiplicity congeals into a unity filled with necessity” (34). In the face of this negativity, the rift separating the materiality of experience and the “necessity” of logic, geometry offered a bridge: “A look at the geometric axioms, for instance, teaches that there are plenty of material relationships the experience of which is linked to compulsory thought. These axioms manifest themselves readily to any observation directed at them, they are intuitions, which cannot be proved further and cannot be derived from other knowledge, but rather themselves represent the original source of any experience building on them” (35). Take Euclid’s geometry, which begins by positing self-evident “axioms,” such as the notion that the whole is greater than the part. We “deem” this idea, which makes a statement about “material relationships” in the world, “worthy” of acceptance (as in the Greek *axíōma*) because it is logically self-evident, even if we cannot prove it. In *Sociology as Science*, the geometric axioms exemplify that, despite the modern separation of world and meaning, the link between our “material” experiences (e.g., chairs are greater than any of their legs) and “compulsory thought” (“the whole” is necessarily greater than “the part”) had not been completely severed. Indeed, the previous quote curiously calls on the geometric axioms to blur the line separating experience and thought, materialism and idealism: we both know from “observation” and “intuition” that wholes are greater than parts and, at the same time, the knowledge that wholes are greater than parts conditions our experience as its “original source.” The task that Kracauer sets for himself in *Sociology as Science* thus resides in determining if sociology, too, can produce knowledge about society along the lines of the synthesis of “experience” and “compulsory thought” in geometry. Even for the modern subject, mathematics held out hope that thought could find necessity, an immanent sense of meaning, in the apparent randomness of social life.

As the passage suggests, what is intellectually significant about geometry for Kracauer is not only how its axioms mix logic and materiality but
also the fact that these axioms provide a starting point from which “compulsory thought” logically and irrefutably unfolds. Here *Sociology as Science* draws on the understanding of axioms and geometry offered by two of Kracauer’s main intellectual interlocutors, Georg Simmel and Edmund Husserl. For Simmel, the axioms of geometry may seem to be a logical necessity, but they, ultimately, depend on the human way of thinking, “our mode of perception.” As he explains in *The Philosophy of Money* (*Die Philosophie des Geldes*, 1900), Euclid’s geometry “has validity only in relation to specific physio-psychological organizations, their conditions of life and the furthering of their activity.” For example, the idea that the whole is greater than the part would have been for Simmel not an absolute logical property, but rather the accumulated result of how the human eyes perceived space throughout time. In contrast, geometry belonged for Husserl to the “sciences of the essence” along with pure logic, which do not depend on experience. In *Ideas: General Introduction to Pure Phenomenology* (*Ideen zu einer reinen Phänomenologie*, 1913), geometry exemplified the pure “thought-constructions” of the “sciences of the essence.” The procedure of geometry “is exclusively eidetic” meaning that “from the beginning and in all that follows further it makes known no factual meaning that is not eidetically valid, in the sense that it could either be brought without mediation to primordial givenness (as being immediately grounded in essences of which we have primordial insight), or could be ‘inferred’ through pure consequential reasoning from ‘axiomatic’ factual meanings of this type.” The passage lays out what David Hilbert later called “axiomatic thinking” in mathematics: all knowledge in geometry is either “immediately” evident (and, hence, is an axiom) or it follows logically from an axiom. For Husserl, the idea that the whole is always greater than the part was a logical necessity—along with any knowledge derived from this axiom—and would be true even without its confirmation through human experience. *Sociology as Science* paves a third way between Simmel and Husserl. For Kracauer, the geometric axioms depended on the materiality of experience, in that they were not the product of mental visualization, but their universality also conferred necessity and validity to any statement derived from them. In chaotic times, this feature of mathematics must have been attractive to Kracauer, in as much as it meant
that a theory of culture could possibly derive logically valid theoretical positions from the meaning it found in material phenomena.

As a potential basis for pure phenomenology and sociology, mathematics provides *Sociology as Science* with the epistemological links between thought and experience, which the text codes in a metaphors of space. As we saw with Scholem and Rosenzweig, mathematics illuminates for Kracauer the possibility of knowledge in the face of skepticism and relativism. As Kracauer explains: “The essential description of the simplest mathematical constructs has axiomatic significance for the entire area [Gebiet] of mathematics; it is the product of immediately evident observation [Schauung], which, for the named reasons, are linked with objectivity and necessary thought [Denkzwang]. Here, the relationship between mathematical statements and the statements of pure phenomenology becomes visible” (K 1:46–47). In this passage, we see the effects of Simmel and Husserl, as mathematics’ “essential descriptions” mix logic and materiality. As with Simmel, the “simplest mathematical constructs” result not from abstract “intuitions” (Anschauung), but rather concrete “observations” (Schauung). As with Husserl, primordial constructs have “axiomatic significance” throughout mathematics, meaning statements that follow logically from “necessary thoughts” are also “objective” and “necessary.” With this passage, however, I want to call attention to the spatial metaphors that *Sociology as Science* takes from Husserl and intensifies into a metaphors: here, mathematics is an “area” and, throughout the text, mathematics and sociology each constitute a “field,” a “manifold” (Mannigfaltigkeit), and a “continuum.” The pure “essences” discerned by phenomenology form, as Kracauer explains, a “hierarchy, they smoothen, so to speak, into a truncated cone.” In *Sociology as Science*, the importance of these spatial metaphors is their propensity to reveal: in the previous quote, the “entire area of mathematics” renders legible the possibility of an intellectual domain, here represented by the geometric axioms, in which the messy world of experience and “necessary thought” interact. In a world in which knowledge and life seemed to lack a “secure, absolute foundation,” these spatial metaphors held out hope for an “area” that accounted for both the materiality of experience and the logical structure of thought (34). In my analysis of Kracauer’s version of cultural critique, I return to these
spatial metaphors and their “intermediary area,” as he later called it, in which material objects carry transcendental meaning and through which thought could intervene in the material world.\textsuperscript{24}

In \textit{Sociology as Science}, the metaphors of space also provide the stage on which the argumentative failure of the text plays out. The characteristics of the space charted out by mathematics, geometry in particular, are its totality and regularity: the “mathematical manifold,” Husserl writes, “determines completely and unambiguously on lines of pure logical necessity the totality of all possible formations in the domain.”\textsuperscript{25} The logical uniformity of “the field of mathematics” makes it, in the terms of \textit{Sociology as Science}, “homogeneous” (K 1:46). With the exception of the axioms, which mix experience and logic, all statements in a field like geometry—theorems about lines, propositions about triangles, and so forth—have the same logical form in that they all follow necessarily from (and only from) the axioms. For Kra- cauer, this homogeneity represents the epistemological advantage of mathematical reasoning: “the further one removes oneself from the axioms, the less transparent the figures become, whose necessary construction the pure ego seeks to grasp,” he explains, “and it frequently takes many intermediary inferences and makeshifts, to cover the distance from the figures back to the immediately evident axioms. But despite its possible length, the path is always traversable” (48). Consider, for example, proposition 30 in Euclid’s book 1: the proof that “straight lines parallel to the same straight line are also parallel to one another” draws only on the “intermediary inferences” of the previous-proved proposition 29 and a set of commonly accepted notions (“axioms”).\textsuperscript{26} For more complex systems of reasoning such as ethics, the spatial metaphor of distance renders legible why philosophers like Spinoza have often turned to mathematics as a ordered paradigm of thinking: it guaranteed that no matter how many intermediate steps it takes to reach a new proposition, the same “compulsory thought” that applied to the axioms will also apply to the conclusions drawn from them. However, the spatial “homogeneity” that makes up mathematics’ epistemic advantage also pointed Kracauer to the epistemological difference between mathematics and sociology.

In contrast to mathematics, \textit{Sociology as Science} argues that the space of phenomenology and sociology is “not homogeneous,” illustrating the failure
of the text’s proposed construction of a “pure sociology” (K 1:49). Here, the text again follows Husserl, who rejected the endeavor to found a “geometry of experience” (Geometrie des Erlebnisses, 48). In Kracauer’s words, “the intention to collect experiences, whose necessity and generality are evident, in areas other than in mathematics” predictably and intentionally falls short: only “pure phenomenology in the strictest sense” (“the smallest part” of the “space tapering upward” of phenomenology) can possibly deliver “synthetic judgments a priori, which equal those of mathematics” (36 and 50). This failure lies in the fact that “the acts of consciousness” are not self-referential like the formal statements of logic and the ideal, spatial concepts of geometry, but rather depend on “the various modes of human community,” they reference “things, values, etc.” (51). For instance, acts of consciousness reference objects and ideas that exist beyond the world of consciousness, such as this book as a material object or the concept of a “book” as a product of certain society at a certain time. Kracauer’s postulate of pure sociology thus remains an impossibility, as Inka Mülder-Bach explains, because of a “fundamental misunderstanding,” in which “Kracauer holds sociology to a validity claim different than that of the sciences that study experience. He demands from it a type of ‘objectivity’ and ‘truth’ different than those that empirical research can provide and seeks to provide.”

This assessment is correct, but this failure is the performative aspect of Sociology as Science, which also opens, exposes, and explores the seemingly self-evident incongruence between the world of experience and the world charted out by mathematics.

The spatial metaphors of fields, spheres, cones, and areas enact Sociology as Science’s performative failure, which suggests how negative mathematics functions as a metaphors in Kracauer’s thought. Throughout the text, these spatial metaphors put on display the mismatch of the homogenous mathematical “manifold” and the heterogeneous sociological “field”; they “demonstrate” (erweisen), as the text announces already in the introduction, how “formal philosophy” cannot encompass the “sphere of reality” that sociology seeks to describe (K 1:11). The assignment of these spatial metaphors is thus to expose, to reveal, and to render legible the impossibility of “pure sociology”: they do the demonstrative work of showing that thought can neither exhaust the “field” of phenomenology (from material phenomena
to the most general categorical essences) nor account for the infinite possibility of social occurrences. In contrast to the finite axioms of mathematics, sociologists would always have to add new sociological axioms to account for new social phenomena. For Kracauer, then, the metaphories drawn from mathematics function differently than they did for Scholem and Rosenzweig. For Rosenzweig, the metaphories of subjectivity and motion provided by infinitesimal calculus lent a language to limit points of the natural and spiritual world that philosophical and theological language could not describe. The metaphories of space did not allow Kracauer to name the nameless, nor did he desire to; instead, they demonstrated and illuminated aspects of knowledge and experience, such as the mismatch of mathematics and sociology and the relationship between logic and materiality, that thought may have otherwise taken for granted and passed over as obvious and ubiquitous. The incongruence of mathematics and sociology may come as no surprise for readers today. But the way the text works out and puts on display the contradictions between thought and experience—here, formalized knowledge like mathematics and the social world—would become a signature move of the critical theorists. Indeed, this performative dimension of negative mathematics informed Kracauer’s cultural critique, as an analytic and literary technique to render legible the tensions between material and metaphysics as a mode of cultural intervention.

The sense of incommensurability that Sociology as Science produces in its comparison of mathematics and sociology characterizes much of Kracauer’s writings from the interwar period onward. As Adorno writes, “incommensurability” was Kracauer’s “central theme—which, precisely for this reason, hardly ever becomes thematic in his work.” Indeed, the sense of disjunction between materiality and logic ran through the works of first-generation critical theorists, such as Lukács, Horkheimer, and Adorno. In Lukács’s Theory of the Novel, for instance, the novel takes over at the point where the alienation of modern life no longer fits the inherited literary form of the epic that presupposed the unity of humankind and nature. In Adorno and Horkheimer’s later criticism of logical positivism, mathematical logic cannot provide, in Adorno’s terms, the “unified interpretation of reality that it demands: namely, because reality contradicts it and because it itself is inconsistent.” A formal, mathematical system of knowledge can never ac-
count in full for the contingency and depth of lived reality. For Horkheimer and Adorno, this incommensurability caused them to dismiss mathematics and condemn any attempt to fit experience, the study of society, and cultural analysis into what was, in their eyes, an ill-fitting mathematical container. Kracauer, too, abandoned the idea of a mathematically “pure sociology.” But Sociology as Science showed him that mathematics, in particular geometry, still held out hope for a method of analysis that could blend logic and materiality, allowing logic to intervene in the material world and experience to shape intellectual concerns. And, after Sociology as Science, it was space and spatial methods that continued to signify the possibility of combining thought and experience in Kracauer’s writing. What remained was to find objects of analysis that occupied this liminal zone between the logic of critique and the materiality of modern life.

Projektionslehre: Descriptive Geometry and the Detective Novel

In the early 1920s, the idea that geometry dealt with negativity by bridging logic and materiality emerged in Kracauer’s thought as a distinct method of cultural analysis and critique. As deployed in The Detective Novel: An Interpretation (Der Detektivroman: Eine Deutung, 1922–1925), a geometric method, “a sociological theory of projection [Projektionslehre]” allowed the cultural critic to read the material products of society, such as detective novels, as indicative of the metaphysical underpinnings of contemporary society and culture. This turn to the analysis of mass culture and its products influenced early members of the Frankfurt School, but it also offered a methodological challenge to the seeming disjunction of meaning and life characteristic of modernity and exacerbated by the relativism of contemporary cultural analyses. Projection countered, for instance, Simmel’s associative and wandering intellectual style, which entailed for Kracauer a relativistic groundlessness that embodied “the fate of civilized humanity” in the age of capitalism (K 9.2:246). Where, in the terms of Kracauer’s 1920 letter to Susman quoted at the outset of this chapter, Simmel “only describes” the cultural phenomena he analyzes, this “sociological theory of projection” allowed Kracauer to “explain,” to “give [the] principles” that currently shape society.
Beyond developing the metaphors of space, the geometric method of projection served as the generative dimension of negative mathematics in Kracauer’s thought. Run in reverse, projection provided a way to read the composition of mass-produced, aesthetic objects as indicative of the metaphysical principles that govern society, such as secular rationality. It also contained a crucial insight for cultural theory: the notion that such aesthetic objects can reveal these principles in as much as they reflected the logic of their creation in their material form.

Projection is a widely used critical term—from psychoanalysis to cinema studies—but it also carries with it a more specific, technical definition.\(^\text{35}\) In descriptive geometry, a branch of mathematics developed in the eighteenth century by the French mathematician Gaspard Monge, projection refers to the mathematical technique of mapping one structure onto another.\(^\text{36}\) The goal of descriptive geometry is not to expand on the more geometrico as a model of sound logical reasoning, but rather to provide practical and heuristic geometric tools to engineers, architects, and technicians “to imagine a convoluted figure intuitively.”\(^\text{37}\) The most common of these procedures is the spatial projection of a three-dimensional object onto the two-dimensional plane, such as the shadow cast by a building on the ground (fig. 4.1).\(^\text{38}\) For architectural and engineering purposes, it is easier to manipulate mathematically a two-dimensional representation of a house—for example, to measure the height of the house or the angle of the roof—even though the process of projection sacrifices a dimension (the length of the house). Despite his apparent distaste for the subject, Kracauer’s architectural studies would have required him to employ projection to draft technical drawings of the
buildings and memorials he recounts producing in his autobiographical novel, *Ginster* (1928). For Kracauer the cultural critic, projection offered a technique to represent the aesthetic products of mass culture in an intellectual space in which the societal and cultural principles governing their production could become readable.

As in *Sociology as Science*, the society that *The Detective Novel* analyzes is the modern, rationalized and secularized world, but *The Detective Novel* displaces its object of analysis from society itself to society’s products, which it illuminates through projection. Best known for its chapter “The Hotel Lobby,” *The Detective Novel* is a strange yet revealing text, neither a literary history nor a social history of the rise of the European detective novel. Instead, *The Detective Novel* offers, as Kracauer writes to Löwenthal, a “metaphysics of the detective novel.” It proposes and enacts “an interpretation” of “the idea, to which detective novels testify and out of which they are created [von der sie zeugen und aus der heraus sie gezeugt sind]: the idea of a thoroughly rationalized, civilized society” (K 1:107). What makes this “art of interpretation” possible is the aesthetic constitution of detective novels, the Enlightenment genre par excellence, in which plot, characters, and mise en scène formally reflect and contribute to the immanent triumph of rationality (the detective) over mystery (the crime). “Detective novels are not concerned with a representation of the reality called civilization that stays true to nature,” Kracauer continues, “but rather, from the outset, with the exposure of the intellectual character of this reality; they hold a distorting mirror in front of that which is civilized, in which the civilized comes face to face with a caricature of its dreadful state of affairs [Unwesen]” (107). In the detective novel, modern society sees its image, however distorted, as unreflective, superficial, and uniform. Surprising about such a statement is how it locates the metaphysical keys to the “intellectual character” of an epoch not in world-historical events (such as the advent of first German Republic or massive economic inflation), but rather in a mundane yet mass-produced literary genre. Finding in the products of capitalism modernity a “mirror” of its “dreadful state of affairs” is the cultural-critical task undertaken by Kracauer’s most famous feuilletons, such as “The Mass Ornament” and “Photography,” and still practiced today as critical theory.

The geometric procedure of projection supplied the particular exegetical mechanism that made this mode of interpretation possible. The disjunction
of life and meaning permeates the world of *The Detective Novel*, but projection offers a means of reestablishing a connection between this fallen epoch and a state of affairs in which logic and materiality coincide:

When a person rejects the relationship [to the religious sphere], they de-realize themselves, but even still, apart from and outside the relationship, the features of the high sphere remain unshakably in effect. It is they that is meant with their displacement, which itself no longer means them, for in the cloudy medium things appear broken like the image of a stick dipped into water and all names are mangled beyond recognition. . . . Therefore, the ensnarled knowledge and behaviors of the lower regions have equivalents in the higher spheres; the message that such knowledge and behaviors bring depicts inessential something essential. It is first their projection onto the very contents that they distort that makes the distorted images transparent: if their meaning is to be freed from the depths, then they are to be transformed until they reappear metamorphosed in the coordinate system of the high region of spheres, where they may be examined to determine their meaning. (K 1:109)

The passage intensifies the metaphors of space, through the reference to “spheres,” but also the spatial dimension invoked by a “projection onto” itself. In particular, projection allows the secularized individual to translate ideas, objects, and events in a rationalized society (“the lower regions”) into their metaphysical plane of meaning (“the high sphere”). It deciphers the metaphysical “message” of “the ensnarled knowledge and behaviors of the lower regions.” Here, the passage draws on an idea that Simmel proposed in the essay “On the Spatial Projection of Social Forms” (“Über räumliche Projektionen sozialer Formen,” 1903), according to which physical space (e.g., a change in location of a capital city) often directly reflects sociological factors (a change in leadership). But terms such as “theory of projection” (*Projektionslehre*, the technical term for studying geometric projections), “coordinate system” (the geometric, Cartesian plane), and “transformation” (a basic geometric operation) reinforce the mathematical dimension of Kracauer’s criticism. Indeed, we have already seen the connection Kracauer makes between his “thinking” and “higher mathematics” cited at the outset of this chapter; in that same letter, he continues: “I could begin my theory of knowledge, which constantly preoccupies me, as follows: given are two
spiritual systems, $X$ and $X'$. Which transformations must be made, in order to get from $X$ to $X'$?

What emerges in *The Detective Novel* is thus a hybrid notion of projection, blending Simmel with the spatial-geometric terms introduced in *Sociology as Science*.

In essence, Kracauer’s “theory of projection” entailed a three-step interpretative procedure that reads these “distorted images” for their metaphysical implications: correspondence, projection, and examination. The first of these philosophical moves fleshes out what Kracauer means when the text claims that detective novels hold a “distorting mirror” up to “that which is civilized”: it proposes the structure of and correspondence between the “spheres” of modern existence and metaphysical meaning that this interpretative relationship seeks to uncover and interpret. Even if Kracauer does not speak of Judaism and Christianity as directly as Scholem and Rosenzweig, his texts still borrow from a Judeo-Christian metaphysical framework, in particular from Søren Kierkegaard’s theory of existence as “stages.” Accordingly, humans exist in three existential “spheres”: the aesthetic (where individuals live in the sensuous present), the ethical (where we attempt to unify finitude and infinitude into a cohesive self), and the religious (in which, via a “leap of faith,” we reconcile our paradoxical relationship to eternity).

“In the high sphere, according to Kierkegaard the ‘religious’ sphere in which the names disclose themselves,” Kracauer writes, “the self stands in a relation to the high secret, which the relationship brings fully into existence. Word and deed, being and image move here right up to the outermost limit, what is experienced is real, what is known is of final human validity” (K 1:109).

Objects in the lower sphere of a secularized, rationalized society thus have equivalents in the high sphere of a religiously oriented community, in which knowledge still possesses the “final human validity” that we saw ascribed to mathematics. By inverting geometric projection, we can read the products of the lower sphere in terms of their metaphysical “principles,” which, through further interpretation, reveal the final principles (“the high secret”) that contemporary society and its products follow.

The second exegetical step is the process of projection itself, which maps, as Kracauer writes, “the ensnared knowledge and behaviors of the lower regions” onto their corresponding “contents” in the “high” sphere. Earlier I
defined projections as the translation of three-dimensional objects (such as the cube topped with a pyramid in fig. 4.2) into their corresponding images on a two-dimensional plane (the bisected square) as dictated by a predefined perspective. The choice of projective perspective (cavalier or, here, parallel) determines the extent to which the representation is “distorted.” Kracauer’s method of projection, then, is geometric projection in reverse; it reads the metaphysical shape of an object out of its corresponding, rationalized forms, flattened and contorted to the same extent that the Mercator projection distorts the earth’s surface so that Greenland appears larger than Africa.

In Kracauer’s text, the products of rational, civilized society—the detective novel, for example—are the two-dimensional figures. His version of projection then maps the detective novel into three-dimensional space, “the coordinate system” of the high region of spheres. In the terms of figure 4.2, the detective novel would be the bisected square, whereas its projected image, the cube topped with the pyramid, would be its “equivalent” in Kierkegaard’s “religious sphere.” Each element in the detective novel (the detective, the crime, and the novel’s end) thus corresponds and can be interpreted as a metaphysical property (the human intellect, the divine secret, and the possibility of messianic reconciliation). The initial “distorted” image may be impoverished (without height in fig. 4.2). It is thus the art of interpretation to transform this figure and reconstitute its corresponding shape in three-dimensional space in order to read an object’s metaphysical meaning. Reversing geometric projection turned the mathematical approach to negativity into a form of cultural analysis, bridging the divide between the detective novel as a mass-produced cultural object and its metaphysical sphere of meaning.
Take, for example, the iconic chapter on the hotel lobby from *The Detective Novel* as an instance of a cultural-critical method of projection. According to Anthony Vidler, the hotel lobby constitutes for Kracauer “the paradigmatic space of the modern detective novel,” depicting the estrangement of the modern individual and epitomizing “the conditions of modern life in their anonymity and fragmentation.” As a mode of analysis, *The Detective Novel* projects the space of the hotel lobby into the religious sphere, reading it as “the counter-image [Gegenbild] of the house of God” (K 1:130). In the hotel lobby, the aimlessness and disassociation of the guests corresponds to and contrasts the “assembly and unification of the directed life of the community” in the church (131). As in the geometrical method of projection, Kracauer’s analysis depends on the correspondence between the general characteristics of the hotel lobby and their equivalents in the church: the character and behavior of the guest and the sense of equality, the observance of silence, and air of mystery that dominates both venues.

For modern, secular society, comparing church and hotel lobby illuminates the social function of the latter. The fact that a community assembles in a church to be amidst a divine yet absent presence shows that the lack of this divine presence is the metaphysical principle of the hotel lobby, evinced by the estrangement and fragmentation of the hotel guests (133). In *The Detective Novel*, projection renders legible not only the metaphysical meaning of estrangement and fragmentation within the hotel lobby but also the lack of spiritual authority, or unified metaphysical meaning, in modern society as a whole.

The third and final philosophical step implied in Kracauer’s methodological proposal is the “transformation” of the distorted figure until its “meaning” is legible in the “higher sphere.” As the text continues in its main explanation of projection, previously cited:

For these transformations it is important to keep in mind that the concepts and forms of life in the lower spheres have at least two meanings. On the one hand, what they mean corresponds to the conditions that govern the sphere that constitutes them. On the other hand, because the path of return is always traversable, and the decision remains open everywhere, they can house intentions, which are not proper to this lower sphere, but rather take on a really legitimate formulation only in one of the higher spheres. (K 1:109–110)
The metaphysical meaning of the projection of the “concepts and forms of life in the lower sphere” may not always be immediately obvious. Instead, the passage suggests, the critic must transform them interpretatively until they “take on a really legitimate formulation.” Consider, for instance, how *The Detective Novel* interprets the sentimental conclusions of most detective novels. One may think such ‘happy endings’ meet the demands of popular literature in a society dominated by the material conditions of mass production and consumption. Interpreted as “the uncontested victory of ratio,” however, the kitsch of detective novels’ ending suggests, on a metaphysical level, the ultimate impossibility of a “messianic ending” (206). The almost obligatory resolution of the crime in the detective novel means that the Messiah will never come. Furthermore, the stipulation that “the path of return is always traversable” intonates that projection opens up for cultural critique a space between materiality—the hotel lobby, the experience and products of rational society—and the logically “homogenous” space of mathematics, where judgments derived from axioms carry the same analytic irrefutability of the axioms themselves. Through the projection and analysis of the logic evident in the material products of modern society, *The Detective Novel* distills and explores the metaphysical principles of modern society, which direct sociological analysis could not—as we saw in *Sociology as Science*.

Detective novels, as well as other products of mass culture such as films and dance revues, allowed for this type of analysis which otherwise evaded society as a whole, precisely because they were, as Kracauer often called them, “aesthetic creations” (110). Here *The Detective Novel* invokes the term “aesthetic” in special usage mentioned in the introduction to this chapter; studying detective novels is a matter not of “art works,” but rather of perception as the physiological threshold between sensation and cognition. For Kracauer, the aesthetic products of modern mass culture adhered to lawful and logical “aesthetic principles of composition” that interweave “into a unity” revealing the “totality itself masked to those who bear civilized society” (118). Detective novels reflect in their aesthetic-material composition the logic of their production, a “totality” that may otherwise remain hidden in that society. As a societal product, they “correspond” to and, as we have seen, render visible the “conditions” that produced them: produc-
ing, for example, the “unconditional victory of the ratio,” while also being mass-produced by rational, “civilized society.” Indeed, the often contrived and tortured prose of Kracauer’s text, which often rearranges the word order of sentences in a way that makes readers’ heads spin, serves as a stylistic reminder that a logic lurks behind both the detective novel and his analysis that requires mediation (i.e., projection) to render it legible. The geometric bridge between logic and materiality thus transforms in *The Detective Novel* into a geometric method of projection that enabled a “metaphysics of the detective novel,” while Kracauer contemplated the “metaphysics of history” and proposed the need for “a yet unwritten metaphysics of film.” With the help of negative mathematics, what was impossible for the analysis of rationalized society became possible for the analysis of the rationalized creations of this society because their manifest rationality gave insight into the principles guiding their production.

The realization that the material products of a society reflect and reveal the logic of society was central to Kracauer’s cultural critique and remains a core element of the critical project today. Reading the metaphysical consequences of aesthetic creations such as the detective novel—not to mention photography and film—became one of Kracauer’s main intellectual objects, serving as a means, as he describes it in *History*, “to bring out the significance of areas whose claim to be acknowledged in their own right has not yet been recognized.” However, what goes unmentioned in this statement is the presumption that in order for the relationship between metaphysics and aesthetics to be critically binding, these creations—provided by literature, photography, architecture, and film—in some way replicate in their composition a set of discernable, perhaps even rational “principles,” the search for which Kracauer found missing in Simmel. The nature of modernity thus becomes legible in its aesthetic products, because, as “products,” they emerge out of the equally material and logical machinery of modern, mass production. For a critical apparatus such as the culture industry, which sees in the rationality of cultural products the deceptive and oppressive face of the capitalist rationalization of production, such an insight is indispensable. For Kracauer, whose critiques increasingly attended to the rationalized products of modern mass culture, the idea that the material products of society revealed the logic of that society held out the hope
that critical analysis could not only diagnose but also, by diagnosing, intervene in the problematic form of reason governing contemporary life during the Weimar Republic.

*The Geometry of Modernity: Rationality, Enlightenment, and the Mass Ornament*

The method of geometric projection informed the analysis of Kracauer’s best-known critical essay, “The Mass Ornament” and transformed in it into a political program for cultural critique. Published in 1927, the essay announces Kracauer’s signature mode of reading modern culture, called “surface-level analysis” (*Oberflächenanalyse*).55 “The place that an epoch occupies in the historical process,” Kracauer proclaims, “can be determined more decisively from an analysis of its inconspicuous surface-level expressions than from the epoch’s judgments about itself” (K 5.2:612). In the essay, the metaphysical space of projection shifts from theology to history—a shift that followed Kracauer’s turn to a materialist-Marxist intellectual narrative in the middle of the 1920s.56 Analyzing surfaces, however, is just another name for projection: the text reads rationalized spatial forms in modern life, which it calls “mass ornaments” on the example of the popular British dance revue, the Tiller Girls, as indicative of the contemporary capitalist “epoch” within the greater “historical process.” Here we start to see the effects of negative mathematics in Kracauer’s thought. By deciphering the meanings of the geometric patterns created by the Tiller Girls, projection rendered the stunted form of thinking at work in capitalist rationality legible, further laying bare the disjunction of materiality and meaning characteristic of modern life. At the same time, the blending of logic and materiality in this geometric analysis offered Kracauer a potential solution to this crisis through cultural critique as a means of interjecting into modern society the very form of reasonable thought that it so desperately lacked.

The relation of mathematics to capitalist rationality in “The Mass Ornament” reflects a larger trend in the early phases of critical theory, taken to its logical extreme in Horkheimer and Adorno’s equation of instrumental reason and the catastrophes of the twentieth century. Let us consider an
example from Georg Lukács’s *History and Class Consciousness*, which was published a year after *Sociology as Science* and was highly influential for members of the Frankfurt School. Lukács’s *Theory of the Novel* greatly inspired a young Kracauer and Lukács’s goal in his second work resonates deeply with Kracauer’s critique of modernity. *History and Class Consciousness* explores rationalization in terms of reification, calling the latter “the central, structural problem of capitalist society.” For Lukács, who adapts the concept from Marx, reification is the process by which “a relation between people takes on the character of a thing and thus acquires a ‘phantom objectivity.’” Capitalism depends on reification, because it allows human relationships to appear as abstract quantities, which we can calculate, equate, and exchange. According to Lukács, modern capitalism accelerates the process of reification by rationalizing not only “work-processes” through “mathematical analysis” but also “the economy” into “an abstract and, to the extent possible, mathematized system of formal ‘laws’ [ein abstraktes, möglichst mathematisiertes Formsystem von ‘Gesetzen’].” When I purchase a table from a store, for instance, interactions among humans—the labor that went into making the table, the process of shipping the table to the store, and so on—appear to me as an abstract quantity, the numerical price of the table. The problem with reification and rationalization lies in its transformative effect: “This rational objectification conceals above all the immediate—qualitative and material—character of things as things.” For Lukács, as well as for many first-generation critical theorists, mathematics served as the mechanism by which capitalist rationality covers up and neglects the qualitative features of human existence by rationalizing them into quantitative forms and relationships.

A similar line of reasoning relating mathematics to capitalist rationality is at play in Kracauer’s diagnosis of modernity as the divergence of life and meaning. A decade before “The Mass Ornament,” some of Kracauer’s earliest known writings tend to see in mathematics the potentially detrimental, forced application of types of logical reasoning to objects and areas of study of qualitative character with which they are fundamentally incompatible—the implications of which can be seen in *Sociology as Science*. Regarding the types of thinking privileged by modern capitalism, Kracauer writes that “the technical gift of discovery, talent at organization, arithmetic dexterity,
logical thinking, etc. become reified into products, whose value is not, for instance, inestimable, but rather allows itself to be directly expressed in numbers” (K 9.2:267). The reference to mathematics is oblique, but such obliqueness indicates its instrumental function: the concepts and operations of mathematics, such as “logical thinking,” “arithmetic dexterity” and “numbers,” only serve as tools to calculate, equate, and exchange “products” that are, in truth, “inestimable.” The mathematical rationality of modern capitalism was thus an incomplete form of reason that privileged certain forms of thinking such as logical deduction and arithmetic reckoning but exhibited “a deep indifference towards the ‘what’ of things,” human beings included (K 9.1:203). Mathematics mixed materiality and logic, but, when taken as ends in itself, transformed the complex and, ultimately, incalculable aspects of society into abstractions categorically unequal to and incongruous with the real people and things it represents. For Kracauer, this type of rationality characterized the problematic state of modern, mass capitalist society in early twentieth-century Germany, as represented by what he calls the mass ornament.

Whereas Horkheimer and Adorno’s identification of mathematics with Enlightenment’s relapse into barbarism caused them to dismiss the critical potential of mathematics, the bridge between materiality and logic in negative mathematics offers “The Mass Ornament” a way to expose, confront, and, potentially, overcome the pathological rationality of modernity. At its core, the essay introduces the concept of the mass ornament in order to analyze mass-produced cultural phenomena, such as zoos and dance revues, often associated with the United States and personified by the synchronized performances of the Tiller Girls. Such phenomena are “mass,” because they are mass-produced, have global appeal, and strive for mass popularity rather than elite artistic distinction; they are “ornaments,” because of their decorative yet inessential function in society and the “pure assemblage of lines” that characterize them. As in Sociology as Science and The Detective Novel, mathematics enters “The Mass Ornament” as a means of illuminating and understanding these modern creations. As the essay explains: “The ornament, detached from its bearers, is to be grasped rationally. . . . It consists of straight lines and circles, as are found in the textbooks of Euclidean geometry; it includes the elementary figures of physics, waves and spirals.
Discarded are the proliferations of organic forms and the emanations of spiritual life” (K 5.2:614). These sentences function on multiple interpretative levels. Referring to “Euclidean geometry,” both sentences develop the metaphorics of space. With “geometry,” the text does not mean Euclid’s system of reasoning, but rather employs the geometric “straight lines and waves” as metaphors for the material expressions of capitalist rationality. The claim that we “grasp” (erfassen) such phenomena “rationally” suggests that only a mode of analysis that addresses the rationality of the mass ornament can adequately capture its implications and place on the metaphysical level of history, instead of dismissing it as a fad of lowbrow culture. Locating this place, we recall, is the goal of the essay and the second sentence hints at the historical stage indicated by the Tiller Girls: as in Lukács, it is a phase of capitalism that reifies “spiritual life,” transforming “individual girls” into “irreducible complexes of girls, whose movements are mathematical demonstrations” (612). Finally, through the haptic dimension of the term erfassen (literally, “to grasp”), the first sentence implies that rationality, the rational analysis of the mass ornament, has the power to intervene in and, potentially, alter the course of history that produced it.

In essence, “The Mass Ornament” projects the mass ornament into a metaphysics of history in order to read the historical stage occupied by Germany during the Weimar Republic, a capitalist society near the apex of industrial expansion in a liberal democracy. It thus draws on not only the methodology of projection in The Detective Novel but also its presupposition linking rational society and its cultural products. “The Mass Ornament” begins this process by defining the guiding principle shared by the Tiller Girls and the society that produced it: “[Both are] designed according to rational principles, which the Taylor system simply takes to its ultimate conclusion. The hands in the factory correspond to the legs of the Tiller Girls. Beyond just manual talents, psycho-technical aptitude tests attempt to calculate even spiritual dispositions as well. The mass ornament is the aesthetic reflex of the rationality to which the ruling economic system strives” (K 5.2:615). Projection relates the mass ornament as an “aesthetic reflex” to the capitalist “rationality” of modern society that created it. As before, the passage uses the term “aesthetic” here to refer to both the material and cognitive dimensions of the mass ornament. The Tiller Girls, for
example, occupy this aesthetic liminal zone, a phenomenon produced for mass entertainment that reflects, in the visual form of geometric dance patterns, the logic of mass production in the “factories.” This logic is the “rationality” proper to capitalism (“the ruling economic system”), the scientific management of the “Taylor system.” Such rationality also indicates, as discussed at the outset of this section, a troubling form of thought that replaces the deeper dimensions of “spiritual dispositions” with the mathematical calculations of “aptitude tests.” The text reinforces this sense of stunted reason by calling the mass ornament a “reflex”—the Tiller Girls are not the conscious creation of the reflective intellect, but rather reflect mass production designed for mass consumption.

As the next step in the process of projection, “The Mass Ornament” defines a new metaphysics of history in which its analysis of the Tiller Girls allows readers to situate their own contemporary moment. In “The Mass Ornament,” history is no longer a narrative of a divine “meaning” (Sinn) that has abandoned the world. Instead, the text adapts the thesis from Max Weber that modernity constitutes the horizon of a larger process of “demythologization.” This metaphysics not only eschews a narrative of a fallen present vis-à-vis a past Golden Age but also anticipates Horkheimer and Adorno’s definition of the Enlightenment project: “The process of history is a battle fought out between weak and distant reason [Vernunft] and the forces of nature that ruled over heaven and earth in the myths” (K 5.2:616). History progresses to the extent that “reason” vanquishes “myth” as the basis of human life. For Kracauer, this concept of reason was a privileged form of Enlightenment reason (Vernunft), the “reason of fairy tales” (617). In the text, the term “fairy tales” represents not the irrationalism of folklore, but rather a vision of the world in which “truth” and the human, such as a Snow White, unilaterally win out over the mythic forces of evil, such as the queen. The rational, but not fully reasonable, mass ornament projected by the text thus indicates the place of contemporary society within this metaphysical process. “The capitalist epoch is,” as “The Mass Ornament” claims, only “a stage on the path to demystification” (617). Capitalist rationality is reason, but one that the privileging of mass production and mass consumption over the concerns of humans themselves has arrested into partial, “murky” reason. We may object to the simplicity of such a linear theory of history, but
Kracauer’s theory of historical progress is not what is significant here. What I want to draw attention to instead is how mathematics represents here not the blind tool of capitalism, but rather the method that renders legible the idea that capitalism only constitutes a phase of reason’s development. If capitalism is only a historical “stage” (note again the spatial metaphor), then perhaps there is hope that thought, properly configured, could surmount it.

The notion that society could potentially push past the contemporary phase of “murky reason” was the moment where negative mathematics opened a critical window in Kracauer’s thought. To recap, the critical point on which “The Mass Ornament” has been building up to here holds that the manifold problems of capitalist society stem, at least in part, from a shift in societal focus. Capitalist society privileges abstract quantities (such as production, exchange, and profit) over humans and the qualities of human life. In Kracauer’s terms, natural and spiritual forms, humanistic phenomena such as community and personality, and, perhaps most significantly, humans as such disappear (as exemplified by the Tiller Girls’ transformation into synchronized shapes, into a realm where “what is demanded is calculability” [K 5:2:614]). For Lukács, the solution to this problem lay in a return to the classicist aesthetic program of Friedrich Schiller and its notion of play, which potentially salvages life “from the deadening effects of the mechanism of reification.” 64 “The Mass Ornament,” however, rejects refuge into high art in the same way that Kracauer had earlier criticized the recourse to theology in Rosenzweig and Buber’s Bible translation. 65 Such proposals were unfit to make this intervention, Kracauer argued, because they neglected the material reality of modern society in favor of idealist and outmoded religious solutions (623). Instead, the solution came in the form of confronting the problem that capitalism, as “The Mass Ornament” claims, “rationalizes not too much, but rather too little” (618). This enigmatic phrase was a call to fashion ways to reinstate reason and reflection back into a society governed by “murky reason.” With a foot in this world of rationality, mathematics and projection allowed cultural critique to make this intervention, adding to the rationality of society not only by calling attention to it but also by critiquing it.

For Kracauer, the political imperative of not only geometric projection but also cultural critique as a whole lay in bring society face to face with its
pernicious rationality and, through this rational confrontation, promoting the progress of reason. As Johannes von Moltke shows, photography and film were one way Kracauer envisioned this confrontation. As in texts such as “Cult of Distraction” (“Kult der Zerstreuung,” 1926), modern cinemas fail to fulfill their political assignment when they cover up the distraction of mass media; instead, they must expose it in order to reveal to the masses their own distracted and disintegrated state. Interpreting the “distorting mirror” in *The Detective Novel*, projection was another mode of cultural critique. “The Mass Ornament” thus ends on a self-reflective note: “[The ‘process’ of societal change] leads through the center of the mass ornament, not away from it. It can move forward only if thought encompasses nature and produces the human as he is constituted by reason. Then society will change. Then, too, the mass ornament will disappear and human life will assume the traits of that ornament into which it develops, through its confrontation with truth, in fairy tales” (K 5.2: 623). In practical terms, this passage imagines a “confrontation” of society with rationality as taking place through the enjoyment but also the analysis of the products of mass culture—the Tiller Girls, film, and photography, to name a few. Forcing society to reflect on its perversion away from “human life” meant an increase in “reason” and thus bore the potential of advancing reason and spurring society to reshape itself around humanity and not capitalist rationality. What is significant in this passage is not just its spatial metaphor (“through the center”) but also its performative dimension—the same performative aspect of Kracauer’s analysis we first saw associated with geometry in *Sociology as Science*. In a text such as “The Mass Ornament,” the method of projection enables cultural critique, the analysis of the mass ornament, as a means of staging this confrontation in its readers. Bridging materiality and logic, the geometric approach to negativity revealed an analytic technique through which the reason of cultural critique could intervene in and, potentially, remedy the rational material fabric of life in interwar Germany. Alongside the geometric method of projection, the metaphors of space associated with it also offered literary techniques to try to confront readers with this rationality through the text itself.

In “The Mass Ornament,” one sees not only the similarities but also the stark differences between Kracauer and Horkheimer and Adorno. In Kra-
cauer’s Weimar-era text, a form of cultural critique that draws on geometric projection still held out a utopian hope that the confrontation of reason with itself could advance the progress of history. In the intellectual climate of postwar Germany, it could only have seemed like illusionary optimism. For texts such as *Dialectic of Enlightenment* and *Eclipse of Reason*, not only mathematics but also the Enlightenment ideal of reason itself symbolized “the germ of the regression which is taking place everywhere today.” And yet Kracauer’s vision of criticism exhibits a belief in critique’s relationship to emancipation that persisted in Horkheimer and Adorno’s notion of criticality and that persists in critical theory today. The geometric method of projection facilitated an analysis of society that was critical, not only because it allowed for a way of reading in the products of mass culture the social and economic principles that brought them into existence. This analysis was also critical, because it allowed the marginal figure of the cultural critic, someone with an oblique relationship to power and the production of culture, to intervene in and work toward the historical advancement of reason. Negative mathematics enabled Kracauer’s Weimar-era feuilletons to take this political assignment of critique seriously, staging a confrontation of society with rationality through the products of mass culture that it analyzed and the critical forms that it employed to analyze them.

**Natural Geometry and the Aesthetics of Theory**

As geometric projection in “The Mass Ornament” turned into a political mode of cultural critique, projection and the metaphorics of space became aesthetically operative in Kracauer’s interwar explorations of the rationalized spaces of the modern city. In these texts, the performative element we saw first in *Sociology as Science* and *The Detective Novel* took on the political charge of Kracauer’s cultural critique as a literary strategy in texts such as “Lad and Bull” (“Knabe und Stier, 1926), “Two Planes (“Zwei Flächen,” 1926), and “Analysis of a City Map (“Analyse eines Stadtplans,” 1926). Indeed, the postwar publication of Kracauer’s Weimar-era essays in *The Mass Ornament* (*Das Ornament der Masse*, 1963) made the connection of these three texts to geometry explicit, as they appeared together under the
title “Lead-In: Natural Geometry.” “I could imagine,” Kracauer explains to the editors at Suhrkamp in his plan for the volume, “that these three little pieces could form, in terms of mood, a good prelude. Because of their geometric character, they resonate well with the word ‘ornament’ in the main title.” In this section, I explore the point of transference where geometric projection and the metaphors of space became a “natural geometry” in Kracauer’s cultural critique, which takes on a “geometric character” by rearranging the language and textual space of critique itself as a projection of rationalization. We can call this Kracauer’s aesthetics of theory, in as much as these texts enact cultural critique, staging on the level of literary form the projection of rationality into the metaphysics of history. The texts of “Lead In: Natural Geometry” present this aesthetics of theory as an active, compositional strategy, which consciously rationalized aesthetic, textual space in order to promote the progressive confrontation of society with rationality called for by Kracauer’s more programmatic essays published during the Weimar Republic, such as “The Mass Ornament.”

As with geometry itself, the idea of “natural geometry” bridged materiality and cognition, suggesting a link between perception and our material experience of the things around us. Far from the rigid axiomatic systems of Euclid or Hilbert, the term natural geometry refers in mathematical and philosophical discourses to conceptual and pedagogical approaches to geometry that emphasize its visually intuitive dimension. The Italian mathematician Ernest Cesàro, for instance, proposed a geometry that avoids the use of nonessential coordinate systems in his book Lectures on an Intrinsic Geometry (Lezioni di geometria intrinseca, 1896) published in German as Vorlesungen über die natürliche Geometrie (1901). The term, however, stems from the theory of perception proposed by Rene Descartes in his Optics (1637). For Descartes, natural geometry (géométrie naturelle) designates our innate ability to comprehend and navigate the three-dimensional space that surrounds us, the possibility of which is conditioned by “the shape of the body of the eye”—that is, the physiognomic arrangement of the human sensory organs. In Descartes’s example, we consider a blind person who “sees” with the aid of the sticks, $AE$ and $CE$ (fig. 4.3). Given “the relation of the eyes to one another,” Descartes explains, “our blind man, holding the two sticks $AE$, 
CE, of whose length I am assuming that he is ignorant, and knowing only the interval which is between his two hands $A$ and $C$, and the size of the angles $ACE$, $CAE$, can from that, as if by a natural geometry, know the location of the point $E$.”73 This “natural geometry” mediates between empirical experience in the form the haptic resistance provided by “the medium of the stick” and cognition in the form of knowledge of “the location of the point $E$” in real and abstract space.74 If the geometric axioms, for Kracauer’s pure sociology, once mixed material judgments with necessary thought, then natural geometry mixed the physical experience of modernity with

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**Figure 4.3.** In the Illustration of the “blind man” in Descartes’s *Optics* (1637), sensation in the hands (points $A$ and $C$) corresponds with objects at the ends of the sticks ($A$ with $D$, $C$ with $B$). Image courtesy of University of Michigan Library, Special Collections Research Center.
cultural critique, that is, the materiality of modernity with its reflection in thought.

While we have seen this combination of materiality and cognition in the term *aesthetics*, the idea of natural geometry takes the entwinement of experience and logic a step further. Scholarly work on Kracauer has long recognized the materialist dimension in Kracauer’s thinking, especially his film theory. As Miriam Hansen puts it, Kracauer espoused a “program of cinematic materialism” that draws as much on a neo-Marxist notion of materialism as a belief in the tactile effects of film on its audience. According to Descartes, such tactility is a property of visual perception as such: “As to position, that is to say the direction in which each part of the object lies with respect to our body, we perceive this with our eyes in the same way as we would with our hands.” Where previous theories of perception focused on the impression left on the mind by objects, “this knowledge does not depend,” Descartes claims, “on any action which proceeds from the object,” instead the active mind comprehends the object through experiencing it.

The idea of natural geometry presaged Kant’s Copernican revolution, holding that the cognizing mind plays an active and sovereign role in forming and discovering the natural world. Natural geometry also suggested that the material dimension of cultural critique could have a cognitive effect on its reader, beyond intellectual comprehension. The materiality of critique—the composition of the text, the medium in which readers encountered it—thus bore the potential to work like film, as Kracauer later called it, in the intermediary zone between experience and thought. This is not to say that texts like those contained in “Lead-In: Natural Geometry” are cinematic. Rather, they share their political imperative with film by reproducing and, thereby, confronting their readers with capitalist rationalization on the level of literary form and through a mass-produced textual medium, the newspaper.

The three texts that constitute “Lead-In: Natural Geometry” transform the metaphors of space into a critical, literary form. Instead of discussing the position of contemporary society in the metaphysics of history explicitly, these texts project this place for Kracauer’s audience through the texts’ rationalized style. Where a text such as “The Mass Ornament” analyzes and projects a material phenomenon (the Tiller Girls) as the current state of
reason (the rationality of capitalism), a text such as “Analysis of a City Map” renders this rationality legible through a detached, cool yet also impressionistic, bird’s-eye examination of the faubourgs and city center of Paris. The effects of rationalization become particularly evident in Kracauer’s depictions of the otherworldly urban spaces of Marseille’s old harbor and so-called “Place de l’Observance” in “Two Planes.” As invoked by the mathematical term “plane” (Fläche), this text is a literary projection that maps the rationalized, two-dimensional “plane” of “The Bay” (“Die Bai”) and “The Quadrangle” (“Das Karree”) into an aesthetic, three-dimensional space. “The Bay” leads readers through the Old Port of Marseille, but its aesthetic core comes in the opening sentences:

Marseilles, a dazzling amphitheater, arises around the rectangle of the old harbor. Each one like the next, rows of facades fringe the three shores of the area paved with sea, whose depth cuts into the city. Across from the entrance to the bay, the Cannebière, the street of all streets, breaks into its smooth luminescence, carrying the harbor further into the city’s interior. It is not the only connection between the soaring terraces and this monster of a square, from whose foundation the neighborhoods rise like the jets of a fountain. To the square point churches as the vanishing point of all perspectives, and the yet uncovered hills face it as well. Such an audience has rarely ever been assembled around an arena. If ocean liners were to fill the basin, their trails of smoke would drift to the most remote houses; if fireworks were to be set off over the plane, the city would be witness to the illumination. (K 5.2:468)

The “rectangle” that begins “The Bay,” like the “square without mercy” that ends “The Quadrangle,” immediately underscores the “geometric character” of these two texts. As Andreas Huyssen notes, the “naturalness” of the “geometry” in a passage like this is ironic, in that abstract rationality permeates the city and viewer in the same way it permeates the “legs of the Tiller Girls” in “The Mass Ornament.” Indeed, the passage stages, as I explore in the remainder of this section, this rationality by objectifying verbs, eliding humans, and, ultimately, rationalizing the grammatical space of the sentence itself. Through an aestheticized analysis, Kracauer’s method of projection enabled texts such as “The Bay” and “The Quadrangle” to force readers to confront and reflect on the pervasive rationality of modernity.
The projection of rationality and the confrontation it hopes to effect in its readers occurs most noticeably in the interplay among space, shapes, and the observer. “Marseille,” the first sentence tells us, “arises around the rectangle of the Old Port [baut sich um das Rechteck des Alten Hafens auf].” Like Descartes’s active viewers whose cognitive activity codetermines their surroundings, the act of reading literally builds up “Marseille” out of and around the “rectangle of the Old Port” as if describing a photograph. Here the text combines a reflexive verb (sich aufbauen) with an inanimate object, affording an action (“to build”), strictly speaking, incongruous with the designated subject (“Marseille”). This formulation is accordingly difficult to render with precision in English: Marseille really does not “arise” around the square of the old harbor and it has not “been built around” the Old Port, but rather: “Marseille . . . builds itself up around the square of the Old Port.” The experience of Marseille is not the product of humans, but rather builds on itself by virtue of the shift in the viewer’s gaze. A relatively short text, “The Bay” repeats this construction: “the splendor” of the “sail-fishing industry” “has lost its luster [hat sich abgenutzt]”; “the streets dead-end [laufen sich tot] on its banks” (K 5.2:469). Such constructions anthropomorphize aspects of the city as the active reader of “The Bay” observes and thus animates its construction in tandem with the act of reading. At the same time, the text displaces the agency of the narrator to that of the readers. The style of depiction results not from the author’s active retelling of his or her physical discovery of the harbor and promenades of the city, akin to Edgar Allen Poe’s nameless protagonist in “The Man in the Crowd” (1840). Instead, for Kra- cauer, narration occurs in the consciousness of the reader, in which the city generates itself around the old harbor, as if projecting a city map or an aerial photograph into a higher “coordinate system.” On the level of form, “The Bay” confronts the rationality of the reader with the rationality of the city, creating an aesthetic link between reader and city but also underscoring the seeming autonomy of rationality in modern urban space.

The fact that its population is almost totally absent in Kracauer’s depiction of Marseilles further underscores this sense of the autonomy of rationality. Near its end, the paragraph previously quoted reintroduces a human element to the otherwise empty streets: “Such an audience has rarely ever been assembled around an arena.” While the term “audience” carries the
connotation of human subjects—although, significantly, not individuals—the context of the preceding sentence informs readers that “such an audience” here refers to “the churches” and “the yet uncovered hills,” and even the observer, who populate the “amphitheater” surrounding and observing the bay. Whereas “The Quadrangle” relies on people such as “the dreamer” and an “observer,” “The Bay” erases the distinctions between individuals as in “The Mass Ornament,” referring to “the human fauna” or “the masses of peoples, in which the people of different nations disappear.” The text even erases individual authorship in its published form, as the “The Bay” (along with “Lad and Bull”) first appeared in the Frankfurter Zeitung under Kracauer’s generic staff byline, “rac.” The noticeable lack of humans in the text reflects the feature of Kracauer’s film theory that von Moltke calls his “curious humanism”: the emancipatory promise of cinema lies less in its depiction of humans on the screen, but in the interaction between objects on the screen and humans in the audience. “The Bay” attempted to achieve this relationship between reader and text. In particular, it allows its reader to mingle with the rationalized object of the city, with individuals reduced to “fauna” and “masses” in the same way that the mass ornament rationalized “individual girls” into “complexes of girls.” Eliminating qualities like “community” and “nationality,” the text projects for the reader the substitution of rational objects for humanity, suggesting that the basis of Marseille is not a reason centered on humans, but instead capitalist rationality.

As “The Mass Ornament” hoped to accomplish a projection of rationality through its critical examination of the Tiller Girls, “The Bay” further stages this confrontation by rationalizing the space of the sentence. As “The Quadrangle” calls attention to rationality’s domination of the subject, as Huyssen explains, the second sentence of the previous passage accentuates the traces of rationality in “The Bay.” “Rows of facades, each like the next, fringe, on the three shorelines, the sea-covered square, whose depth cuts into the city [Den meergepflasterten Platz, der mit seiner Tiefe in die Stadt einschneidet, säumen auf den drei Uferseiten Fassadenbänder gleichförmig ein].” Here the sentence separates its subject (“Fassadenbänder”) and direct object (“Den meergepflasterten Platz”) from the verb (“einsäumen”). The emphasis of “rows of facades” and “the square paved with sea” created by this distance signals the text’s own rationalized and calculated style. Not
grammatically incorrect in German, this technique appears repeatedly not only in “The Bay” (“in the puddles the sky is pristine [rein steht in den Lachen der Himmel]” for example) but also in texts such as The Detective Novel.\textsuperscript{83} Furthermore, the relative clause (“whose depth cuts into the city”) and the spatial adverbial phrase (“on the three shorelines”) reinforces the sense of interaction between material form and intellectual content, “cutting” into the flow of the sentence, enacting its content through its syntactic form. Within the calculated space of the sentence, the text forces readers to recognize not only the rationalization of space in Marseille but also of the textual space itself. One of the effects of emphasizing the spatial arrangement of sentence structure is to draw the readers’ awareness to rationality and stimulate critical reflection about the rationalization of urban space and the everyday products of modern society, such as the newspaper in which “The Bay” appeared. This intermingling of materiality and logic constitutes the final consequence of the metaphors of space that we have seen emerge throughout this chapter: the bridge between materiality and logic in geometry became an aesthetic strategy for cultural theory, mixing the materiality of literary style with the logic of cultural critique. Geometry showed cultural theory its aesthetic side, as texts such as “The Bay” literally lead readers through rationalization. By accentuating rationality formally, negative mathematics allowed Kracauer to compel his readers to think through rationality in the hope that beyond it lay the reason promised by the Enlightenment.

In printed form, “The Bay,” the other texts that make up “Lead-In: Natural Geometry,” and Kracauer’s Weimar-era essays more generally reflected the projection of rationality in not only their aesthetic but also their material form. Most appeared in the feuilleton section of the newspaper, the Frankfurter Zeitung. In contrast to Scholem’s private translations of a holy text, the Book of Lamentations, Kracauer’s newspaper texts embody the logic of mass production and consumption that they often worked to expose, as quickly written, distinctly modern products. For instance, “The Mass Ornament” was only one of almost two hundred essays, film and book reviews, and reports that Kracauer published in 1927, equivalent, on average, to more than one publication appearing every other day.\textsuperscript{84} Moreover, they appeared in a medium, a newspaper, which was synonymous with the rise of
modernity and the rationalization of knowledge, indicative, for Benjamin, of
the withering of the type of knowledge that he upheld as “experience” (Erfah-
rung). As feuilletons, the texts in which Kracauer unfolded core elements
of his theory of modernity are often “aesthetic” in the same sense as detect-
tive novels are: they reflect and discuss contemporaneous political and cul-
tural developments, and maintain a pretension to literary styling, mixing
materiality with thought. If, for Kracauer, the Tiller Girls created a mass
ornament, then the form of the feuilleton itself, as understood for example
by Karl Kraus, corresponded to a “literary ornament,” carving out its own
consumable literary genre for “the crowd” (der Pöbel). Kracauer’s texts, es-
pecially as they appeared during his tenure at the Frankfurter Zeitung, thus
participated in the same process of rationalization whose more general cul-
tural effects they simultaneously sought to lay bare. Participating in the same
discourse his essays criticize is not the contradiction, but rather the critical
imperative of negative mathematics in Kracauer’s work, which sought to
illuminate—indeed, to project—the contemporary state of society through
such rationalized forms as an impetus to advance it.

For Kracauer, natural geometry held out hope that cultural critique could
have a material, intellectual, and corrective effect on the society it critiqued.
As geometric projection and the metaphors of space turned into a literary
style, Kracauer’s text performed a political assignment, calling attention to
the rationalization of space through the rearrangement of sentence struc-
ture, ascribing reflexive actions to objects, and the elimination of humans
amidst the urban landscape. Kracauer’s negative mathematics thus offers
tools to cultural theory today, in particular the idea that the medium of cri-
tique can help render its message legible. This aspect of negative mathemat-
ics foreshadows and reemphasizes the interweaving of form and content
in Horkheimer and Adorno’s vision of critical theory, which underpins their
prose. For Kracauer, however, how geometry made cultural critique a space
for cultural intervention was the emancipatory element of negative mathe-
matics, which continues in the critical project today. If society necessitated
the projection of its shortcomings onto a metaphysical level, then it also
necessitated cultural critics, those who, based on their marginality, could
observe mainstream society from the sidelines in order to change society.
As cultural critique, negative mathematics thus included, as Kracauer called
it in 1947, the “Jewish contributions in our era,” which works “to dissolve all the elements that obstruct the breakthrough and fulfillment of reason.” Through “centuries of migration, exile, and eternal adjustment,” Jewish thinkers had also come to occupy the liminal zone between material permanence and transcendental reason, reality and thought, enabling them to “spread Enlightenment with a flashlight.” Negative mathematics enabled Kracauer as a cultural critic to spread Enlightenment by aestheticizing theory. For cultural theory today, negative mathematics suggests that the continued ability of cultural critique to enlighten depends on not only the objects it analyzes but also the aesthetic and material forms through which this analysis occurs.

Material Logic and the Politics of Cultural Critique

This chapter has traced the transformation of the metaphors of space and the method of projection out of Kracauer’s writing on geometry and into an aesthetics of theory—cultural critique that attempts to alter society by performing its critique through writing. Kracauer’s essays, which this aesthetics of theory informed, and which appeared mainly during the Weimar Republic, thus point toward an alternative approach to the merger of the strict rationality of mathematics and cultural theory, unilaterally rejected by Horkheimer and Adorno. Kracauer’s union of “higher mathematics” and “thought” by no means sought the totalizing mathematization of thought that in logical positivism, according to Horkheimer and Adorno, threatened to eliminate the critical and historical faculties of philosophy. In contrast, we see through Kracauer how negative mathematics mediates between materiality and logical necessity, enabling the critic to read the metaphysical dimensions of society in its material products and intervene in it through the materiality of critique. Kracauer’s negative mathematics reflects the inclusivity of the theories of history, tradition, and knowledge that negative mathematics opened up for Scholem and Rosenzweig. Indeed, making the cultural critic an arbiter of social change, Kracauer’s negative mathematics not only opens up the critical project to voices on the margins of society but also indicates that cultural critique depends on them. Moreover, by show-
ing the potential political efficacy of the aesthetics of critique, Kracauer’s negative mathematics recommends ways of putting this more capacious vision of critical theory into practice.

Informed by negative mathematics, the mix of logic and materiality in Kracauer’s theory of cultural critique includes marginalized cultural perspectives and helps reincorporate them into the critical project. In contrast to Scholem’s history of discontinuity or Rosenzweig’s messianic theory of knowledge, this sense of inclusion in Kracauer’s negative mathematics functions less on a theological than on a social level. In the same way that the liminal space of geometry blended materiality and logic, the vision of the cultural critic made possible by negative mathematics occupies a socially liminal space. Such a cultural critic would participate in the materiality of culture, while observing its logic from a critical distance attached to their social status as outsiders, strangers, and observers. In this vision of cultural critique, the ability to observe, analyze, and intervene in contemporary society would follow neither from the pronouncements of academic philosophers nor from the cultural critics that are part of the majority population of that society. Instead, this ability lies with cultural critics who have one foot inside and one foot outside society: the “homeless souls” of modernity, the exiles, the German Jews. Negative mathematics in Kracauer’s thought turns the cultural critic into what Adorno later called “the dialectical critic of culture,” who both “participate[s] in culture and [does] not participate.”89

In this regard, Kracauer’s vision of cultural critique informed by negative mathematics circumvents Adorno’s claim that cultural criticism depends on and, thus, only perpetuates the economic and cultural factors that it seeks to criticize. Kracauer’s negative mathematics thus points us to a mode of cultural critique in the present as a form of self-understanding in contemporary society—drawing on a critical confrontation with its shortcomings—that depends on paying attention to the critical voices society may otherwise push to its margins. They, and perhaps only they, can catch glimpse of the conspicuous logic of society hidden within its material products.

Furthermore, negative mathematics bears the possibility that cultural theory and critique could alter society instead of merely describing, analyzing, and criticizing it. Drawing on the process of projection that Kracauer found in geometry, such a theory of culture would take the space of cultural
critique as a mode of performing reason with the intent of effecting social change. For critical theory in the present, negative mathematics recommends techniques of making its cultural intervention through the aesthetic materiality of critique, to borrow a term from *Sociology as Science*, through a “material logic.” In particular, negative mathematics offers techniques of manipulating the form of an argument—through sentence construction, verb choice, and the presence of humans in the text—in order to draw attention to its critique (for Kracauer, of rationality) on an aesthetic level. These techniques suggest that the material manifestation of thought may provide one way that cultural critique could help put into practice a theory of history as discontinuity and a messianic theory of knowledge. In this regard, cultural critique could point to rupture and absence by manipulating not only the style of writing but also the material forms that communicate it, such as through print or, now, through digital technologies. Kracauer’s negative mathematics thus puts renewed emphasis on one of critical theory’s central tropes: the performativity of critique. Indeed, a “performative contradiction,” as Habermas calls it, underlies a text such as *Dialectic of Enlightenment*, which works through the same sense of reason whose innermost contradictions its authors sought to expose. Even if we may doubt the utopian hope of forwarding the progress of enlightenment, negative mathematics underscores the political urgency of the performative element of cultural critique as a means of projecting and calling attention to the contradictions of society. Through negative mathematics, cultural critique can find new ways not only to reflect on our society through philosophy but also to intervene and alter a society through the material and aesthetic dimensions created by the digital age.

Ultimately, Kracauer’s later writings on film and history turned away from the generative potential that his Weimar-era essays found in negative mathematics. In his final work *History: The Last Things before the Last* (1969), mathematics provides the foil against which the task of the historian unfolds. “While the establishment of the world of science, this web of relationships between elements abstracted from, or imposed upon, nature, requires mathematical imagination, rather than, say, moral ingenuity,” Kracauer explains, “the penetration of the historian’s world which resists easy breakdowns into repeatable units calls for the efforts of a self as rich in facets as the human
affairs reviewed.” For Kracauer, the study of history had to mediate between the contingency of its subject matter and the rule-bound logic of the natural sciences, sacrificing its study of the past to neither the one nor the other. Nonetheless, the type of cultural critique enabled by negative mathematics in Kracauer’s Weimar-era essays must resonate with those of us who live in a world of new media, one ever more mediated and controlled by computers and other digital technologies. To be sure, we live in a world governed by a different type of rationality than the one discussed and performed in Kracauer’s feuilletons. The rationality of this new form of capitalist society, however, is no less murky or any less in need of illumination than the rationality that accompanied the advent of mass culture during the Weimar Republic. Enabling a form of cultural critique that not only participates in the world created by these new media but also seeks to intervene politically in it points us to the relevance of negative mathematics today.