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**S. S. Schweber: In the Shadow of the Bomb**

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## 1.

### WHAT IS ENLIGHTENMENT?

Enlightenment is man's leaving his self-caused immaturity. Immaturity is the incapacity to use one's intelligence without the guidance of another. Such immaturity is self-caused if it is not caused by lack of intelligence, but by lack of determination and courage to use one's intelligence without being guided by another. *Sapere Aude!* Have the courage to use your own intelligence! is therefore the [heraldic] motto [*Wahlspruch*] of the enlightenment.

—Immanuel Kant (1949, 132)

In November 1784, the *Berlinische Monatschrift* published Kant's response to the question, "What is Enlightenment?" which the magazine had posed earlier that year. Kant's now well-known answer was given in the epigraph above. Some two hundred years later, Michel Foucault took Kant's essay as the point of departure for his reexamination of this same question: *Was ist Aufklärung?*<sup>1</sup> The importance of Kant's essay for Foucault stemmed from the fact that he saw it as a watershed: "modern" philosophy could be characterized as the philosophy that is attempting to answer the same question as the *Berlinische Monatschrift* had raised.<sup>2</sup> Foucault suggested that for Kant the importance of his "little text" derived from the fact that it gave him the opportunity to assess the contemporary status of both his own philosophic enterprise and his reflections on history, and to examine how these two activities intersected.<sup>3</sup> And by looking at Kant's essay in this way, Foucault proposed to connect Kant's *Aufklärung*, the leaving of immaturity, with what he called the "attitude of modernity" with its consciousness of contemporaneity, "a modernity which sees itself condemned to creating its self-awareness and its norms out of itself."<sup>4</sup> *Creating the norms that were to guide them as moral agents in and out of* the new world they had helped create were central problems Bethe and Oppenheimer addressed after the war; and they addressed them as children of the Enlightenment.

This chapter draws on Foucault's incisive article, so it may be helpful to summarize it briefly. Foucault stressed that Kant had defined

two essential conditions under which mankind can escape from its immaturity. The first is that the realm of obedience and the realm of reason must be clearly distinguished. Humanity will reach maturity when it is no longer required to obey any authority that demands “Don’t think, just follow orders” and when men are told, “Obey, and you will be able to reason as you like.” But Kant distinguished between the public and the private uses of reason: “Reason must be free in its public use, and must be submissive in its private use. Which is . . . the opposite of what is ordinarily called freedom of conscience.”<sup>5</sup> Man makes private use of reason when he is “a cog in a machine,” that is, when he has a role to play in society and jobs to do. To be a soldier, to have taxes to pay, to be a civil servant were the examples that Kant had given. Under those circumstances, man finds himself placed in a circumscribed situation, where he has to apply particular rules and pursue particular ends. In these situations his reason must be subjected to the particular ends in view, so that there cannot be any free use of reason. But when one is reasoning only to use one’s reason, when one is reasoning as a reasonable human being as a member of reasonable humanity (which is the meaning of the German word *räsonieren* as Kant used it), then the use of reason must be free and public. “There is Enlightenment when the universal, the free and the public uses of freedom are superimposed on one another.”<sup>6</sup> Enlightenment must thus not be conceived simply as a general process affecting all humanity, nor as an obligation prescribed to individuals. It also poses a political problem: How can the use of reason take the public form that it requires? How can *Sapere Aude!* be exercised publicly, while individuals are obeying scrupulously privately? (This, incidentally, was precisely the problem Bethe and Oppenheimer faced in connection with the H-bomb!) The solution for Kant was to propose a sort of contract to Frederick II—the contract of rational despotism with free reason: “The public and free use of autonomous reason will be the best guarantee of obedience, on condition, however, that the political principle that must be obeyed itself be in conformity with universal reason.”<sup>7</sup>

At this point Foucault left Kant’s “brief article” and turned to its connection to Kant’s three *Critiques* and to the linkage of *Aufklärung* to modernity. Foucault conceived modernity as an “attitude,” “a mode of relating to contemporary reality; a voluntary choice made by certain people; in the end, a way of thinking and feeling; a way, too, of acting and behaving that at one and the same time marks a relation of belonging and presents itself as a task. A bit, no doubt, like what the Greeks called an *ethos*.”<sup>8</sup> By stressing choices and behavior, Foucault again made clear that the task at hand was principally a moral one.

To make his conception of modernity more concise, Foucault pointed to its characterization as a consciousness of the discontinuity of time: “a break with tradition, a feeling of novelty, or vertigo in the face of the passing moment,” and he quoted Baudelaire’s definition of modernity: “the ephemeral, the fleeting, the contingent, the half of art whose other half is the eternal and the immutable.”<sup>9</sup> Foucault commented that, for Baudelaire,

being modern does not lie in accepting this perpetual movement; on the contrary, it lies in adopting a certain attitude with respect to this movement; and this deliberate, difficult attitude consists in recapturing something eternal that is not beyond the present instant, nor behind it, but within it. . . ; modernity is the attitude that makes it possible to grasp the “heroic” aspect of the present moment. Modernity is not a phenomenon of sensitivity to the fleeting present; it is the will to “heroize” the present.<sup>10</sup>

For Baudelaire, modernity was a mode of relationship that has to be established with oneself. Modern man dedicates himself to asceticism and commits himself to a discipline whereby he does not go off to discover himself, but instead tries to invent himself. “Modernity does not ‘liberate man in his own being’; it compels him to face the task of producing himself. . . . But Baudelaire did not imagine that this heroization of the present and ascetic elaboration of the self had any place in society itself, or in the body politic. They can only be produced in another, a different place, which Baudelaire calls art.”<sup>11</sup>

Toward the end of his article, Foucault stressed that it was not important whether he had summarized successfully the complex historical event that was the Enlightenment, or depicted effectively the attitude of modernity in the various guises it may have taken during the last two centuries. Nor is it important for me whether his exposition and interpretation of the Kantian canon meet the approval of Kant scholars. I find attractive his suggestion that the thread that may connect us with the Enlightenment is not a faithfulness to doctrinal elements, but rather a permanent reactivation of an attitude—that is, of a philosophical ethos that could be described as a permanent critique of our historical era whose aim “will be oriented toward the ‘contemporary limits of the necessary,’ that is, toward what is not or no longer indispensable for the constitution of ourselves as autonomous subjects.”<sup>12</sup> And here Foucault clearly rejected Kant’s claims of essentialistic a priori limitations intrinsic to our very constitution as thinking and willing subjects and Kant’s view of ethics as fixed and transcendent in some way.

In concluding his article, Foucault indicated that what is at stake are the answers to the following question: “How can the growth of the capabilities of individuals with respect to one another be severed from the intensifications of power relations that are conveyed by various technologies (for example, institutions whose goal is social regulation, or productions with economic aims, or techniques of communication).”<sup>13</sup> To answer the question would lead to the study of what Foucault called “practical systems,” by which he meant

what [people] do and the way they do it. That is, the form of rationality that organizes their ways of doing things (this might be called the technological aspect) and the freedom with which they act within these practical systems, reacting to what others do, modifying the rules of the game, up to a certain point. . . . [The study of these practical systems] will have to address the questions systematized as follows: How are we constituted as subjects of our own knowledge? How are we constituted as subjects who exercise or submit to power relations? *How are we constituted as moral subjects of our own actions?*<sup>14</sup>

This is Foucault’s translation of Kant’s famous threefold question: What can I know? What should I will? and, What may I reasonably hope for? And the central question is a moral one.

Rejecting Kant’s universalistic response, Foucault believes the legacy of Kant’s reflection is that *Aufklärung* has to be considered not “as a theory, a doctrine, nor even as a permanent body of knowledge that is accumulating; it has to be conceived as an attitude, an ethos, a philosophical life in which the critique of what we are is at one and the same time the historical analysis of the limits that are imposed on us and an experiment with the possibility of going beyond them.”<sup>15</sup>

I would like to suggest that it is in this Foucaultian sense that both Bethe and Oppenheimer are children of the Enlightenment. Both had been raised on Kant’s universalist maxims on morality—Bethe in the *Gymnasium*, Oppenheimer in the Ethical Culture School where Felix Adler’s emendation of them were guiding tenets. Both Bethe and Oppenheimer had sought certain universal values.<sup>16</sup> Both became very much concerned with the self-shaping, volitional aspect of ethical conduct; both came to include contextual factors and culture-specific values and motives in making sense of themselves as moral agents. Thus, in a lecture delivered at the University of North Carolina in 1960, Oppenheimer asserted: “It was one thing to say, along the banks of the Sea of Galilee, ‘Love thy neighbor.’ It is a different thing to say it in today’s world. Not that it is less ‘true’; but it has a different meaning in terms of practice and in terms of what men can manage.”<sup>17</sup>

Oppenheimer could be called a relativist, for he was not sure that one could recognize a detached or valid perspective from which to judge the morality of other societies. In a letter in 1951 to George Kennan, who found it difficult to understand his sense of morality, Oppenheimer explained:

It is not in our judgment of ourselves or our own actions that I would reject moralism: it is rather in our attitude toward the behavior of other peoples. What I question is our ability to put ourselves, as a nation, in the place of these other peoples and decide what is right or wrong in the light of their standards and traditions, as they see them, or even in the eyes of the Almighty. I regard the behavior of other societies as something the morality of which I would prefer not to have to determine. I think it is our business to study that behavior attentively, to measure the intensity of the emotional forces behind it, and to take careful account of the potency of its influence on international affairs; but I feel we would do better not to attempt to classify it as “right” or “wrong”, praiseworthy or reprehensible. We Americans have enough, it seems to me, with our consciences and with the necessity, now upon us, to reconcile an individualistic tradition with the centralizing pressures of advanced technology. It is for this that we are accountable as a body politic, not for the decisions and solutions arrived by others. Let us conduct our policies in such a way that they are in keeping with our own character and tradition. This means, of course, that the moral element, as we feel it, must be present.<sup>18</sup>

Both men came to lead a life of personal inquiry in which the examination of who and what they were was at the same time an analysis of the limits that were imposed on them and an experiment to determine the possibility of going beyond them.

Both Bethe and Oppenheimer were conscious of the strong, moral influence of the social dimension of their scientific activities. They staunchly believed that, as scientists engaged in fundamental physics, they had assumed a privileged role—and a special responsibility—as members of a community can be described as committed to the Peircian vision; that is, a community committed to rationality—but not instrumental rationality—for which communication inheres in its very being, whose members believe in a basic ontology of the world and affirm that it is possible to decipher and ascribe order to the physical universe.<sup>19</sup>

On Foucault’s analysis, Bethe has remained more Kantian than Oppenheimer: intellectual and moral maturity is still to be achieved

through the exercise of criticism in its various modes, but the a priori has become historicized. Bethe's world is still premised on Enlightenment ideas of knowledge, reason, truth, progress, and he harbors strong hopes of universality for them.

Oppenheimer was more "modern" than Bethe, if we interpret being "modern" as referring to sensibility and style. Throughout his life, Oppenheimer was always sensitive to and conscious of style. Modern literature, as a sign of its modernity, at times makes itself exacting. Similarly, Oppenheimer, at times almost willfully, made himself difficult. He also resonated with modernism's "sympathy for the abyss." Irving Howe noted that

[modernist culture] strips man of his system of beliefs and his ideal claims, and then proposes the one uniquely modern style of salvation: a salvation by, of, and for the self. In the modernist culture, the object perceived seems always on the verge of being swallowed up by the perceiving agent, and the act of perception in danger of being exalted to the substance of reality. *I see, therefore I am.*<sup>20</sup>

The seeing extends to the mind's eye. *I see, therefore I am* is applicable to Oppenheimer, with an emphasis on both *I*, that is, the self, and on *see*, that is, on comprehending and grasping. For much of his life, *I am* did follow from the *I see* thus understood. Oppenheimer also fits being characterized as "modern" if we accept that what distinguishes modern sensibility from earlier sensibilities is that the modern thrives on moral problems and the former on metaphysical problems. Moral problems were always at the center of Oppenheimer's concerns—a legacy of his Jewish and Ethical Culture background.

Isaiah Berlin, in a perceptive essay on "Benjamin Disraeli, Karl Marx and the Search for Identity," commented that those who are born in the solid security of a settled society—as Bethe did—tend to have a stronger sense of social reality: "to see public life in reasonably just perspective, without the need to escape into political fantasy or romantic invention." Those who belong to minorities which are to some degree excluded from participation in the central life of their community—as Oppenheimer was by virtue of his Jewishness—"are liable to develop either exaggerated resentment of, or contempt for, the dominant majority, or else over-intense admiration or indeed worship for it, or at times, a combination of the two, which leads both to unusual insights and—born of overwrought sensibilities—a neurotic distortion of the facts."<sup>21</sup> Trying out different personas in an effort to see which fits best, assuming different roles to achieve centrality contributed to Oppenheimer's restlessness and prevented him

from achieving that noble calm that marks Bethe's disposition. He never found his proper place. What Isaiah Berlin said of late nineteenth century emancipated Jews in general applies to Oppenheimer in particular. According to Berlin, these Jews had lost the buttresses of the discipline of their faith and were facing a marvelous, dangerous, and unfriendly new world. Their "over-anxiety to enter into a heritage not obviously [their] own . . . [led] to [an] over-eager desire for immediate acceptance, [and to] hopes held out, then betrayed: to unrequited love, frustration, resentment, bitterness, although it also sharpens the perceptions, and, like the grit which rubs against an oyster, causes suffering from which pearls of genius sometime spring."<sup>22</sup>

Until his downfall, Oppenheimer was also "modern" in the Baudelerian sense. As a young man, in one of his many facets, Oppenheimer had groomed himself to grasp the "heroic" aspect of the present moment and had cultivated the will to "heroize" the present. After the war, I would suggest, there were also attempts by Oppenheimer to estheticize politics, so that at times political activities became "an ascetic elaboration of the self" worked out by a kind of Nietzschean *übermensch* in pursuit of his own desires.<sup>23</sup>

Oppenheimer was deeply conscious of the "discontinuity of time" in physics, in literature, in the arts, and in politics. In his lectures after the war, he often spoke of the break with tradition, of the feeling of novelty he was experiencing in the new world he was living in and of the vertigo brought about by the tempo of change.<sup>24</sup> I would characterize him as almost "postmodern" during the last decade of his life. He then saw modernism as a localized, historically contingent state of consciousness,<sup>25</sup> and became "very suspicious of statements that refer to totality and completeness" and to the eternal and the immutable: "Only a malignant end can follow the systematic belief that all communities are one community; that all truth is one truth; that all experience is compatible with all other; that total knowledge is possible; that all that is potential can exist as actual."<sup>26</sup> He likewise became very distrustful of order, "which is hierarchical in the sense that it says that some things are more important than others—that some things are so important that you can derive everything else from them."<sup>27</sup> As far as science was concerned, "No part of science follows, really from any other in any usable form. I suppose nothing in chemistry or in biology is in any kind of contradiction with the laws of physics, but they are not branches of physics. One is dealing with a wholly different order of nature."<sup>28</sup> He believed that no theory in science is ever closed or finished: "Science is always limited, and is in a profound way unmetaphysical, in that it necessarily bases itself upon the broad

ground of common human experience, tries to refine it within narrow areas where progress seems possible and exploration fruitful. Science is novelty and change. When it closes it dies.<sup>29</sup> And he was contemptuous of the claim of the logical positivists that only within the context of the natural sciences can one speak of truth: “They limit very much the meaning and the scope of what it is worth talking about; and they pre-empt the word ‘truth’ rather harshly for the content of the sciences. That need not bother us. One does not have to insist that the poet speaks of truth; he does sometimes; most of the time he is doing something equally, perhaps more important. He speaks meanings, and he speaks order.”<sup>30</sup>

While nurturing his various talents and proclivities, but conscious of his fracturedness, Oppenheimer yearned for wholeness and a more integrated self. In 1930 he wrote his brother, Frank, of his longing for maturity: “In mature people there comes to be more and more of a certain unity, which makes it possible to recognize a man in his most diverse operations, a kind of specific personal stamp, which characterizes not so much the what as the hows of a man’s business.<sup>31</sup> One could portray the *young* Oppenheimer in terms of Baudelaire’s depiction of the “modern” painter Constantin Guys:

Be very sure that this man, such as I have depicted him—this solitary, gifted with an active imagination, ceaselessly journeying across the great human desert—has an aim loftier than that of the mere *flaneur*, an aim more general, something other than the fugitive pleasure of circumstance. He is looking for that quality which you must allow me to call “modernity”; for I know of no better word to express the idea I have in mind. He makes it his business to extract from fashion whatever element it may contain of poetry within history, to distill the eternal from the transitory.<sup>32</sup>

How to find the elements of poetry within history, how not to be reduced to mere history, how not to be a rebel yet fix a limit to history<sup>33</sup>—these are the questions that delineate some of Oppenheimer’s struggles with himself. And perhaps Nietzsche’s insight provides a partial answer as to why Oppenheimer never resolved his internal conflicts:

One who cannot leave himself behind on the threshold of the moment and forget the past, who cannot stand on a single point, like a goddess of victory, without fear or giddiness, will never know what happiness is; and worse still, will never do anything to make others happy. The extreme case would be the

man without any power to forget who is condemned to see “becoming” everywhere. Such a man no longer believes in himself or his own existence; he sees everything fly past in an eternal succession and loses himself in the stream of becoming. At last, like the logical disciple of Heraclitus, he will hardly dare to raise his finger.<sup>34</sup>

One might characterize Oppenheimer until 1936—when he met Jean Tatlock<sup>35</sup> and also became politically engaged—as a “dandy” in the Baudelairean usage of that word.<sup>36</sup> For Baudelaire, “dandy” implied “a quintessence of character and a subtle understanding of the entire moral mechanism of the world; with another part of his nature, however, the dandy aspires to insensitivity.” The desire for insensitivity for Oppenheimer was complex. On the one hand, it stemmed from his hypersensitivity; and on the other, from a need to assert his superiority. In 1929, Oppenheimer had written to his brother, Frank, that “it is not easy for me—to be quite free of the desire to browbeat somebody or something.”<sup>37</sup> He still was not free of this trait after the war, though, interestingly, it was not in evidence during the Los Alamos years.<sup>38</sup> Abraham Pais, who was his colleague at the Institute for Advanced Study, commented that Oppenheimer would anger him at times “by his arrogance if not cruelty when a young academic would not clarify or miss a point, cutting him down with unnecessary biting comments.”<sup>39</sup>

How to control all his conflicting feelings as well as his prodigious talents had led him already as a young man to confront various forms of obedience. In 1932, in a letter to his brother, Frank, he described the virtue of discipline:

I believe that through discipline, though not through discipline alone, we can achieve serenity, and a certain small but precious measure of freedom from the accidents of incarnation, and charity, and that detachment which preserves the world which it renounces. . . . But because I believe that the reward of discipline is greater than its immediate objective, I would not have you think that discipline without objective is possible: in its nature discipline involves the subjection of the soul to some perhaps minor end; and that end must be real, if the discipline is not to become factitious. Therefore I think that all things which evoke discipline: study, and our duties to men and to the commonwealth, war, and personal hardship, and even the need for subsistence, ought to be greeted by us with profound gratitude; for only through them can we attain to the least detachment; and only so can we know peace.<sup>40</sup>





and in so doing epitomizes its central idea: that rebellion necessarily entails, because of God's justice and mercy, atonement."<sup>47</sup>

The poem's grip on Oppenheimer might indeed have been that it addresses the issue of sin and expiation. With his act of defiance, the building of the atomic bomb, he had eaten of the tree of knowledge. How to atone for the blood on his hand caused by its use became an obsession with Oppenheimer.<sup>48</sup> His apathetic stand at his trial in 1953 probably in part reflected his need to do penance. In 1957, when he read the poem to the students, its theme of despair, discipline, and rebellion clearly still resonated with his inner concerns, but his sensitivity to its message perhaps admits a somewhat less Christian interpretation—though the fact that Oppenheimer should identify so deeply with a poem that is Christian at its core should be noted. The Christian God who can only reveal himself by becoming human, is a God for whom no mediation is possible. According to Christian theology, the moral disorder entailed by Adam and Eve's rebellion of eating the fruit of the tree of knowledge could only be overcome by Christ's sacrifice and his gift of *caritas*. But for Oppenheimer, the chaos and moral disorder entailed by the new knowledge—that of the atomic and nuclear world, that of the new biological world—could only be overcome by “what companionship and intercourse and an open mind can do. . . . [For t]he greatest relief and opening is comradeship, and that ability to learn from others of what their world is like.” Salvation lies in tolerance and in reverence for knowledge and skill. Oppenheimer counseled the students: “If you have learned how to be something, how to be a competent professional, you will know a great deal about what is good in the world. You will have a bond in common with every other man who is a scholar or a scientist.” Note that on leaving Los Alamos in 1945 he had characterized as the deepest bond “the common bond with other men everywhere.” In his address to the students in 1957 he was content with less, namely with establishing “a bond in common with every other man who is a scholar or scientist.”

It was part of Oppenheimer's tragedy that, after World War II, he felt that he no longer was a creative scientist and that he therefore had lost part of his “anchor in honesty,” and hence integrity. George Kennan, who got to know Oppenheimer after the war<sup>49</sup> and became his colleague at the Institute in 1951, made some of the most insightful observations of Oppenheimer's personality. Kennan described Oppenheimer

as in some ways very young, in others very old; part scientist,  
part poet; sometimes proud, sometimes humble; in some ways

formidably competent in practical matters, in other ways woe-fully helpless: . . . a bundle of marvelous contradictions. . . . His mind was one of wholly exceptional power, subtlety, and speed of reaction. . . . The shattering quickness and critical power of his own mind made him . . . impatient of the ponderous, the obvious, and the platitudinous, in the discourse of others. But underneath this edgy impatience there lay one of the most sentimental of natures, an enormous thirst for friendship and affection, and a touching belief . . . in what he thought should be the fraternity of advanced scholarship . . . [a belief that] intellectual friendship was the deepest and finest form of friendship among men; and his attitude towards those whose intellectual qualities he most admired . . . was one of deep, humble devotion and solicitude.<sup>50</sup>

The greatest tragedy of Oppenheimer's life was not the ordeal he went through over the issue of his loyalty, but his failure to make the Institute for Advanced Study a true intellectual community. As Kennan noted, Oppenheimer was often discouraged, and in the end deeply disillusioned, by the fact that

the members of the faculty of the Institute were often not able to bring to each other, as a concomitant of the respect they entertained for each other's scholarly attainments, the sort of affection, and almost reverence, which he himself thought these qualities ought naturally to command. His fondest dream had been [Kennan thought] one of a certain rich and harmonious fellowship of the mind. He had hoped to create this at the Institute for Advanced Study; and it did come into being, to a certain extent, within the individual disciplines. But very little could be created from discipline to discipline; and the fact that this was so—the fact that mathematicians and historians continued to seek their own tables in the cafeteria, and that he himself remained so largely alone in his ability to bridge in a single inner world those wholly disparate workings of the human intellect—this was for him [Kennan was sure] a source of profound bewilderment and disappointment.<sup>51</sup>

Bethe has been more modest. Furthermore, Bethe never stopped doing physics, never ceased “preserving his competence and mastery of his profession”<sup>52</sup> and therefore never lost his anchor in integrity. To the present, he works every day on physics. His scope may have narrowed, but he has maintained full mastery of that terrain. And at Cornell he created an intellectual and social community within the

Laboratory of Nuclear Studies that gave him a warm and harmonious fellowship—of the mind and of the heart.

Baudelaire captured something of Bethe's genius. Baudelaire interpreted genius "as nothing more than nor less than childhood recovered at will" and characterized a genius as "a person for whom no aspect of life has become *stale*. . . . [He is] a master of that only too difficult art—sensitive spirits will understand me—of being sincere without being absurd."<sup>53</sup>