

## **The Story of O from Giotto to Einstein (Excerpt)**

"The Story of O from Giotto to Einstein (Excerpt)," *Bildwelten des Wissens. Kunsthistorisches Jahrbuch für Bildkritik*, I, 2, 2003, 37-43

Updated English version (unpublished) 2014

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## THE STORY OF O FROM GIOTTO TO EINSTEIN (Excerpt\*)

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Vasari in his *Life of Giotto*, gives the following account of the origin of his great work at St. Peter's:

. . . the work brought Giotto such renown in that city and elsewhere, that Pope Benedict IX (*recte* Boniface VIII), who was proposing to decorate St. Peter's with some paintings, sent a courtier from Trevisi to Tuscany, to see what manner of man Giotto was, and the nature of his work. On the way the courtier learned that there were other excellent masters in painting and mosaic in Florence, and he interviewed a number of artists at Siena. When he had received designs from these, he proceeded to Florence. Entering Giotto's shop one morning, as he was at work, the envoy explained to him the Pope's intention, and the manner in which he wished to make use of his work, and finally asked Giotto for some small drawing to send to His Holiness. Giotto, who was always courteous, took a sheet of paper and a brush dipped in red, pressed his arm to his side to make a compass of it, and then, with a turn of his hand, produced a circle so perfect in every particular that it was a marvel to see. This done, he turned smiling to the courtier and said: 'Here is the drawing.' The latter, who thought he was being mocked, said: 'Am I to have no other design but this?' It is enough and more than enough,' replied Giotto; 'send it in with the others and you will see if it obtains recognition.' The messenger perceived that he would get nothing else, and left in a state of considerable dissatisfaction, imagining that he had been laughed at. However, when he sent in the other designs with the names of their authors, he included that of Giotto, and related how the artist had executed it without moving his arm and without compasses. From this the Pope and many of the well-informed courtiers recognized to what an extent Giotto surpassed all the other painters of the time in excellence. When the story became public it gave rise to a saying which is still used for people of dull wits: 'You are more simple (*tondo*) than Giotto's O.' This proverb deserves to be considered a good one, not only from the circumstances out of which it arose, but much more for its meaning, which is due to the twofold significance of the word *tondo* in Tuscany, that of a perfect circle, and slowness and heaviness of mind.<sup>1</sup>

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\* Excerpted from an essay that formed part of my Mellon lecture series at the National Gallery of Art, Washington, in April 2004. First presented at a symposium honoring Christoph Frommel at the Bibliotheca Hertziana, Rome, October 2001.

I want to perform what the Italians call a *salto mortale* from early fourteenth century Florence to twentieth century Vienna, where the O that Giotto drew to represent the all-encompassing capacity of his art reappeared, at least so I believe, in a radically new and different context. The leap is not quite so risky as it might seem because if the connection I want to make succeeds, Rembrandt will provide the safety net. In January 1921 there took place in Vienna an amazing and famous event. Albert Einstein, who was by then probably the most glamorous man on earth—more so, I bet, than Rudolf Valentino himself, visited Vienna to give three lectures on his theory of relativity. Part of the glamour of Einstein, like that of Valentino, was the Romantic air of mystery that surrounded him—in Einstein's case for two main reasons: one was that he had

<sup>1</sup> Gaunt, William, ed., *The Lives of the Painters, Sculptors, and Architects*, 4 vols, London, New York, 1963, vol. 4, 71f.

acquistò . . . tanta fama, che Papa Benedetto IX [Boniface VIII] da Trevisi mandasse in Toscana un suo cortigiano a vedere che uomo fusse Giotto e quali fossero l'opere sue, avendo disegnato far in S. Piero alcune pitture. Il quale cortigiano, venendo per veder Giotto et intendere che altri maestri fussero in Firenze eccellenti nella pittura e nel musaico, parlò in Siena a molti maestri. Poi, avuto disegni da loro, venne a Firenze et andato una mattina in bottega di Giotto che lavorava, gl'espose la mente del Papa et in che modo si voleva valere dell'opera sua et in ultimo gli chiese un poco di disegno per mandarlo a Sua Santità. Giotto, che garbatissimo era, prese un foglio et in quello con un pennello tinto di rosso, fermato il braccio al fianco per farne compasso e girato la mano, fece un tondo sì pari di sesto e di profilo che fu a vederlo una meraviglia. Ciò fatto, ghignando disse al cortigiano: «Eccovi il disegno». Colui, come beffato, disse: «Ho io a avere altro disegno che questo?». «Assai e pur troppo è questo, - rispose Giotto - mandatelo insieme con gl'altri e vedrete se sarà conosciuto ». Il mandato, vedendo non potere altro avere, si partì da lui assai male soddisfatto, dubitando non essere uc[c]ellato. Tuttavia, mandando al Papa gl'altri disegni et i nomi di chi gli aveva fatti, mandò anco quel di Giotto, raccontando il modo che aveva tenuto nel fare il suo tondo senza muovere il braccio e senza seste. Onde il Papa e molti cortigiani intendenti conobbero per ciò quanto Giotto avanzasse d'eccellenza tutti gl'altri pittori del suo tempo. Divolgatasi poi questa cosa, ne nacque il proverbio che ancora è in uso dirsi agl'uomini di grossa pasta: Tu sei più tondo che l'O di Giotto. Il qual proverbio non solo per lo caso donde nacque si può dir bello, ma molto più per lo suo significato, che consiste nell'ambiguo, pigliandosi tondo in Toscana, oltre alla figura circolare perfetta, per tardità e grossezza d'ingegno.

*Giorgio Vasari. Le vite*, a cura di Rosanna Bettarini e Paola Barocchi, Firenze, 1966, vol. 1, Testo, 103f.

propounded a revolutionary theory about the universe, which, it was said, only a bare handful of people in the world could understand. The second was that not long before observable, objective evidence had been found that demonstrated that his theory was actually true! The visit itself became famous because the wife of the distinguished physicist in whose house Einstein stayed, recalled that he had forgotten his bedroom slippers and only brought one white collar, both of which she went to the store and bought for him. He had brought a change of trousers, both of which were wrinkled so she had one pair pressed for him to wear at the great occasion. The first two lectures, on January 10 and 11, were very technical and took place at the university at the invitation of Einstein's good friend and colleague Felix Ehrenhaft. The third lecture was at the invitation of the prestigious association of science lovers, the Urania, and took place on January 13 in an auditorium ordinarily reserved for public performances. The auditorium's 3000 seats were filled to more than capacity. When he came to the lecture Einstein was wearing the dirty collar and the wrinkled pair of trousers, and he was too frightened to go to the lectern unless his friend accompanied him. The lecture itself became famous for two reasons reported by those who heard it. No one in the room understood anything of what he was saying; and he delivered the lecture in such a monotone, without emphasis or modulation of any kind and finally simply walked away from the lectern without a word of conclusion. Only after the speaker failed to reappear did the audience realize that the lecture was over, whereupon they applauded politely and went home. I have so far been unable to learn the actual content of this "popular" presentation, except that unlike the specialized papers at the university, the Urania lecture was about the general theory of relativity.

The lectures were commemorated in an etched portrait of Einstein executed in 1921 by the Viennese painter and graphic artist Ferdinand Schmutzer (**Figs. 1, 2**). Largely forgotten today, Schmutzer was one of the most successful portraitists of the day, recording many of the important figures of the city, especially intellectuals, and many Germans, including the Emperor himself. Einstein is shown as if he were giving a lecture, with lightly sketch drawings on the blackboard behind him, including mainly a large circle and an ellipse. Let me say at once that this striking recollection of Rembrandt and the graphic tradition stemming from Giotto's O that lay behind him (**Fig. 3**), was by no means fortuitous. It is evident from every other aspect of the portrait of Einstein itself, and from every aspect of Schmutzer's work generally, that he was a

profound, life-long student of Rembrandt, especially his portraiture. Without the example of Rembrandt's self-portrait at Kenwood, the portrait Schmutzer made of himself in 1907, at work in his studio with a large circle drawn on the back wall, is inconceivable (**Fig. 4**).

All this seems obvious, at least to me. What I want to consider, however, is the nature and content of Schmutzer's image, which I seriously doubt is a record of what took place at any of Einstein's lectures. In the numerous but admittedly scant accounts of the Urania event, no mention is made of Einstein illustrating his talk in any way; one journalist reported that he stood before a blackboard with chalk in hand, but never used it! On the contrary, from what we are told of his lecture style on that occasion, it seems very unlikely that he made any rhetorical gesture at all, visual or verbal. The most important evidence I have found for Schmutzer's creative process in this case suggests to me, at least, that he was one of those few who did come to understand the three basic points on which the proof of Einstein's reformulation of the universe was based. During Einstein's visit Schmutzer took, so far as I have been able to determine, a total of fifteen photographs of him. Nine of these are in a formal portrait mode: Einstein standing, rather dapper in his overcoat and hat, wearing what looks to be a clean collar, looking at the camera (**Fig. 5**); Einstein seated, coatless and hatless, gazing variously at the camera or wistfully into the distance (**Fig. 6**). The other six photographs, doubtless taken on the same occasion and no less obviously staged, show Einstein as if delivering a talk and were clearly made in preparation for the etching. Einstein stands holding a stick of chalk in his right hand, looking variously toward and away from the camera; on a slate behind him are boldly and distinctly drawn two of the features that reappear more sketchily in the etching, the circle and the  $Kt$  coordinates. In five of these images Einstein's left hand is not visible, either cut off by the frame at the bottom and right or stuck in his pocket; and the drawings on the slate are partially cut off by the frame at the left (**Fig. 7**). In the sixth photograph of this group Einstein still stands with the chalk in his right hand, looking toward the camera, his left hand now resting on a table placed before him; the drawings on the slate behind are fully visible (**Figs. 8, 9**). The etching does not follow any one of these preparatory photographic studies, but incorporates elements from several: the drawings are visible, the left hand returns to the pocket, and the table becomes a desk with a paper-strewn still life.

Evidently, Schmutzer conceived the event not as a formal public discourse, as took place at the Urania, but as an informal classroom lecture, as took place at the University. On the other hand, the markings on the blackboard are not depictions of the natural phenomena Einstein's theories explained, such as might have been appropriate for a general audience, nor the mathematical calculations he would have presented to his professional colleagues. I have so far found no record of the meeting between Einstein and Schmutzer or of what must have been a very interesting photography séance in the artist's studio. Although one may well suppose that Einstein suggested, or at least approved of the carefully executed drawings, the sure and practiced hand was no doubt Schmutzer's. In the etching executed after Einstein's visit, in addition to reversing them, Schmutzer changed them fundamentally (**Figs. 10, 11**). A diagonal ellipse with a longitudinal axis was added above and a smaller coordinate scale was added beside the first. And the circle has now acquired a series of radiant marks along the upper quadrant of the left rim; these make it quite clear that the reference is to the stupendous observations made by Arthur Eddington and his colleagues on twin expeditions to Principe Island off the coast of West Africa and to Sobral in northern Brazil in 1919 to test the theory by studying an eclipse of the sun. The observations showed that, as Einstein predicted, rays of light were indeed bent by the force of gravity—reported immediately around the world, proof number one that the theory was right.

But rather than go on myself about things I do not really understand, I reproduce a note I received from a physicist colleague of mine, one of the successors to Einstein at the Institute for Advanced Study, after I showed him a rather poor photocopy of the etching and convinced him to take the sketches seriously.

E-MAIL FROM STEVE ADLER, MONDAY 13 AUGUST 2001:

Dear Irving,

Just to recapitulate some of what we talked about.

1. Two elements of the picture - the ellipse, and the circle, seem to refer to general relativity. The perihelion precession of Mercury is discussed on page 253, 255 of Pais's book "Subtle is the Lord". In November, 1915 Einstein wrote a paper showing that his new theory of general relativity explained the precession of the elliptical orbit of Mercury, which had been a mystery for more the sixty years.

(Precession means that the major axis of the ellipse rotates very slowly in direction, rather than being fixed as would be predicted by Newtonian theory.)

In the same paper, he predicted the bending of starlight near the limb of the sun, getting a value twice what he had obtained earlier. On pages 303-306 Pais describes how Einstein became a world celebrity after the eclipse experiment in the fall of 1919 confirmed the starlight bending prediction. Thus, by the time of your print in 1921, Einstein's successes in general relativity were well-known to the world at large. (Einstein received the 1921 Nobel Prize, but this was announced only on Nov. 9, 1922, presumably after the date of your print.)

2. The two sets of axes may well refer to special relativity. Einstein's famous June 1905 paper is reprinted in English translation in a little Dover Press Book entitled "the Principle of Relativity". The paper, entitled "On the Electrodynamics of Moving Bodies," is his first exposition of special relativity. In the paper (see page 43 of the reprint) he talks about transformations between a moving system ( $k$ ) and a stationary system of axes ( $K$ ). (He uses  $x, y, z, t$  to label the three spatial coordinates and time, as usual. In the German version coordinate system is Koordinatensystem - hence the  $K$ .) So that would suggest that the right angled axis set, with the  $k$  (or  $K$ ) near it, is a reference to his special relativity theory. (I'm amazed - I didn't expect to find the  $k/K$ !)

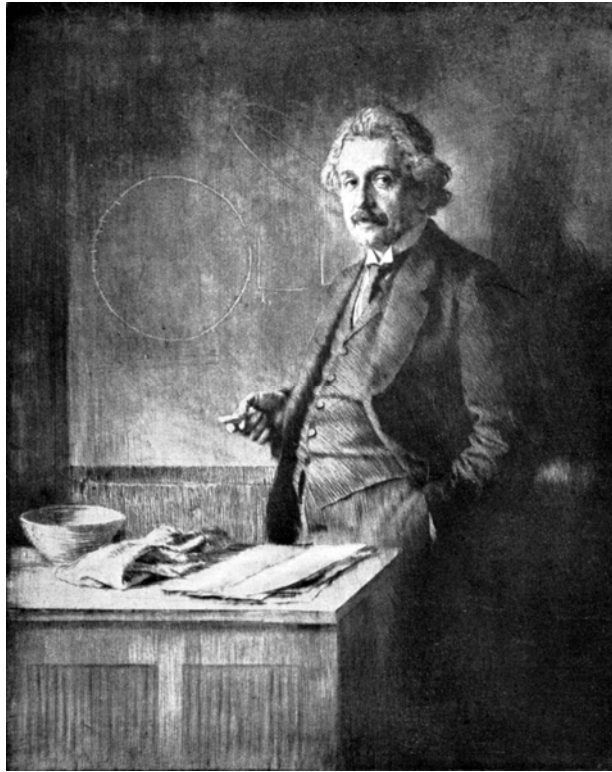
I'll send you Xerox copies of the things I've quoted. If you want to see the books, Layla Wieczorek in Bldg. D can get them for you from my office; I'll leave them on the table in front of the couch in my office. The original German is in an issue of Annalen der Physik which Momota Ganguli keeps in her office.

Best Steve

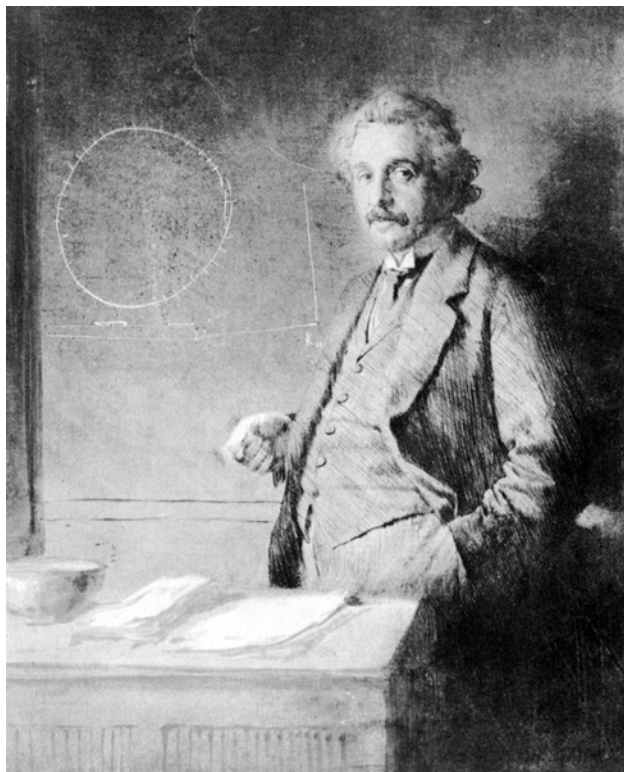
In the revisions he made to the simple diagrams on the back wall, Schmutzer succeeded in combining in one image references to General and Special Relativity, and the peculiar acceleration of the precession of the perihelion of the orbit of Mercury, i.e., the two main points of relativity and the two proofs: the bending of light and the precession of Mercury. It is interesting to note, finally, that the etched portrait of Einstein went through no less than six states, of which I have obtained reproductions of the first (**Figs. 2, 10**) and the last (**Figs. 1, 9**). The designs on the back wall remain throughout, but one of the main changes in the sequence of etchings is that the drawings, now scientifically more meaningful, become more regular and distinct, more geometrically "correct," as in the less comprehensive figures in the photographs that evidently preceded the lectures (**Figs. 7, 8, 9**). One might say that here, almost exactly six

centuries later, the perfect, all encompassing universe Giotto envisaged with his O, met its match.





**Fig. 1** Ferdinand Schmutzer, Portrait of Einstein, right hand holding stick of chalk, left hand in pocket. Etching, sixth state (after Arpad Weixlgärtner, *Das radierte Werk von Ferdinand Schmutzer*, Vienna, 1922, pl. 237).



**Fig. 2** Ferdinand Schmutzer, Portrait of Einstein, right hand holding stick of chalk, left hand in pocket. Etching, artist's proof (after Christian Ludwig Martin, *Ferdinand Schmutzer. Der Radierer und Maler*, Vienna, 1958, pl. 35).

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Fig. 3 Rembrandt, Self-portrait, ca. 1660. Kenwood House, London

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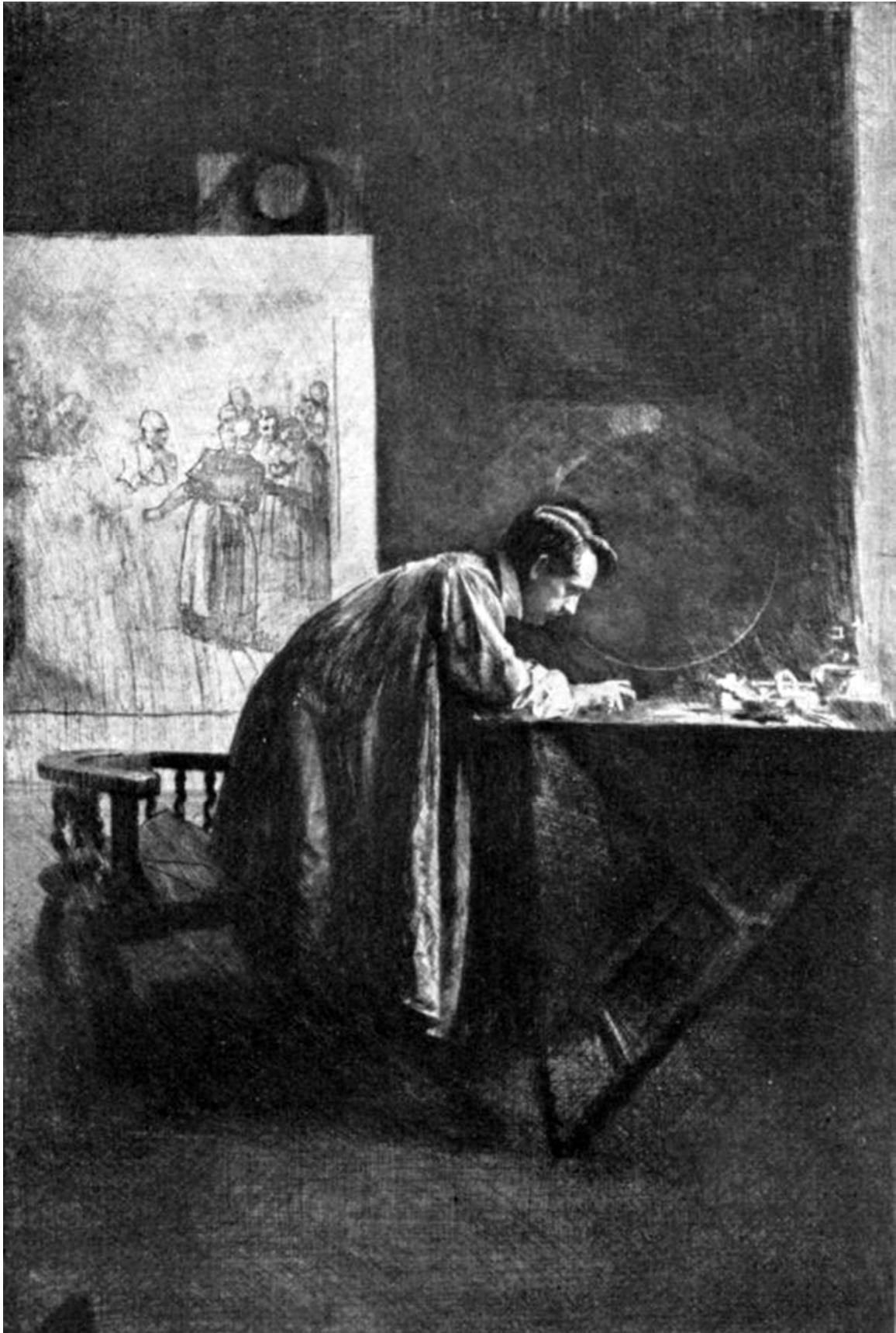


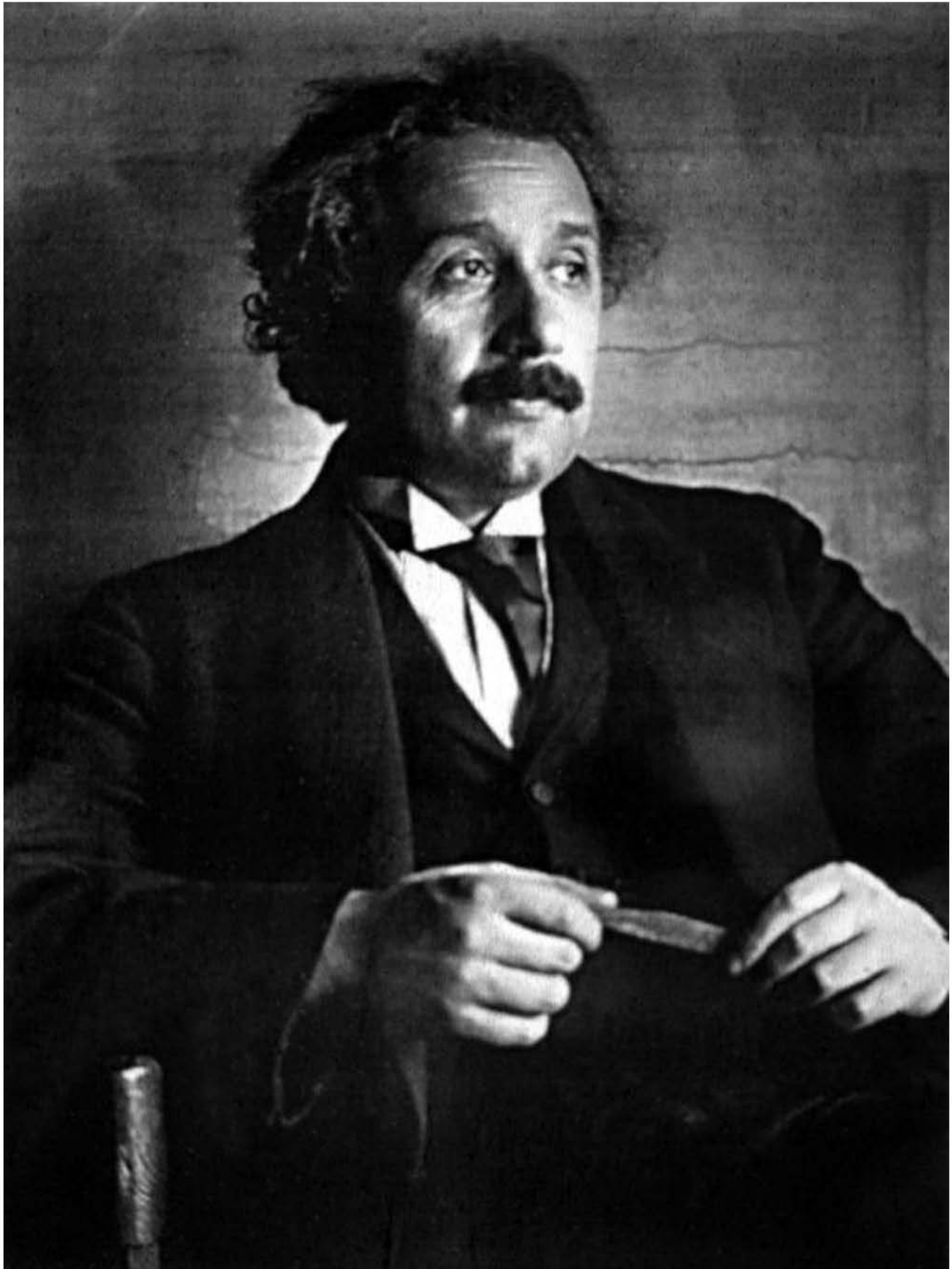
Fig. 4 Ferdinand Schmutzer, Self-portrait. Etching (after Weixlgärtner pl. 10).

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Fig. 5 Ferdinand Schmutzer, photograph of Einstein wearing hat and overcoat.

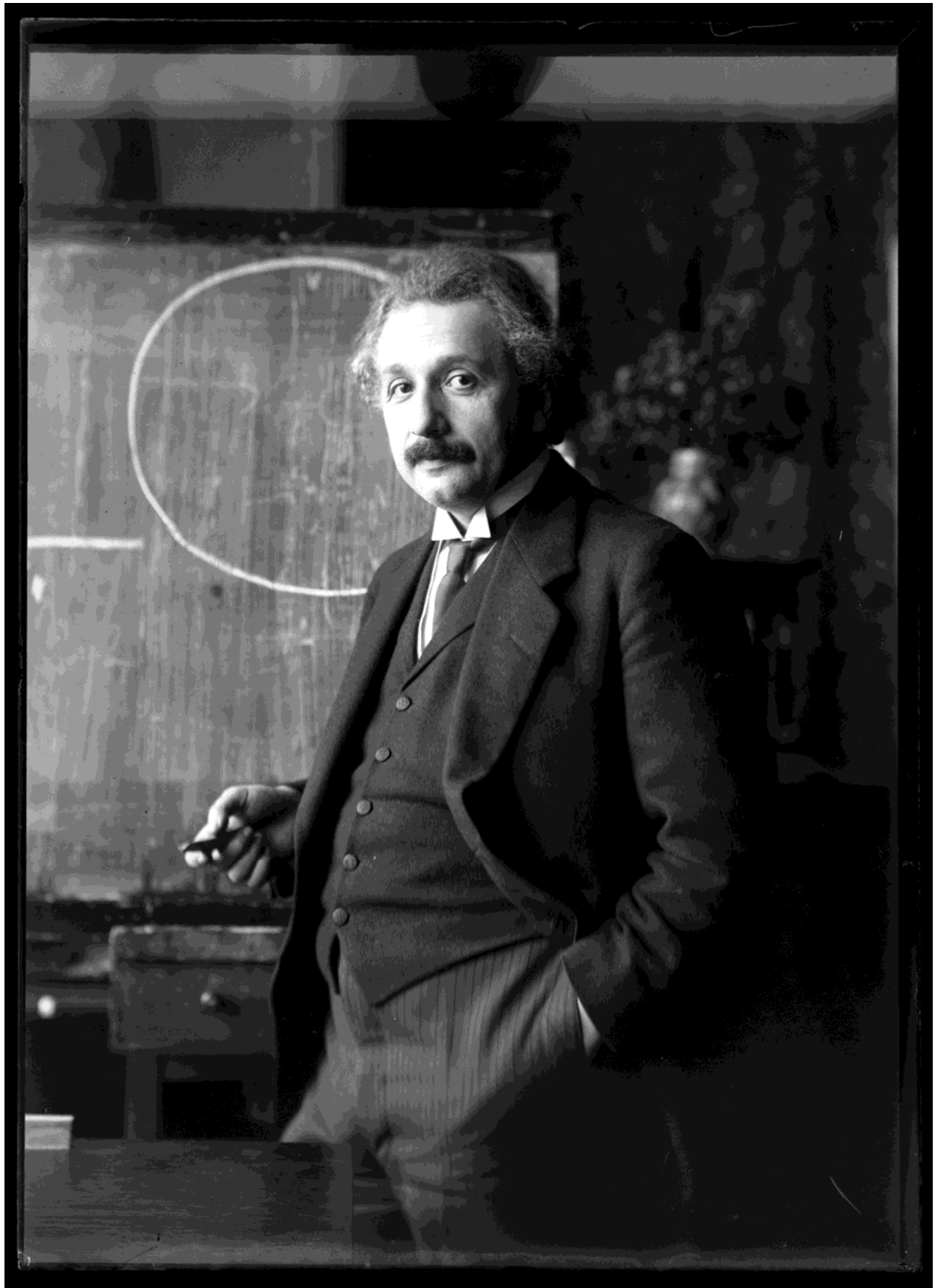
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**Fig. 6** Ferdinand Schmutzer, photograph of Einstein seated holding stick of chalk.

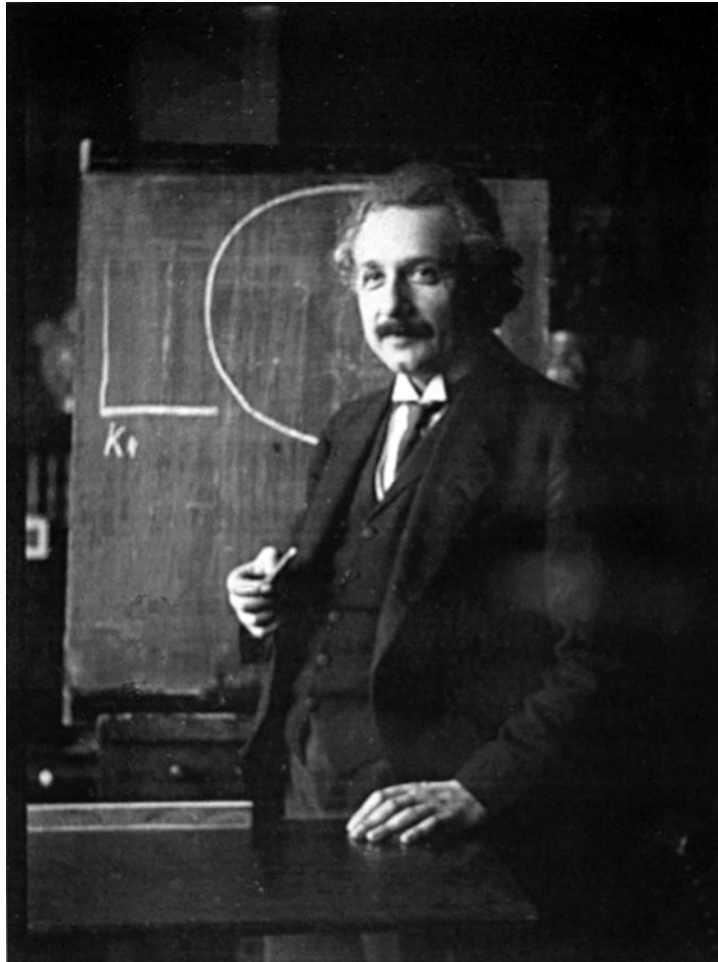
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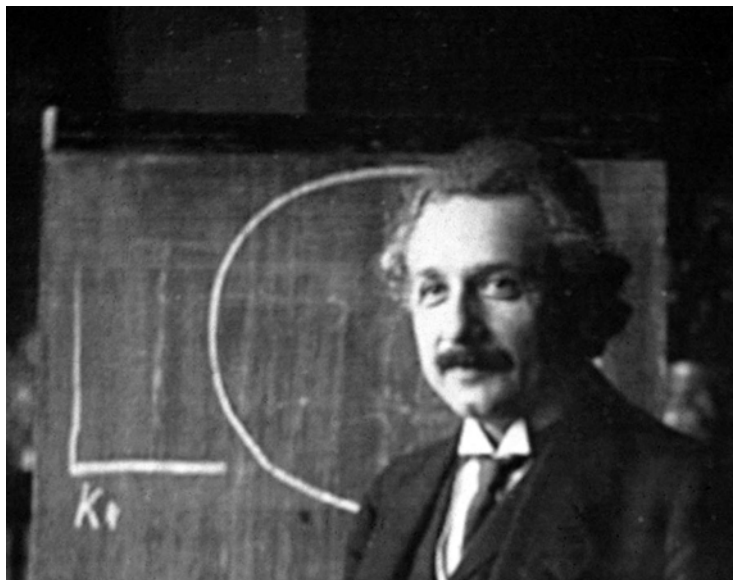


**Fig. 7** Ferdinand Schmutzer, photograph of Einstein standing before blackboard, right hand holding stick of chalk, left hand in pocket.

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**Fig. 8** Ferdinand Schmutzer, photograph of Einstein standing before blackboard, right hand holding stick of chalk, left hand on tabletop.



**Fig. 9** Ferdinand Schmutzer, detail of Fig. 8.

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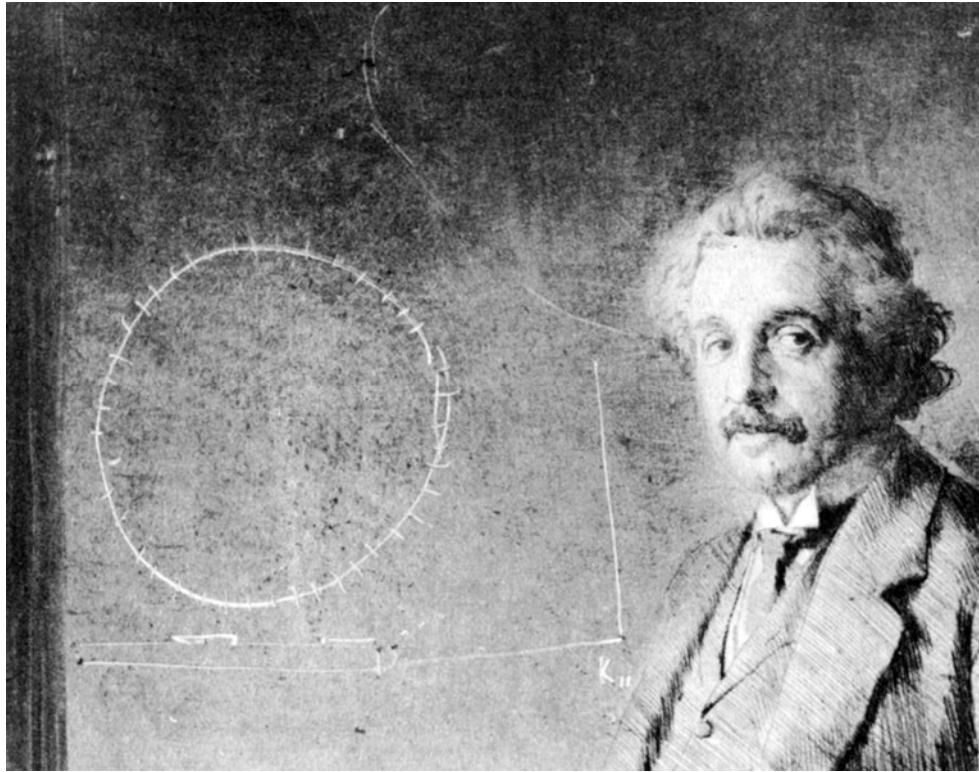


Fig. 10 Ferdinand Schmutzer, Portrait of Einstein. Etching, artist's proof, detail of Fig. 2 (after Martin)

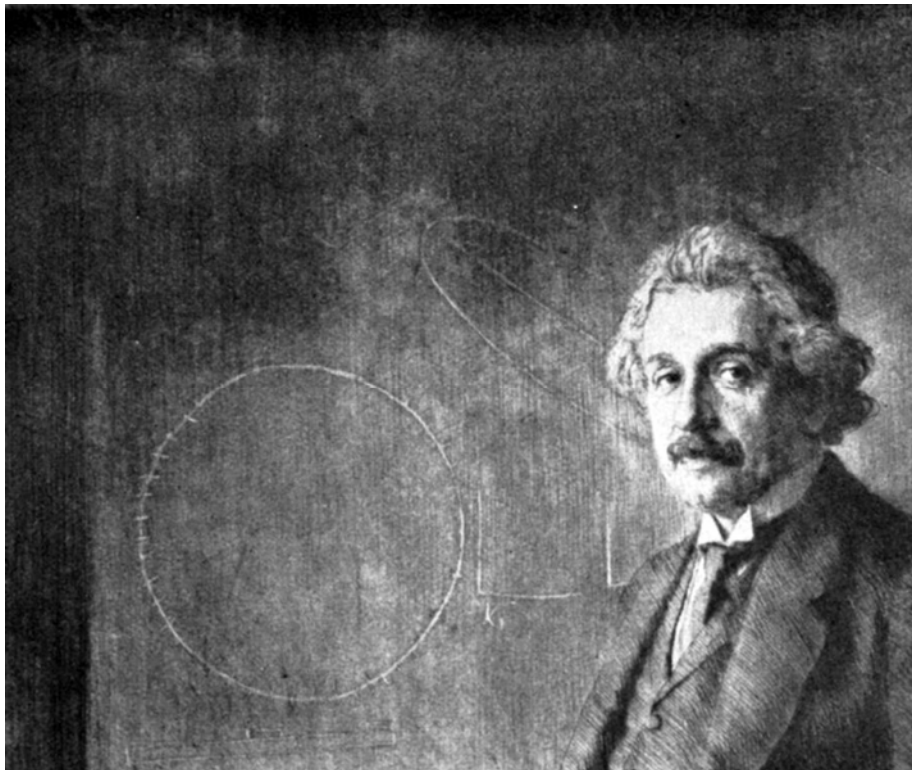


Fig. 11 Ferdinand Schmutzer, Portrait of Einstein. Etching, sixth state, detail of Fig. 1 (after Weixlgärtner)