Musil's Imaginary Bridge

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Introduction

If it is true that Musil wrote *Törleß* "out of boredom"[1]—after abandoning a career in the army, earning a degree in mechanical engineering, completing a year of compulsory military service, taking up a job as a research assistant at Stuttgart's Technical University, and patenting an ingenious chromatometer just for the purpose of earning the financial security necessary to "buy freedom"[2], quit the job, and go back to school to study philosophy and psychology—it is hard to see any sign of it. In many ways, it *could* have been a mundane exercise in genre writing, and of a genre that in central Europe had been popular for almost two decades when *Die Verwirrungen des Zöglings Törleß* appeared in 1906. The setting wasn't that original, either. The military academies that came out of the reform of the education system of the *keislerich und königlich* monarchy provided a common milieu for this sort of *Bildungsroman*. Even Rilke had just published 'Die Turnstunde'[3]—and Rilke's story reflects his traumatic experience at the very same boarding school where Musil spent the three miserable years that inspired *Törleß*: the infamous senior academy in Mährisch-Weißkirchen, the real-world W., the "a–hole of the Devil".[4] Nonetheless, Musil's debut novel was not just an exercise in the genre. And it was not self-admiration that led literary critic Alfred Kerr

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[1] 'Vermächtnis II' (1932), in Musil [1978], p. 954.

[2] Notebook 24 (1904–1905), in Musil [1976], vol. 1, p. 115 [Eng. trans., p. 72]. On the chromatometer, see 'Der Variationskreisel nach Musil' (1927), in Musil [1978], p. 944. Apparently, the device was manufactured from 1907 to 1921 and used for perceptual and physical experiments in most European psychological research laboratories (see Hickman [1992], p. 100). It did not, however, bring the financial security Musil was hoping for.

[3] Rilke [1902].

[4] Notebook 33 (1937–1941ca.), in Musil [1976], vol. 1, p. 953 [Eng. trans., p. 469]. 'W.' is the name used by Musil for Törless's boarding school.

(who had helped Musil with the final revisions and patronized the publication) to write a six-column glowing review in *Der Tag* describing the novel as a "masterful" and psychologically sophisticated disclosure of Musil's "literary vocation".[5] The vocation was there and one could see its imprint on every page, regardless of Musil's lingering misgivings about his own talent and regardless of how bored he might have been with his life as a mechanical engineering. After all, he *had* meanwhile gone to Berlin to study philosophy and psychology and would soon complete his doctorate, but when Meinong offered him an attractive research assistantship at the University of Graz, at the end of 1908, Musil decided to turn it down to focus on his literary projects: "My love for artistic literature is no less than my love for science", he explained politely.[6]

Exactly what kind of love and literary vocation was driving the young engineer-psychologist-philosopher is, of course, a different question. In his first, unsuccessful efforts to find a publisher, Musil tried to explain that his manuscript was "struggling towards a new way of writing",[7] but that doesn't help much. The plot itself is rather meager, the focus being entirely on the *inner* responses of young Törless (we are never told his first name and exact age) to a collage of more or less distressing events and experiences: a classmate being caught thieving money; the blackmailing and vicious punishments to which the thief is subjected (including physical, psychological, and sexual abuse); homosexual and heterosexual experiences, the latter with an aging and degraded local prostitute; the constant struggle between visceral and intellectual impulses, and between the darkness of internal turmoil and the urge for restored comprehensible order; the inability to accept the web of values and prejudices in which the grownups have spun themselves up; and more. All of this made *Törleß* a perfect candidate for a *Bildungsroman* at the twilight of 19th century certainties. Yet Musil was worried that "the good, tolerant, literary audience" would be disappointed and would complain that "the novel falls short of developing its bold but rather promising theme"[8] (a complaint that will eventually erupt in the early responses to *Der Mann ohne Eigenschaften*). More important, however, is the fact that he was worried his readers would just not get it. "[T]hey will find things 'that do not even belong in a novel'. An excursus on irrational numbers, etc."[9] At least, this is *one* important fact vis-à-

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[5] Kerr [1906], p. 240.

[6] Letter to Alexius Meinong (1/18/1909), in Musil [1981], vol. 1, p. 63.

[7] Letter to a Publisher (3/22/1905 or later), in Musil [1981], vol. 1, p. 14. (Several publishers turned down the manuscript before it came into the hands of Alfred Kerr.)

[8] Letter to Stefanie Tyrka (3/22/1905), in Musil [1981], vol. 1, p. 12.

[9] *Ibid.*, p. 13.

vis the general question of Musil's emerging literary vocation. And it is this very worry that interests me here. Why, indeed, that odd mathematical excursus in the middle of everything? What is it about and what purpose does it serve? What does it tell us about Törless? What does it tell us about Musil?

An Excursus on Imaginary Numbers

The excursus takes place right in the middle of the story, after one more description of the sort of brutal humiliation to which Basini, the pupil who had been caught stealing, was subjected by Törless and his two comrades, Beineberg and Reiting. In fact, the previous chapter ended with Törless giving signs of repentance, or rather unease. The scene sickened him, and he leaned back into the darkness, feeling shame for having delivered up the idea that led to it. The new chapter begins with an abrupt change of colors:

> During the mathematics period Törless was suddenly struck by an idea.
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> For some days past he had been following lessons with special interest, thinking to himself: "If this is really supposed to be preparation for life, as they say, it must surely contain some clue to what I am looking for, too."
>
> It was actually of mathematics that he had been thinking, and this even before he had had those thoughts about infinity. (154/104)[10]

Here the reference is to a brief section of an earlier chapter, where Törless suddenly became aware of "how incredibly high the sky was" and, "making an effort to be as calm and rational as he could", concluded that "of course there *is* no end […] it just keeps going on and on for ever, into infinity" (130/87), using for the first time a word he had often heard in math lessons but that "never meant anything in particular to him" (131/88). So, now that comes back to him, and as the class is dismissed, he sits down with Beineberg—the intelligent comrade, the erudite and philosophically minded one, the only person he could talk to about this sort of thing over and above the messy business with Basini—and the famous dialogue begins to unfold. I'll break it down into three parts:

> "I say, did you really understand all that stuff?"
> "What stuff?"
> "All that about imaginary numbers."

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[10] All page references in the main text are to the original edition of *Die Verwirrungen des Zöglings Törleß*, Musil [1906], followed by the corresponding page number in the English translation.

"Yes. It's not particularly difficult, is it? All you have to do is remember that the square root of minus one is the basic unit you work with."

"But that's just it. I mean, there's no such thing. The square of every number, whether it's positive or negative, produces a positive quantity. So there *can't* be any real number that could be the square root of a minus quantity."

"Quite so. But why shouldn't one try to perform the operation of working out the square root of a minus quantity, all the same? Of course it can't produce any real value, and so that's why one calls the result an imaginary one. It's as though one were to say: someone always used to sit here, so let's put a chair ready for him today too, and even if he has died in the meantime, we shall go on behaving as if he were coming." (154–156/105–106)

This 'as if' contains, in my opinion, the first important point of the dialogue. While it is not the pith and core of the excursus, it bears witness to an intuition—a philosophical stance, really—that informs much of what follows, anticipating a theme that will play a central role in Ulrich's reflections on things in *Der Mann ohne Eigenschaften*. I'll come back to this in the next section. The dialogue continues:

"But how can you when you know with certainty, with mathematical certainty, that it's impossible?"

"Well, you just go on behaving as if it weren't so, in spite of everything. It'll probably produce some sort of result. And after all, where is this so different from irrational numbers—division that is never finished, a fraction of which the value will never, never, never be finally arrived at, no matter how long you may go on calculating away at it? And what can you imagine from being told that parallel lines intersect at infinity? It seems to me if one were to be over-conscientious there wouldn't be any such thing as mathematics at all."

"You're quite right about that. If one pictures it that way, it's queer enough. But what is actually so odd is that you *can really* go through quite ordinary operations with imaginary or other impossible quantities, all the same, and come out at the end with a tangible result!"

"Well, yes, the imaginary factors must cancel each other out in the course of the operation just so that does happen."

"Yes, yes, I know all that just as well as you do. But isn't there still something very odd indeed about the whole thing? I don't quite know how to put it. Look, think of it like this: in a calculation like that you begin with ordinary solid numbers, representing measures of length or weight or something else that's quite tangible—at any rate, they're real numbers. And at the end you

have real numbers. But these two lots of real numbers are connected by something that simply doesn't exist. Isn't that like a bridge where the piles are there only at the beginning and at the end, with none in the middle, and yet one crosses it just as surely and safely as if the whole of it were there? That sort of operation makes me feel a bit giddy, as if it led part of the way God knows where. But what I really feel is so uncanny is the force that lies in a problem like that, which keeps such a firm hold on you that in the end you land safely on the other side." (156–158/106–107)

The bridge image is the second key intuition here. The standard reading is that we have, here, a metaphor of the central dilemma of the novel—possibly the dilemma that underlies Musil's entire literary production: the unfathomable link between the rational and the irrational, the visible and the invisible, the overt world of manifest happenings and the hidden world of inner life. I'll come back to this, too. At this point, Beineberg grins:

"You're starting to talk almost like the chaplain, aren't you? You see an apple—that's light-waves and the eye and so forth—and you stretch out your hand to steal it—that's the muscles and the nerves that set them in action—but between these two there lies something else that produces one out of the other, and that is the immortal soul, which in doing so has committed a sin . . . ah yes, indeed, none of your actions can be explained without the soul, which plays upon you as upon the keys of a piano . . ." And he imitated the cadences in which the chaplain was in the habit of producing this old simile. "Not that I find all that stuff particularly interesting."

"I thought you were the very person who would find it interesting. Anyway, it made me think of you at once because—if it's really impossible to explain it—it almost amounts to a piece of evidence for what you believe."

"Why shouldn't it be impossible to explain? I'm inclined to think it's quite likely that in this case the inventors of mathematics have tripped over their own feet. Why, after all, shouldn't something that lies beyond the limits of our intellect have played a little joke on the intellect? But I'm not going to rack my brains about it: these things never get anyone anywhere." (158–159/107)

This striving for an explanation is the third theme I am going to discuss briefly below. It will take us also to the next chapter in the story, which features Törless's meeting with his mathematics master on the following day, during the noon break, and concludes the entire digression (though Törless will briefly come back to the topic in the spirited speech he delivers to his teachers in the headmaster's lodgings at the end of the book).

As If

Let's begin with the idea that imaginary numbers, such as the square root of minus one, involve a fictional stance, an as-if attitude, as when we put a chair ready for someone who has always joined us even though, alas, we know that he or she has passed away in the meantime. We just behave *as if* they were coming, pretending everything is normal.

There is, today, a growing interest in fictionalist understandings of mathematical discourse broadly understood, mainly as a reaction to mathematical platonism. First introduced by Hartry Field as a hard-road response to the Quine-Putnam argument for the indispensability of mathematics in the development of empirical theories, the view has been endorsed and articulated in various ways, but the basic idea is simple enough: the axioms of mathematical theories are "fictions that for a variety of reasons mathematicians have become interested in", and the usefulness of mathematics and its applicability in science "doesn't require" that the fiction be literally true, even less that it be made true by such postulated entities as numbers, functions, sets, and the like.[11] Thus, in a way, on this view all mathematics involves a cognitive attitude of pretense, of make-believe, of "as if" talk,[12] and the usefulness of this talk rests in its good service when it comes to "mediating inferences"—as Mark Kalderon puts it[13]—between claims that are purely about concrete, genuine denizens of the world. Is this Törless's attitude, too?

The analogy is worth stressing, especially insofar as Beineberg's 'as if' will soon turn into Törless's metaphor of the ghostly overpass connecting real, "ordinary solid numbers". It is in fact regrettable that the literature in the philosophy of mathematics has paid little attention to the connection, if any, for certainly Törless is here playing precisely with the idea that theoretical fictions may provide useful "bridge laws" to make inferences and draw conclusions concerning what is truly there (and the very idea that mathematics should be "preparation for life", which sets the scene in the opening paragraphs of the excursus, is of course a hint to the problem of the "applicability" of mathematics). However, it is also clear that Tör-

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[11] See Field [1980] (the quoted phrases are from p. viii). For the (classical) indispensability argument, see e.g. Putnam [1971], esp. chs. 5–8. For further versions of the fictionalist account of mathematics, see e.g. Balaguer [1998] and Leng [2010].

[12] Let me stress the qualification "in a way", for there is little evidence that mathematicians participate in their fiction by actually engaging in such a cognitive *attitude*. See e.g. Burgess [2004] and Daly [2008] on significant differences between mathematics and literary fiction. On the latter, and the mechanisms of the relevant make-believe practices, see Walton [1990] and Currie [1990].

[13] Kalderon [2005], p. 1.

less is not, here, expressing any fictionalist attitude concerning the ontology of mathematics as such. His problem is not the abstract or otherwise elusive nature of such entities. He is struggling specifically with the ontology of *imaginary* numbers—entities which, like infinity, find their origin in ordinary palpable things and yet take us beyond those things in ways which can only be made sense of if we engage in as-if talk, giddy as that may feel. More specifically, he is struggling with the thought that there *can't* be such numbers; they are *impossible*, and yet mathematicians manipulate them in performing calculations about numbers that represent perfectly tangible measures. It's hard enough to pretend that something is present when, as a matter of contingent fact, it isn't, as with a guest who passed away. But how can we engage in the pretense when we know that the guest is something that can't be present as a matter of mathematical necessity? How can we play with imaginary numbers if we cannot even *imagine* them? (It's worth noting that even Descartes, to whom we owe the term 'imaginary' for such numbers,[14] associated their nature with the *impossibility* to provide them with a geometric construction.[15] Not even Meinong could intuitively apprehend $\sqrt{-1}$, *pace* Borges.[16])

To be sure, the mathematical fictionalist shouldn't feel much better about numbers in general. For surely an anti-realist about numbers is not just saying that such putative entities do not or may not exist as a matter of contingent fact—that they are or may be fictional creatures on a par with Pegasus, the characters of a dream, or a guest who is not present. For a serious mathematical anti-realist, num-

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[14] The term was introduced in 'La géométrie', in Descartes [1637], p. 236. For a history of the *concept*, which is obviously much older than the term, see Nahin [1998]. On the general problem of *imagining* such numbers, see Mazur [2003].

[15] Also noteworthy is the fact that when John Wallis provided the first geometric construction for the imaginary numbers, in 1685, his account had a fictionalist prelude: "These *Imaginary* Quantities (as they are commonly called) arising from the *Supposed* Root of a Negative Square (when they happen) are reputed to imply that the Case proposed is Impossible. And so indeed it is, as to the first and strict notion of what is proposed. For it is not possible, that any Number (Negative or Affirmative) Multiplied into itself, can produce (for instance) –4. Since that Like Signs (whether + or –) will produce +; and therefore not –4. But it is also Impossible, that any Quantity (though not a Supposed Square) can be *Negative*. Since that it is not possible that any *Magnitude* can be *Less than Nothing* or any *Number Fewer than None*. Yet is not that Supposition (of Negative Quantities) either Unuseful or Absurd; when rightly understood. And though, as to the bare Algebraick Notation, it import a Quantity less than nothing: Yet, when it comes to a Physical Application, it denotes as Real a Quantity *as if* the Sign were +; but to be interpreted in a contrary sense." Wallis [1685], pp. 264–265 (last italics mine).

[16] See Borges [1947], p. 185.

bers do not belong to the furniture of this world just as they do not belong to the furniture of *any* possible world. Her ontological stance has the modal force of necessity, so she, too, cannot sincerely *engage* in the pretense.[17] But never mind. On the face of it, there is definitely an important intuitive difference between a "real" number and an "imaginary" one, and it is the pretense with which mathematicians are supposed to manipulate the latter that preys on Törless's mind. So forget the (anachronistic) idea of reading Beineberg's 'as if' in the spirit of current fictionalist accounts in the philosophy of mathematics. Here the thought should go to a different sort of fictionalism. And the one that naturally comes to mind is the sort of fictionalism associated with Hans Vaihinger's *Philosophie des Als Ob*.[18] Indeed, Vaihinger's book was published in 1911, but the first part (Basic Principles) comes from his 1877 inaugural dissertation in Straßburg, so it is not too unlikely that Musil might even have been familiar with his views. Moreover, Vaihinger had just published a well-received book on Nietzsche, one of Musil's heroes, and was a well-known Kant scholar.[19] And it is a book by Kant that the mathematics master hands over to Törless at the end of their meeting on the day following the exchange with Beineberg:

> "You see this book. Here is philosophy. It treats of the grounds determining our actions. And if you could fathom this, if you could feel your way into the depths of this, you would come up against nothing but just such principles, which are inherent in the nature of thought and do in fact determine everything, although they themselves cannot be understood immediately and without more ado. It is very similar to the case with mathematics. And nevertheless we continually act on these principles." (166–167/112)

Vaihinger's *philosophy of as-if* was broadly Kantian in this sense. It was based on the idea that we can never have knowledge of the real structure of the world, and that our cognitive endeavors, including our scientific practices, must therefore involve a lot of simulation and model-building. We "act as if" our theoretical constructs matched the real world. We "pretend" that there are such things as waves, forces, or subatomic particles even though we have never directly observed any of them, and we refine our models and develop new systems as a result of what we

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[17] On this point, and on the difficulties that it raises when it comes to the proper semantics of the fictionalist's language, see Varzi [2012].

[18] Vaihinger [1911].

[19] See Vaihinger [1902] and, on Kant, the two-volume commentary of the first *Critique,* Vaihinger [1881/92].

do observe on the basis of the pretense. (Vaihinger's Principle of Fictionalism stated explicitly that the theoretical incorrectness or falsity of an idea does not entail its practical unworthiness; on the contrary "such an idea, in spite of its theoretical nullity may have great practical importance".[20] In this sense, he may be seen as a precursor, not of Field's fictionalism in mathematics, but of van Fraassen's constructive agnosticism in the philosophy of science.[21]) Of course, in all this Vaihinger's reading of Kant was "very idiosyncratic"—as Arthur Fine put it[22]— to say the least. For, in Kant scientific principles are supposed to provide the possibility of objective grounds for knowledge, whereas Vaihinger sees them as fictions functioning as regulative (not constitutive) ideas. With few exceptions, no Kantian scholar would go along with such a reading.[23] But then, again, Vaihinger was perfectly aware of its unconventional character. The book devotes no less that 100 pages to argue painstakingly that, contrary to standard, lore, "for Kant a large number of ideas, not only in metaphysics but also in mathematics, physics and jurisprudence, were Fictions", drawing attention to the fact that in the Doctrine of Method Kant was explicit in referring to the transcendental ideas as "heuristic fictions".[24] Very idiosyncratic. But precisely for that reason, these views were fueling much debate in Musil's times.

Again, this is much too general. But we come remarkably close to Törless's real concerns if we recall that Vaihinger placed special emphasis on the fictionalist treatment of contradictions and other *impossibilia*. For him, the "genuine fictions" are those that involve self-contradiction, as opposed to those "semi-fictions" that are simply theoretic constructions not quite in agreement with the facts, such as Descartes's theory of vortices or Ptolemaic astronomy. For example, in the realm of geometry, the thought that lines and surfaces are infinitely divisible is a genuine fiction in this sense, for it does not correspond to "a real possibility". The idea that a point is zero-dimensional is also described as self-contradictory, for a construct without any dimension is, in itself, "a nothing". These thoughts and ideas drive many demonstrations; but as soon as their internal logical inconsistency is revealed, Vaihinger says, their claim to objectivity disappears and "the question, why it happens that we are able to deal with reality by means of fictional con-

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[20] Vaihinger [1911], p. viii.

[21] See van Fraassen [1980], who actually cites Vaihinger explicitly at pp. 35–36.

[22] Fine [1993], p. 10. The idiosyncrasy of Vaihinger's reading of Kant was already subjected to a book-long critique by Adickes [1927]. For a recent assessment, see Allison [2011], pp. 305–306.

[23] See e.g. Schaper [1966] for a notable exception.

[24] Vaihinger [1911], p. viii. (The reference is to Kant's first *Critique*, A771/ B799.)

structs, has then been answered".[25] We thus come to the main point. For among the many cases of this sort that Vaihinger discusses in his book, Chapter XVII from Part I (the part coming from the 1877 inaugural dissertation) deals with no less than our case. And borrowing a "brilliant comparison" between imaginary numbers and things-in-themselves from Salomon Maimon,[26] the philosopher Kant regarded as the most acute of his opponents,[27] he concludes:

> $\sqrt{-a}$ is the symbol of a mathematical fiction, the unjustified extension and transference of a mathematical operation to a case where the nature of the material forbids its application and renders it meaningless. Nevertheless, mathematics often requires this idea, and proceeds with it *as if* it symbolized a reality, a number that could be expressed; but, be it remembered, this fiction always drops out as valueless at the end of the procedure. This is what also occurs in the case of the *Ding an sich*.[28]

To be clear: I am not trying to attribute this rather hyperbolic view to Törless, even less to Musil himself. Rather, I am suggesting that it is with this way of thinking that Törless is wrestling, a way of thinking that in the novel is introduced by Beineberg's "as if" metaphor (and reprised, to some extent, by Törless's math master) and which Törless is struggling to make sense of in spite of his finding it odd, queer, and ultimately uncanny.[29] The question then is, why did Musil fancy that this way of thinking was worth a lengthy discussion at all in a novel of this sort? After all, by the time he was completing *Törleß* in 1905, Musil had already moved to Berlin and spent two years as a graduate student in psychology and philosophy (though he "wasn't attending many lectures"[30]), and whether or not he was familiar with Vaihinger's theories, surely he must have been familiar with the by-then standard way of representing, if not truly visualizing, imaginary numbers. At least, he must have been familiar with Ernst Mach's article on 'Space and Ge-

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[25] *Ibid.*, p. 69. See also Part II, §20, 'Surface, Line, Point, etc. as Fictions'.

[26] Vaihinger gives no references, but he must have been thinking of the passages in Maimon [1797], p. 158 and p. 191, where the comparison between the thing-in-itself and $\sqrt{-a}$ is actually discussed. However, elsewhere Maimon speaks of the thing-in-itself as an idea that can only be represented approximately, drawing an analogy with the irrational number $\sqrt{2}$. See e.g. Maimon [1794], p. 142.

[27] Letter to Marcus Herz (5/26/1789), in Kant [1902], pp. 311–312.

[28] Vaihinger [1911], at pp. 74–75.

[29] This is in line with Fine [1993], §7. The parallel between Vaihinger and Beineberg is also considered in Roth [1972], pp. 50 and 83–86, and Kroemer [2004], p. 147.

[30] Notebook 33, cit. (note 3), p. 912 [Eng. trans., p. 437].

ometry',[31] since Musil would eventually write his dissertation on the Moravia-born philosopher of science.[32] And that work devotes a famous footnote to reminding the reader that the old problem concerning the *prima facie* impossibility of $\sqrt{-1}$ had long been solved by thinking of such a number as a *relation* between magnitude and direction, namely, as a mean direction-proportional between +1 and −1.[33] Why would Musil ignore all that in his novel, as though nothing had happened since Descartes?

Indeed, Musil had at least two more options available. One was to associate Beineberg with a different kind of fictionalism, older than Vaihinger's but certainly less bold—Bentham's. In many of his writings, some of which had reached considerable popularity after the publication of his *Complete Works* only a decade after his death,[34] Bentham puts forward a rich account of the "as if" talk that takes place in many aspects of our social lives, from the law to religion to the sciences.[35] And while he was pungently critical of the fictional mechanisms that pervade the language of the law—that "pestilential breath of fiction" that poisons the bigotry and artifice of all lawyers, locked up in an illegible character and in a foreign tongue[36]—he was careful in explaining the value of the "logical fictions" involved in other domains of discourse, without which it would be impossible to go beyond "the language of pure creation".[37] In particular, he developed a sophisticated analysis of the idea that much of our discourse should not be taken at face value and that theorists in various fields are not and need not be committed to the literal truth of their statements. There is always, in the background, a different way of saying things that reflects more literally the content of such statements, a recasting that is equivalent in meaning and yet more innocent vis-à-vis its ontological implications—a suitable ontologically transparent and "intrinsically non-misleading" paraphrase, as Gilbert Ryle would put it.[38] Bentham himself used the term 'paraphrase', or 'paraphrasis', and was very precise about its definition: "A word may be said to be expounded by *paraphrasis*, when not that word alone is translated

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[31] See Mach [1904], also published in German as part of Mach [1905].

[32] Musil [1908], under the supervision of Carl Stumpf.

[33] Mach [1904], p. 8n. This was *almost* the solution proposed by Wallis (see above, n. 15), though the accepted formulation Mach was referring to comes from Argand [1806].

[34] Bentham [1843].

[35] A representative selection of such writings was published in 1932 by Charles K. Ogden, the English translator of Vaihinger. See Ogden [1932], Part 2.

[36] 'A Fragment on Government' (1776), in Bentham [1843], vol. 1, p. 235.

[37] 'A Fragment on Ontology' (1813/21), in Bentham [1843], vol. 8, p. 198.

[38] See Ryle [1931/32].

into other *words*, but some whole sentence, of which it forms a part, is translated into another *sentence*".[39] Thus, for example, when a scientist speaks of a body being either in motion or at rest, she should not be taken as attaching a literal meaning to her words. 'Motion' and 'rest' are but "modes of speech", and motion and rest are "imaginary, involuntarily imagined substances" in which a body may conveniently be conceived as being placed; really the scientist's statement should be charitably reinterpreted as asserting, say, that the body is in two different places, or at the same place, at or in two successive portions of time ('space' and 'time' being themselves terms that might require similar treatment).[40] And so it is with any other putative fictional entity: "To language, then—to language alone—it is, that fictitious entities owe their existence—their impossible, yet indispensable, existence".[41] In short, and in current terminology, Bentham was a hermeneutic fictionalist.[42] And certainly his account would have allowed Törless to reconcile himself with all problematic talk about imaginary numbers quite easily, just by thinking of it as taking place at the level of surface grammar. Imaginary numbers would be fictional entities in the same sense in which motion and rest are fictional entities—entities to which the grammatical form of our discourse ascribes existence even though, "in truth and reality, existence is not meant to be ascribed".[43]

The other option that was available to Musil was to delve directly into the moot metaphysics that lurks in the background of Törless's formulation of the problem. After all, what puzzles Törless is that he could see no substantial counterpart to $\sqrt{-1}$ in the solid world. But that is a vestige of the traditional Aristotelian conception according to which every proposition asserts the inherence of a predicate in a subject, which in turn can only stand for an individual substance. The empiricist revolution, as the young Deleuze stressed in his study of Hume,[44] consisted precisely in shifting the metaphysical barycenter from substances to relations. And as Morris Cohen put it in his criticism of Vaihinger, on a relational metaphysics there is no difficulty in pointing to a place in the world where $\sqrt{-1}$ can be found:

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[39] 'A Fragment on Government', cit., p. 293, n. 6. For a thorough analysis of Bentham's use of this concept, see the essays collected in Ogden [1994].

[40] 'A Fragment on Ontology', cit., p. 200.

[41] *Ibid.*, p. 198.

[42] On the "hermeneutic" understanding of fictionalist practices, with special reference to mathematical discourse, see Burgess and Rosen [1997]. For an analysis of Bentham's fictionalism along these lines, see Rosen [2005], pp. 46–56.

[43] Bentham, 'A Fragment on Ontology', cit., p. 195.

[44] Deleuze [1953]. One might say that this shift was also driving the metaphysics behind Bentham's fictionalism; see Di Lucia [1998].

"not a thing nor the property of a thing, but a relation or transformation of things".[45] ('Relational' was also the key word in Mach's footnote.) That's how a fiction can be fruitfully involved in the scientific explanation of the processes of nature. And that's why the logical positivists did not like being associated with Vaihinger at all, in spite of his early coinage of their school's name.[46]

So, to go back to our main question, why did Musil not consider any of these options, including the standard mathematical account, framing instead the problem in terms of Beineberg's unwary 'as if'? The answer—and it may well be the obvious one—is that the problem itself is not the main point. Törless's concerns with $\sqrt{-1}$ are not the unfitting digression of a clever writer struggling with boredom, just as his overall torments about mathematics are not just a stroke of color in Musil's portrait of his character. They are clues to something else, to what the novel is really about—indeed, to something that was to haunt Musil throughout his life and his literary career. And as a clue, the as-if stance is a lot better than any other option, over and above the mathematical nature of the mathematical problem. Which takes us to the second question advertised above.

The Bridge—and the Door

What Törless finds odd is that you "*can really* go through" ordinary operations with imaginary numbers and "come out at the end" with a tangible result. You begin with real numbers that represent concrete measures and you *do* end up with numbers that are equally real, but in the course of the operation you find yourself walking as if on a bridge that stands on no piles. As I said, the accepted reading of this master allegory is that the uncanny bridge hints at the invisible, unfathomable gap between the rational and the irrational sides of human nature, the light world of manifest happenings and the dark world of inner life (the "uttermost depths of the abyss" mentioned in the passage from Maurice Maeterlinck that stands as epigraph to *Törleß*[47]). In J. M. Coetzee's words, it stands for the bridge between

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[45] Cohen [1923], p. 486.

[46] Vaihinger [1911] occasionally labels his philosophy 'logical positivism'; see e.g. p. 163. On the attitude of the Vienna Circle, see e.g. Schlick [1932], pp. 481 and 504.

[47] It is worth quoting the epigraph in full: "In some strange way we devalue things as soon as we give utterance to them. We believe we have dived to the uttermost depths of the abyss, and yet when we return to the surface the drop of water on our pallid finger-tips no longer resembles the sea from which it came. We think we have discovered a hoard of wonderful treasure-trove, yet when we emerge again into the light of day we see that all we have brought back with us is false stones and chips of glass. But for all this, the treas-

"Törless's own outward sang-froid and the seething forces within him", between "the well-regulated life at school and the eerie nocturnal flaggings in the attic", eventually between "the orderly bourgeois front presented by Törless's parents and what he darkly knows must go on in the privacy of their bedrooms".[48]

I agree with this accepted reading—though, of course, strictly speaking the bridge is not *between* those opposite sides of Törless's personality, or of human condition generally; it is, rather, a bridge that binds together the rational self *over* the dark depths of the irrational self. For what it is worth, I would even say that the accepted reading is the only acceptable one, for Musil chose his example carefully. After all, the purely mathematical aspect of Törless's puzzle does not require imaginary numbers; the negative integers would have been enough. They, too, involve a leap into the unknown when it comes to concrete measures of concrete things. They, too, were initially considered "impossible" (Diophantus), and as late as the sixteenth century there were mathematicians who still called such less-than-nothings "absurd" (Stifel) and "fictitious" (Cardano).[49] The difference, though, is that imaginary numbers are commonly thought of as *irrational* numbers—and while that is inaccurate, it is as explicit a clue as Musil could give us.

But let me elaborate. There are, actually, several passages where the tension between the rational and the irrational is depicted by Musil quite explicitly, making *Törleß* a good *prima facie* candidate for the earliest instance of Freud's influence on twentieth-century literature[50] (over and above Musil's transparent debt to Nietzsche and to the other "masters of the floating life within", as Ulrich will call them in *Der Mann ohne Eigenschaften*[51]). Most notably, the tension is plainspoken in the description of Törless's thoughts as he is about to learn from Reiting that the fellow-pupil who stole the money out of Beineberg's locker was Basini:

> He felt as though torn between two worlds: one was the solid everyday world of respectable citizens, in which all that went on was well regulated and ra-

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ure goes on glimmering in the darkness, unchanged." The passage, which Musil gives in German, is from the opening paragraph of 'La morale mystique', the fourth essay in Maeterlinck [1896], at pp. 65–66. Musil's text corresponds to the 1898 translation by Oppeln-Bronikowski, p. 31. On Maeterlinck's influence on *Törleß*, see Pestalozzi [1989].

[48] Coetzee [2001], p. xi.

[49] For a history, see e.g. Smith [1925], pp. 258–260.

[50] The candidacy has been advanced explicitly by Goldgar [1965], but I agree with Luft [1980], p. 58, that it betrays a fallacy of retrospective influence. Already Reniers [1970] objected that the archival evidence indicates that Musil had not, in fact, read Freud by the time of his writing *Törleß* (as he would not read much Freud later on).

[51] Musil [1930], p. 403 [Eng. trans., p. 301]

tional, and which he knew from home, and the other was a world of adventure, full of darkness, mystery, blood, and undreamt-of surprises. It seemed then as though one excluded the other. (81/53–54)

The tension shows up explicitly also after Reiting's report, where Törless suddenly realizes that Basini, who until the day before had been the same as himself, had "plunged into the depths":

> Then it was possible that from the bright diurnal world, which was all he had known hitherto, there was a door leading into another world, where all was muffled, seething, passionate, naked, and loaded with destruction—and that between those people whose lives moved in an orderly way between the office and the family, as though in a transparent and yet solid structure, a building all of glass and iron, and the others, the outcasts, the blood-stained, the debauched and filthy, those who wandered in labyrinthine passages full of roaring voices, there was some bridge—and not only that, but that the frontiers of their lives secretly marched together and the line could be crossed at any moment. (92-93/53–61)

This also triggers the natural reading of Basini himself as representing one of Törless's two sides. Törless is both attracted to him and repelled by him. Every movement of Basini's fills Törless with disgust and yet they eventually end up spending a night (and more) of homosexual love together. Törless proves moral revulsion for Basini's actions as well as for his undignified passivity and his unwillingness to stand up for himself, yet he cannot help feeling morbid tenderness for that very same person. Basini *is* the dark world of inner soul, in regard both to Törless's urge to dive into it and to his fear to do so, lest he be lost forever. And solving the Basini problem is solving his own existential drama.

Now, it is important to note that the second passage just quoted already contains the "bridge" metaphor explicitly. It is here that it makes its first appearance (and it comes up once again before the mathematical excursus, at 137/92). But note, too, that it comes in conjunction with a second metaphor—the "door". This is the other central metaphor that unfolds through the pages of *Törleß*. It peeps out at the very beginning with the seemingly ordinary door that closes behind Törless "with irrevocable finality" as he enters the school (4/3) and it continues through the doors of the "dirty little hovels" into which Törless glances intently on the day of his parents' visit (23/15), the door that he and his comrades would open "fumbling excitedly" during their stopovers at the local prostitute Božena (51/34), the "the heavy, iron, locked" door that blocked the way to the murky attic where they had their secret meetings (72/48), all the way to this trapdoor that leads straight

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"into another world" and whose knob will keep "slipping from his grasp" (204/ 139) for the rest of the novel. (Might it really be that this is the intended meaning of Törless's own name?[52])

The bridge and the door metaphors work in tandem. To open the door is to fall into the abyss of dionysian darkness *unless* there is a bridge that can take us safely back to solid ground.[53] And it is for this reason that the mathematical digression is not a digression at all. Mathematicians can "really" do that when they open the door to imaginary numbers, the most irrational among all numbers. How? How do they manage to keep the darkness under control, and even use it for their own purposes? That is Törless's question to his fellow-pupil Beineberg on the day following their torture of Basini, and that is also the question that Törless brings to his math teacher on the next day. He is "looking for a clue", a recipe for holding together the rational and the irrational. If mathematicians have worked out a rigorous, successful way to cross their bridge through the imaginary, there may be a similar way to step through the door and cross the bridge from puberty to adulthood without falling into the void like Basini. And the answers Törless receives disappoint him because they do not deliver what he is truly and secretly looking for. In particular, Beineberg's as-if answer disappoints him because Törless does not want to believe that the only option is the construction of a *fictional* bridge. He does not want to believe—and this becomes clearer as the story develops into a broader revolt against the "civilized" bourgeois culture he comes from—that the only way to adulthood is through a fraudulent bridge that gets thickened and strengthened only through comforting ignoramuses, articles of faith, and prejudicial self-deception.

Actually, in his reprise Beineberg adds something that *is* in the right direction, but only to turn immediately into further grounds for Törless's disappointment. He says that the question is not as peculiar as Törless made it sound. It's not just a queer thing about $\sqrt{-1}$; we are *always* walking on a ghostly bridge. And while the apple example Beineberg uses is not exactly what was truly agitating Törless's mind, it does come close to it philosophically. For even when we do something as mundane as grabbing an apple there really is something mysterious, something hidden connecting a tangible starting point, such as the physical event of our seeing the apple, and a tangible endpoint, such as the physical event of our hand

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[52] For the (somewhat far-fetched) suggestion that 'Törless' alludes to 'türlos', i.e., doorless, see e.g. Freij [1968]. One of the novel's translators, however, rejects it resolutely; see Wilkins [1968], p. 48.

[53] Here I agree with the analysis offered by Peters [1978], ch. 2.

stretching out to grab it. (The allusion to the original sin adds another layer to the story, but let's set that aside.) *All* our actions are like that; they all involve something that is not manifestly physical. Right. And what is that something? Here is where Beineberg's reprise turns into another disappointment: for his answer is that the hidden something is the immortal soul. Törless does not comment on it. But we know that *this* is not the answer he needs. He doesn't need another imaginary entity. In fact, we just have to wait a few pages before he does find the words to say so, and in that context Musil does not pull back from helping us see the connection with the Basini affair:

> "You don't understand me. You simply don't know what interests me. If mathematics torments me and if"—but he instantly thought better of it and said nothing about Basini—"if mathematics torments me, it's because I'm looking for something quite different behind it from what you're looking for. What I'm after isn't anything supernatural at all. It's precisely the natural— don't you see? Nothing outside myself at all—it's something in me I'm looking for! something natural, but, all the same, something I don't understand! Only you have just as little feeling for it as any maths master in the world." (181/123)

In a way, the answer that came from the math teacher wasn't much different in this respect, though his philosophical background is transcendental idealism and not the mix of Indian philosophy and Cartesian dualism that Beineberg likes so much. For when Törless went to see him the day after he raised the question to Beineberg, the teacher speaks evasively of the intervention of "transcendent factors" and of the "soprasensual" into our lives. And when it came to explaining what that means, making it clear that he would restrict himself to his field of expertise, he would simply say that such relationships work out "in a natural and purely mathematical way". It is at that point that he invoked the *Critique of Pure Reason*. For that is *the* book that deals with "the grounds determining our actions". And as the passage quoted earlier says clearly, what Kant's book is supposed to offer, to those who fathom it, is a set of principles that are "inherent in the nature of thought and do in fact determine everything", although they themselves "cannot be understood immediately". Needless to say, Törless did not fathom it. He clenched his teeth and spent hours on its "incomprehensible" parentheses and footnotes—up to page three. And though it bothered him that his math teacher had the big book lying around in his studio "as if it were his daily entertainment" (174/118), those three pages were enough for him to be all the more sure: that is the kind of book that one venerates "only because one is glad that thanks to its exist-

ence there are certain things one need no longer bother about". (169/115) (Ironically, had the math teacher handed over Kant's *Critique of Judgment* instead, Törless might have found something more helpful, at least something reassuring the legitimacy of his intellectual condition. For there, and close enough to the beginning, Kant himself used the image of a missing bridge in dealing with the gap between ordinary experience and moral values:

> The domain of the concept of nature under the one legislation and that of the concept of freedom under the other are entirely barred from any mutual influence that they could have on each other by themselves (each in accordance with its fundamental laws) by the great chasm that separates the supersensible from the appearances. The concept of freedom determines nothing in regard to the theoretical cognition of nature; the concept of nature likewise determines nothing in regard to the practical laws of freedom: and it is to this extent not possible to throw a bridge from one domain to the other.[54]

It is hard to tell whether Musil was familiar with this passage at the time of his writing *Törleß*, though it is certainly tempting to see the novel as an original reappropriation of Kantian aesthetics over and above its scorning attitude towards Kant's philosophical style.[55])

With all this, I am, as I said, in line with the accepted reading of *Törleß*'s master allegory. But it is important to place emphasis on the fundamental link between the two metaphors on which the allegory stands—the bridge (explicit) and the door (implicit). Without the door that leads to it, the bridge metaphor does not go that far and one cannot blame Beineberg and the math professor for not understanding Törless's frustration. Even today, many a philosopher would be perfectly happy with their way of approaching the issue. In particular, to go back to our main point, Beineberg's fictionalist account of the mathematical puzzle (as opposed to his supernaturalistic account of the more general action-theoretic problem) would be fine, though arguably inferior to some of the variants mentioned in the previous section. Musil was aware of that, and it is for this reason, I think, that he was worried his readers would regard the episode on $\sqrt{-1}$ as a digression that doesn't even "belong" in a novel.

Let us not forget that as Musil was writing *Törleß*, the whole of mathematics was actually undergoing an unprecedented foundational crisis of which he was well aware and informed. Given his interests and his passion for the precise sci-

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[54] Kant [1790], pp. 80–81.
[55] The issue is addressed extensively in McBride [2008], esp. ch. 4.

ences, it is not implausible that the whole idea of exploiting a mathematical metaphor was the result of his being independently concerned about the foundations of mathematics as such, and cognizant of the dramatic import of the crisis well beyond the domain of pure mathematics. In fact, just a few years later he would write a short article for Franz Blei's experimental journal *Der Lose Vogel* in which his views on the matter are expressed with extraordinary lucidity. And to the readers of *Törleß* those views might have sounded astonishing (had the article not been published unsigned). It is worth quoting the text extensively. First the good part:

> Mathematics is the bold luxury of pure reason, one of the few that remain today. […] We live almost entirely from the results of mathematics […]. Thanks to mathematics we bake our bread, build our houses, and drive our vehicles. […] All the life that whirls about us, runs, and stops is not only dependent on mathematics for its comprehensibility, but has effectively come into being through it and depends on it for its existence […] For the pioneers of mathematics formulated usable notions of certain principles that yielded conclusions, methods of calculation, and results, and these were applied by the physicists to obtain new results; and finally came the technicians, who often took only the results and added new calculations to them, and thus the machines arose.[56]

This is by itself a remarkable description of the *importance* of mathematics in our lives, of its immense practical value despite its being *Tapferkeitsluxus* of pure reason. But then:

> suddenly, after everything had been brought into the most beautiful kind of existence, the mathematicians […] came upon something wrong in the fundamentals of the whole thing that absolutely could not be put right. They actually looked all the way to the bottom and found that the whole building was standing in midair. But the machines worked! We must assume from this that our existence is a pale ghost; we live it, but actually only on the basis of an error without which it would not have arisen. Today there is no other possibility of having such fantastic, visionary feelings as mathematicians do.[57]

So, yes, there is something ghostly about the way mathematics works, and about the fact that we always manage to make good use of its results in spite of the absurdities that come with it—not just the impossible imaginary numbers that puz-

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[56] Musil [1913b], pp. 312–313 [Eng. trans., pp. 41–42]

[57] *Ibid*., p. 313 [Eng. trans., p. 42]

zled Törless (those "amphibians between being and non-being", as Leibniz had called them[58]), but the impossible *facts* represented by the set-theoretic paradoxes. Yet that ghost is benign and Musil's verdict on the overall situation is as pragmatically light-hearted as it can be. More elegant, but not much different from Beineberg's own formulation when he sums it all up by saying that, well, with those imaginary numbers "the inventors of mathematics have tripped over their own feet". Perhaps the reason why in the end the machines still work lies in the logic that keeps it all together, not in the mathematical machinery; the troubles are local and do not spread by metastasis because the logic is, as we would say today, paraconsistent. Perhaps there is another explanation, and it would certainly be good to know. But our lives depend on the fact that in the end the building doesn't fall more than they depend on our ability to explain *why* it doesn't.

Precision and Soul

We know how Törless's *Verwirrungen* come to an end. When the situation becomes unbearable, he writes a note to Basini advising him to give himself up and thus put an end to the unsafe and undignified state of subservience he is in. Törless is "sick of the whole thing", sick of "searching for something behind it all", sick of the riddles: "Things just happen: that's the sum total of wisdom" (280-281/190-191). Then he runs away from the school. When he is brought back two days later, tired and hungry, the authorities have completed their investigation and Basini has been expelled. And when Törless meets with the headmaster and some other teachers (including his mathematics teacher) to explain his conduct, his animated speech can only leave the authorities baffled and confused—except for his final words:

> "Now it's all over. I know now I was wrong after all. I'm not afraid of anything any more. I know that things are just things and will probably always be so. And I shall probably go on for ever seeing them sometimes this way and sometimes that, sometimes with the eyes of reason, and sometimes with those other eyes. . . . And I shan't ever try again to compare one with the other. . . ." (310-311/212)

To many a reader, this ending is the real mystery of *Törleß*. It's "all over"? Things "just happen"? What happened to Törless's inquisitive mind, to the turmoil

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[58] 'Specimen novum analyseos pro scientia infiniti circa summas et quadraturas' (1702), in Leibniz [1858], p. 357.

in his soul, to the door and the bridge on the uttermost depths of the abyss? What happened to the announced revolt against bourgeois normalcy and its fictitious articles of faith? What happened to $\sqrt{-1}$? It is indeed hard not to feel disoriented at Törless abrupt change of attitude as the story comes to an end. However, precisely here lies the uniqueness of *Törleß* vis-à-vis the other *Buildungsroman* novels of its time. Törless is not a late romantic character. He embraces neither normalcy nor subversion. He refuses to acquiesce in either of the two worlds he has become aware of and gives up on the idea of bringing them together in a mathematically safe way. But that is not a defeat; as Musil himself wrote to Frau Tyrka in the 1905 letter cited in the Introduction, that is the central statement of the novel: "the world of feeling and that of the intellect are incommensurable".[59] That is, this incommensurability is not a defeat *as long as* it does not amount to mutual exclusion; if anything, it is a matter of letting the inner side express itself alongside the rational self, and that is what Törless comes to appreciate at the end of his *Verwirrungen*. In the words of Musil's later reflections on his own novel, the feelings and upheavals of thought "are not to be grasped in the abstract and in concepts, but only—perhaps—in the flickering of the individual case".[60] In fact, this is more than an attempt to deflate any "geological" reading of *Törleß* as embodying the sort of psychologizing *fin-de siècle* decadence from which Musil wanted to distance himself. Philosophically, it is the statement of a conception of human nature where the Cartesian "I think" is replaced by an "it thinks", precisely as Mach had recommended a few years earlier in that essay on 'The Analysis of Sensations'[61] to which Musil will eventually devote large portions of his doctoral dissertation. "The thought —he wrote in 1905, as he was completing *Törleß*—does not consist in seeing clearly something that has developed within us"; rather "an inner development stretches out into this bright area". For it is not that we ever think about something; rather, "something 'thinks itself up' within us".[62]

That being said, the ending of *Törleß* is, for Musil, just the beginning. The co-existence and incommensurability of the two worlds will in fact continue to haunt the characters of his novels throughout his life, and will constitute a major theme in *Der Mann ohne Eigenschaften*. One usually reads only up to the first volume of Musil's major opus. But let's read on and half way into the second volume we'll find Törless speaking with the voice of Ulrich:

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[59] Letter to Stefanie Tyrka, cit. (note 8), p. 13.
[60] Musil [1913a], p. 223 [Eng. trans., p. 27].
[61] See Mach [1890], pp. 64–65.
[62] Notebook 24, cit. (note 2), p. 117 [Eng. trans., p. 74].

By exercising great and manifold skill we manage to produce a dazzling deception by the aid of which we are capable of living alongside the most uncanny things and remaining perfectly calm by it. […] We are capable of living between one open chasm of the sky above our heads and one slightly camouflaged chasm of the sky beneath our feet, feeling ourselves as untroubled on the earth as in a room with the door locked.[63]

How we manage to live that way is a mystery for Ulrich just as it was a question for Törless, even though it *is* the fact of life. One might be tempted here to seek help in Musil's pragmatism concerning the foundations of mathematics, or rather lack thereof. But that would be pushing the mathematical man into the wrong direction. When it comes to life, that "the machines still work" is the puzzle, not the solution, in spite of the fact that both Törless and Ulrich come to accept it as long as neither world takes over the other.

So, no bridges at all, just a funny web with nobody who knows where the first mesh is that keeps all the rest in place? That is how Beineberg put it at some point (177–178/ 121). But again, it would be the wrong conclusion. For Musil was a writer. He became a writer writing *Törleß* just as much as he became a philosopher—and not out of boredom. He was, remember, "struggling towards a new way of writing". And whether or not he found the right way, for him—if not for his characters—that was precisely where the bridge is to be found. Let me conclude, then, with one last quotation, from an essay Musil published towards the middle of his career, where he tells us what, for *him*, the bridge really was:

Every work of art offers not merely an immediate experience but an experience that can never be completely repeated. […] The person dancing or listening, who yields himself to the moment of the music, the viewer, the person transported, is liberated from everything before and after […] This condition is never of long duration except in pathological form; it is a hypothetical borderline case, which one approaches only to fall back repeatedly into the normal condition, and precisely this distinguishes art from mysticism, that art never entirely loses its connection with the ordinary attitude. It seems, then, like a dependent condition, like a bridge arching away from solid ground as if it possessed a corresponding pier in the realm of the imaginary.[64]

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[63] Musil [1933], p. 293 [Eng. trans., p. 275].
[64] Musil [1925], pp. 503–506 [Eng. trans., pp. 205–208].

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