

Thomas
Against the Day
Pynchon

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Amid a great creak and scrape of beer-house furniture, Kit's companions had swiftly vanished.

"Converging to zero," he mumbled, "what a surprise. . . . Good evening, miss, were you looking for one of those boys that suddenly ain't here anymore?"

She sat down, took a look at him. The Eastern eyes, the tension of whose lower lids had found a perfect balance between heat and appraisal, certainly were promissory of heartbreak.

"You are not English." Her voice unexpectedly just a little screechy.

"American."

"And is that a revolver you're carrying?"

"This? No, no this is the, what they call the *Hausknochen*? Get in off the street and up the staircase with." He produced a gigantic key whose transgression of scale, beyond all parameters of the tasteful, had in its time provoked unease even in the most collected of spirits. "Everybody around here packs one of these."

"Not everybody. All they've given me is this." She held up and jingled at him a silvery ring with a little pair of latchkeys. "Feminine, yes? This, plus of course a set of signs and countersigns before I'm even allowed to use them, as I am chaperoned without mercy. How is a person expected to prove Riemann's Hypothesis when half her time is taken up getting in and out of rooms?"

"Another one of them Zetamaniacs, eh? Sure are a lot of you folks pouring in to town, is it's like a silver camp in Colorado here, eternal renown in em hills, so forth."

Yashmeen lit up an Austrian cigarette, held it between her teeth, grinned. "Where have you been? This has been going on everywhere, since Hadamard—or Poussin, if you like—proved the Prime Number Theorem. The first nugget out of the ground, as you'd say. Is it the problem that offends you, or those of us trying to solve it?"

"Neither one, it's an honorable pursuit, just kind of obvious, is all."

"Don't patronize me." She waited for a protest, but he only smiled. "'Obvious'?"

Kit shrugged. "I could show you."

"Oh please do. While we're at it, you can also show me how your *Hausknochen* works. . . ."

He guessed he was hearing things, but before long, having translated themselves without inconvenience out the door, down the street and up the stairs, here they were, actually up in his room with two bottles of beer he'd located in the patent *Kühlbox*. He sat just taking in her image for a bit, presently venturing,

"They tell me you're kind of famous?"

"Women at Göttingen form a somewhat beleaguered subset." She looked around. "And what is it you do here again?"

"Drink beer, work on my sleep allowance, the usual."

"I took you for a mathematician."

"Well . . . maybe not *your* kind. . . ."

"Yes? Come, don't be too clever."

"All right, then." He squared his shoulders, brushed imaginary beer foam off his almost-matured mustache, and, expecting her to disappear just as quick as beer-foam, winced in apology. "I'm a sort of, hm . . . Vectorist?"

Despite the shadow of an intent to flinch, she surprised him instead with a smile which, for all its resemblance to the smiles one gives the afflicted, was still able to turn Kit's extremities to stone. That is, is it was *some smile*. "They teach vectors in America? I'm amazed."

"Nothing like what they offer here."

"Isn't England where you ought to be now?" as to a naughty child one expected to become, in a short while, naughtier.

"Nothing but Quaternions over there."

"Oh dear, not the Quaternion Wars again. That is *so* all rather fading into history now, not to mention folklore. . . . Why should any of you keep at it this way?"

"They believe—the Quaternionists do—that Hamilton didn't so much figure the system out as receive it from somewhere beyond? Sort of like Mormons only different?"

She couldn't tell how serious he was being, but after a decent interval she stepped closer. "Excuse me? It's a vectorial system, Mr. Traverse, it's something for engineers, to help the poor prats visualize what they obviously can't grasp as *real maths*."

"Such as your Riemann problem."

"*Die Nullstellen der ζ -Funktion*," saying it the way some other girl might say "Paris" or "Richard Harding Davis," but with a note as well warning that though she might possess an active sense of humor, it did not extend to Riemann. Kit had seldom, if ever, in those years up and down the New York–New Haven Trail, from debutantes to nymphs of the Tenderloin, run into anything as passionate as this stretching of spine-top and untilting of face. Her neck so uncommonly slender and long.

"Hate to tell you, but it's not all that hard to prove."

"Oh, a *Vectorist* proof, no doubt. And only excessive modesty has kept you from publishing."

Rummaging through the domestic clutter for a piece of paper with some blank space still on it, "Actually, I've been looking for a way, not to solve the Riemann problem so much as to apply the ζ -function to vector-type situations, for instance taking a certain set of vectorial possibilities as if it was mappable into the set of complex numbers, and investigating properties and so forth, beginning with vector systems in the prime-numbered dimensions—the well-known two and three of course, but then five, seven, eleven, so forth, as well."

"Only primes. Skipping the fourth dimension, then."

"Skipping four, sorry. Hard to imagine a less-interesting number."

"Unless you're—"

"What?"

"Sorry. I was only thinking out loud."

"Aw." Was this amazing girl flirting? How come he couldn't tell?

"Death to reveal, I'm afraid."

"Really?"

"Well . . ."

Which is how Kit first heard about the T.W.I.T. back in London, and of the ghostly neo-Pythagorean cult of tetralatry or worship of the number four, currently the rage in certain European circles, "not to mention ellipses and hyperbolæ,"—loosely allied, in fact, as a sort of correspondent group, with the T.W.I.T. These days, among those inclined to studies of the mystical, the fourth dimension, owing to the works of Mr. C. Howard Hinton, Professor Johann K. F. Zöllner, and others, was enjoying a certain vogue, "or should I say vague?" remarked Yashmeen.

"O.K. Here's the Riemann proof—" He wrote down, without pausing, no more than a dozen lines. "Leaving out all the obvious transitions, of course. . . ."

"Of course. How eccentric-looking. What were these upside-down triangles again?"

All at once there came a horrible metallic banging and rattling from down at the street entry, accompanied, from beneath the window, by some tone-deaf beer-society in vulgar song. She stared at Kit, lips compressed, head nodding emphatically. "So—it's all been a trick. Hasn't it, yes. A squalid trick."

"What?"

"Arranging for your little beer-mates to show up just as I was about to find the screamingly obvious fallacy in this . . . 'proof' of yours—"

"It's only Humfried and some pals, trying to get a *Hausknochen* in the lock. If you want to hide someplace, I'd suggest that closet, there."

"They . . . live here?"

"Not here, but none of them more than a couple-three blocks' distance. Or do you Riemann folks say 'metric interval'?"

"But why should your friend use *his* key—"

"Um actually, as it turns out, every *Hausknochen* fits pretty much every lock around here."

"Therefore—"

"Social life is unpredictable."

Shaking her head, eyes on the floor, "*Auf wiedersehen*, Herr Professor Tra-verse." By mistake the door she chose to exit by was not the back door, though it looked—and from its swing, weighed—about the same, indeed seemed to be located in the same part of Kit's rooms, as the back door, and yet, strangely, was *not* the back door. How could this be? Actually, it was not even a door to begin with, but something designed to allow the human brain to *interpret* it as a door, because it served a similar function.

On the other side of it, she found herself out on the corner of Prinzenstraße and Weenderstraße, known to mathematicians here as the origin of the city of Göttingen's coordinate system. "Return to zero," she muttered to herself. "Begin again." She didn't find this sort of excursion especially out of the ordinary—it had happened before, and once she had learned that no harm was likely to come of it, she had been able to shrug and get on with her day. It was no more upsetting than waking from a lucid dream.

Back in quotidian space, Kit, having observed Yashmeen apparently walk through a solid wall, had scarcely time to register puzzlement before up the

stairs and into the room came thumping Humfried and his creature, Gottlob. They were indeed seldom noted apart, being driven by a common fascination with the details of others' lives, no matter how trivial. "All right, where is she?"

"Where's who, and speaking of *where*, Gottlob, *where's* 'at twenty marks you owe me?"

"*Ach, der Pistolenheld!*" screamed Gottlob, attempting to hide behind Humfried, who as usual was looking for food.

"No, no, Gottlob, control yourself, he will not shoot at you, here, see, this interesting sausage—" Eating half of it immediately and offering the rest to Gottlob, who shook his head vigorously no.

Humfried had been obsessed for a while now with a connection he thought he saw between automorphic functions and the Anharmonic Pencil or, as he preferred, *das Nichtharmonischestrahlenbündel*, though he had decided to write all his papers in Latin, which no one had done since Euler.

Gottlob, on the other hand, had come to Göttingen from Berlin to study with Felix Klein, on the strength of Klein's magisterial *Mathematical Theory of the Top* (1897), approached by way of functions of a complex variable, and also to get away from the sinister influence of the late Leopold Kronecker, keepers of whose flame regarded the complex domain with suspicion if not outright abhorrence—only to find at Göttingen a dwarf variety of the same monumental quarrel between Kronecker and Cantor then raging in the capital, not to mention the world. Fundamentalist Kroneckerites had been known to descend on Göttingen in periodic raids, from which not all of them returned.

"*Ach, der Kronecker!*" cried Gottlob, "he needed only to step out into the street, and mad dogs ran away or, knowing what was good for them, at once regained their sanity. Only five feet tall, but he enjoyed the abnormal strength of the possessed. Each time he appeared, one could count on weeks of panic."

"But . . . folks say he was very sociable and outgoing," said Kit.

"Perhaps, for an insane zealot who believed 'the positive integers were created by God, and all else is the work of man.' Of course, it is a religious war. Kronecker did not believe in pi, or the square root of minus one—"

"He did not even believe in the square root of *plus two*," said Humfried.

"Against this, Cantor with his *Kontinuum*, professing an equally strong belief in just those regions, infinitely divisible, which lie *between* the whole numbers so demanding of all Kronecker's devotion."

“And that’s what has kept driving Cantor back into the *Nervenklinik*,” added Humfried, “and he was only worrying about line-segments. But out here in the four-dimensional space-and-time of Dr. Minkowski, inside the tiniest ‘interval,’ as small as you care to make it, within each tiny hypervolume of *Kontinuum*—there likewise must be always hidden an infinite number of other points—and if we define a ‘world’ as a very large and finite set of points, then there must be worlds. Universes!”

In fact, a mystical Cantorian cult of the very, indeed vanishingly, negligible, ever seeking escape into a boundless epsilonic world, was rumored to be meeting weekly at Der Finsterzweg, a beer-hall just outside the old ramparts of the town, near the train station. “A sort of Geographical Society for the unlimited exploration of regions neighboring the Zero. . . .”

As Kit had rapidly discovered, this sort of eccentricity abounded at Göttingen. Discussion ran far into the night, insomnia was the rule, though if one did wish to sleep for some reason, there was always chloral hydrate, which had its own circle of devotees. He saw Yashmeen now and then, usually across the smoke-clouded depths of some disreputable *Kneipe* by the river, but seldom to talk to. One evening he happened to be walking along the promenade on top of the old fortifications, and near the statue of Gauss passing to Weber a remark forever among the pages of silence, noticed her gazing out over the red-tile roofs of the town, and the lights just coming on.

“How’s ’at old Zeta function?”

“Something amuses you, Kit?”

“Every time I see one them Zetas, it makes me think of a snake up on its tail being charmed by a snake-charmer, ever notice that?”

“These are the reflections that occupy your time?”

“Let me put it a different way. Whenever I see one, it reminds me of you. The ‘charmer’ part anyway.”

“Aaah! Even more trivial. Do none of you ever think beyond these walls? There is a crisis out there.” She scowled into the stained orange glow of the just-vanished sun, the smoke rising from hundreds of chimneys. “And Göttingen is no more exempt than it was in Riemann’s day, in the war with Prussia. The political crisis in Europe maps into the crisis in mathematics. Weierstrass functions, Cantor’s continuum, Russell’s equally inexhaustible capacity for mischief—once, among nations, as in chess, suicide was illegal. Once, among mathematicians, ‘the infinite’ was all but a conjuror’s convenience. The connections lie there, Kit—hidden and poisonous. Those of us who must creep among them do so at our peril.”

“Come on,” Kit said, “let a trivial fellow buy you a beer.”

THAT WINTER, IN St. Petersburg, troops at the Winter Palace fired on thousands of unarmed strikers who had marched there in respectfulness and innocence. Hundreds were killed and wounded. In Moscow the Grand Duke Sergei was assassinated. More strikes and fighting followed, along with peasant and military insurrections, on into the summer. The Navy mutinied at Kronstadt and Sebastopol. There was street-fighting in Moscow. The Black Hundreds carried out pogroms against Jews. The Japanese won the war in the East, obliterating the entire Baltic Fleet, which had just sailed halfway around the world to try to lift the siege of Port Arthur. A general strike in the autumn cut the country off for weeks from the rest of the world and, as people came slowly to realize, stopped history. In December the Army beat down another major uprising. In the East there was fighting all up and down the railroad lines, banditry, eventually a Muslim rebellion in Inner Asia. If God had not forgotten Russia, He had turned His attention elsewhere.

For the rest of Europe, the year that followed was to be remembered as the year of Russians everywhere, fleeing into mass exile, as the Revolution went collapsing at their heels—the Peter and Paul Fortress and sooner or later death if they stayed. Who would have thought the Tsar had so many enemies?

Kit had begun to notice Russians in the Weenderstraße. Yashmeen was convinced they were in town to spy on her. They were trying to blend in, but certain telltale nuances—fur hats, huge unkempt beards, a tendency in the street to drop and begin dancing the kazatsky to music only they could hear—kept giving them away.

“Say, Yash, what’s with all those Russians?”

“I’m trying not to take it personally. My parents were Russian. When we lived on the frontier, my family and I one day were taken in a raid and sold as slaves. Some time later, Major Halfcourt found me in a bazaar in Waziristan and became my second father.”

Not feeling as surprised as he might’ve been, “And he’s still out there someplace?”

“Whatever he’s been up to, it is of enough political weight that someone thinks they can use me somehow.”

“Are you in touch?”

“We have our own means, which neither distance nor time can affect.”

“Telepathy or something.”

She frowned. “Perhaps you think I am a girl with Æther between her ears, easily influenced by the beliefs of the T.W.I.T.”

“Dang, Yash, you sure *read my mind* there,” with what he hoped was enough of a twinkle that she wouldn’t take offense, for her unannounced ferocities, however playful, continued to cause him some dismay.

She was fooling with her as-ever transcendently interesting hair, always a sign of trouble down the line. “Even with the Revolution, news comes back. Thousands of miles, multitudes of tongues, unreliable witnesses, deliberate misinformation and all, it finds its way back to the T.W.I.T. people at Chunxton Crescent, and what comes out of their shop can surprisingly often be trusted—even the War Office admits it’s better ‘gen’ on the whole than their own.”

“Anything I can do, just fire away.”

She gave him a look. “To the world here, I enjoy a reputation as ‘my own person’ . . . yet I am also, ever . . . *his*. My other family have gone on to destinies I cannot imagine. Only in dreams do I catch glimpses of them, moments so fugitive, so slight, that afterward there is the sensible ache here, in my breast, of cruel incompleteness. My true memories do not begin until the moment *he* first saw me in the market—I was a soul impaled, exactly upon the cusp between girl and young woman, a cusp I could literally feel as it penetrated me, as if to bisect me—I do hope that is not a blush, Kit.”

Well, sort of, but more from perplexity than desire. Today she wore an ancient coin, pierced and simply suspended from a fine silver chain around that ever-fascinating neck. . . . “It’s an Afghani dirhan, from the early days of the Ghaznid Empire. He gave it to me, for luck.” Over its nine or ten centuries of circulation, thieves had nipped and shaved silver from around the outer border, but the inner circle survived, crowded with ancient writing. It was the outward emblem of a hidden history of assault and persistence, the true history of its region and perhaps of this young woman, through this life and who knew how many previous. “Thank you for the offer, Kit. If anything arises, I shall certainly seek your advice. I am ever so grateful,” with eyes a-dance in the luxury of believing little beyond the assumption that he would allow her to get away with this, yet expect no favors in return. He ate it all up like a fairground ice-cream cone, even if he had to pretend indifference. You sure never got this in New Haven. They didn’t know how to flirt like this even in New York. This is the world, Kit reflected, and a couple nights later, around three A.M., as an extra smack of the bamboo stick, *She* is the world.

Meanwhile Yashmeen, a fine one to scold the trivial, had taken up with a wealthy coffee scion named Günther von Quassel. On their first date, Günther, a devotee of the less than universally respected Ludwig Boltzmann, had tried to explain to her the Riemann problem by means of statistical mechanics.

"Here. Tell me please, as n grows infinitely large, what the n th prime is?"

Sighing, though not with desire, "Its value—as any Gymnasium child at all acquainted with the Prime Number Theorem knows—approaches $n \log n$."

"So. Looking at the entropy of a system—"

"Some sort of . . . steam-engine word, isn't it? Am I a boiler engineer, Gūnni?"

"Except for the usual constants," writing as he spoke, "one may express the entropy as . . . the summation, of $p(E_k)$, times $\log p(E_k)$. All in order so far?"

"Of course, but this is only statistics. When do we get to the mathematics?"

"*Ach, die Zetamanie* . . . your Prime Number Theorem is *not* statistical?"

But she was looking at what he'd scribbled down, the two something-log-somethings. "This E_k . . . ?"

"The energy of a given system, you use the k to index if there is more than one, and there usually is."

"And is there insanity in your family, Gūnther?"

"You do not find it odd that the N th prime for very large N may be expressed as one measure of the chaos in a physical system?"

None of which kept Yashmeen from pursuing the attachment.

"AS A CRIME," Humfried pointed out, "often of the gravest sort, committed in a detective story, may often be only a pretext for the posing and solution of some narrative puzzle, so romance in this town is often pursued as little beyond a pretext for running in and out of doors, not to mention up and down stairs, while talking nonstop and, on auspicious days, screaming."

Yashmeen one day overheard Gūnther confessing to his intimate Heinrich, "There is only one girl in this town I have ever wanted to kiss." It was doctoral-candidate talk, of course, though Yashmeen in her Riemannian obsession appeared to be unaware of the Göttingen tradition that required successful Ph.D.'s in mathematics to kiss the statue of the little goose-girl in the fountain of the Rathaus square, getting soaked and with luck delirious in the process.

Yashmeen grew exercised. "Who is this person?" she demanded of Heinrich, who assumed she was teasing.

"All I know is, he says that she waits every day near the Rathaus."

"For whom? Not for Gūnther?"

Heinrich shrugged. "Geese were mentioned?"

"Real geese, or University students?" as she went storming out into the Platz, where she began to loiter menacingly. For days. Gūnther happened

by, or did not happen by, but never in the company of any imaginable rival. Naturally she failed to pay much attention to the fountain nearby, or the little statue. One day she did hear him singing—

Her idea of banter
Likely isn't Cantor,
Nor is she apt to murmur low
Axioms of Zermelo,
She's been kissed by geniuses,
Amateur Frobeniuses,
One by one in swank array,
Bright as any Poincaré,
And . . . though she
May not care for Cauchy,
Any more than Riemann,
We'll just have to dream on . . .

Let
 it occur in spots in
Whittaker and Watson—
Unforeseen converging,
Miracles emerging,
Epsilonic dances,
Small but finite chances,
For love . . .

Concerned for her mental stability, everybody felt obliged to put in their two pfennigs, including Kit. "Yash, you want to forget this customer, he's not for you. I mean, what if he is tall, muscular, even in some strange German way some'd think presentable—"

"You forgot brilliant, amusing, romantic—"

"But you are being used by your racial memory here," declared Humfried indignantly, "you are out looking for some Hun."

"Are you saying I want to be overrun and conquered, Humfried?"

"Did I say that?"

"Well . . . suppose I do, is that, one, any business of either of you, two, anything I feel that I must apologize for, two point one—"

"Yash, you are flat correct," Kit nodded, "we're all just night-riders here miles up a posted trail, making pests of ourselves. Ought to be shot, well, shot at, anyway."

"Günther may be all you say and worse, but until you experience emotions

the way we women do, you will find in your relations with us much struggle and little success."

"I could manage some sniffing maybe, would that help?"

She was already halfway out the door, scowling over her shoulder in reproof, when who should come bounding athletically up the stairway but the very Adonis under discussion, yes Günther von Quassel himself, brandishing a *Hausknochen* in menacing fashion, approaching, as the stairs brought him to their upper limit, a comparable level of brute rage. "Now Gūnni," she greeted him, "you mustn't murder Kit, must you?"

"What here is he *doing*?"

"I live here, you oversize bratwurst."

"Oh. *Ja*. This is true." He considered. "But Fräulein Yashmeen . . . she does *not* live here."

"Say, Günther, that's really interesting."

Günther gazed at him, for what any but the erotically smitten would have considered far too long. Yashmeen, meanwhile, playful as Kit seldom saw her, kept snatching away Günther's dueling-society cap and pretending to throw it down the stairs. Each time he would respond to the prank only after several seconds had gone by, though with as much alacrity *as if it had just happened*. In fact, according to Humfried, a disciple of Professor Minkowski, it ought to be obvious to all that Günther inhabited his own idiomatic "frame of reference," in which time-discrepancies like this one were highly important, if not essential, features. "He is not 'here,'" Humfried explained, "not completely. He is slightly . . . somewhere else. Enough so, to present some inconvenience to any who value his company."

"Yeah, but how many of those could there be?"

"Oh you're all so horrid," Yashmeen said.

Günther meanwhile insisted that Yashmeen's presence here amounted to an affair of honor. "Obviously, we must now a duel fight."

"How's that?"

"You have insulted me, you have insulted my fiancée—"

"Oh, Gūnni?"

"*Ja, Liebchen?*"

"I'm not your fiancée, remember? we talked about this?"

"*Egal was, meine Schatze!*—meanwhile, Mr. Traverse, as challenged party you shall have the choice of weapons—how lucky to have provoked your quarrel here, in the dueling capital of Germany. At my disposal, and yours, are matched pairs of the *Schläger*, the *Krummsäbel*, the *Korbrapier*, even, if it should be your vice, the *épée*—a weapon which, though not up to German standards, is I am told quite all the rage now in England—"

"In fact," said Kit, "I was thinking more along the lines of, maybe, pistols? I happen to have a couple of Colt six-shooters we can use—though as for 'matched,' well . . ."

"Pistols! Oh, no, no, impulsive, violent Mr. Traverse—here we do not duel to *kill*, no! though of course wishing to maintain the honor of the *Verbindung*, one's deeper intent is, upon the face of the other, to *inscribe one's mark*, so that a man may then bear for all to see evidence of his personal bravery."

"Is that what that is on your face, looks like a Mexican tilde?"

"Unusual, no? Later we worked out the probable frequency the blade must have been vibrating at, given the restoring moment, elastic constants, all in the most gentlemanly way, which I am sure your American gunslinger has no concept of. Oh it is true, *ja*, there do creep among us certain *desperate maniacs*, who have come away from their affairs carrying actual *bullet scars* on their faces, but this takes a degree of indifference to mortality that few of us are blessed with."

"Are you saying pistols'd be too dangerous for you, Gūnni? Where I'm from, when it's about Honor? why a man's pretty much obliged to use a pistol. Blades, that'd be just too—I don't know—quiet? mean? . . . sneaky, even?"

Günther's ears quivered. "Am I to understand, sir, that you mean thus to classify the German as a subspecies of some *less valiant race*, is this correct?"

"Wait—I've insulted you again? you're . . . calling me out, twice now? Well! That sure ups the ante, don't it? say, if you're going to get offended at every little thing, maybe we'd better have all our chambers full, six shots apiece, what do you think?"

"This *cowboy*," Günther in plaintive appeal, "seems unaware that civilized beings are repelled by the stench of powder."

"Listen, Porkbarrel, what's this really about? I told you it wasn't going to converge, and it never will."

"There. Again. Three times, now."

"Just the same, about halfway through, you skipped a step. Not to mention in one of your series you grouped some terms together wrong, reversed sign a couple times, even went and *divided by zero*, yeah you did, Gūnni, look, right here, you're lucky somebody took the time to read it that close—basic stupid mistakes—"

"Four!"

"—and instead of all this carving on folks, why not consider if this is really the best field of study for you, if all you want's your face on a souvenir postcard."

"You insult Geheimrat Hilbert now!"

"At least he's got the right hat."

After repeated consultations with the Prussian dueling bible, a small

brown volume known as the *Ehrenkodex*, Kit, Günther and their seconds met down by the river, as soon as there was light to see by. It was one of those profoundly agreeable spring mornings, which more rational souls might choose to celebrate in some less lethal way. The tanneries had not quite cranked up to operating speed, and the air still smelled like the countryside it had passed over. Willows swayed alluringly. Farther off, ruinous watchtowers emerged from the mists. Early bathers came blinking by, wraithlike and curious. Students in dressing-gowns, Tyrolean hats, colored spectacles, carpet slippers, and exotic pajamas with Oriental prints on them, sleepily queued up to stake demented wagers with the bookmakers found haunting such affairs. Now and then someone, edging into consciousness, remembered he was still wearing his *Schnurrbartbinde*, or nighttime mustache-keeper. Those principally involved stood around bowing back and forth for a while. A vendor appeared with a cart carrying a steaming tub brimful of boiled sausages, and beer arrived as well, both in barrels and in bottles. A photographer set up his tripod and Zeiss "Palmos Panoram" for any who might wish visual mementoes of the encounter.

"Very well, I did divide by zero—once only, mea maxima culpa, no effect on the result. I did not omit any step where you said I did. You, rather, incapable appear, of following my argument."

"Hogwash Günther, look, between steps, here to here, this function of time, you assume it's commutative, just glide on past it, when in fact—"

"So?"

"You just can't make that assumption."

"I may do as I wish."

"Not when this needs a minus sign here. . . ." Thus, despite the restlessness of the crowd, who had been chanting "*Auf die Mensur!*" for quite some time actually, the young men found themselves in yet another mathematical exchange, which soon bored everyone into wandering away, including Yashmeen, who had in fact left much earlier, on the eager arm of a graduate anthropologist visiting from Berlin, who hoped to define here among the dueling clubs of Göttingen a "control-group" for examining the deeper meanings of facial inscription, especially as practiced among northern tribes of the Andaman Islands—departing, in fact, to shouts of "Stephanie du Motel!" and rude whistling, as the community, being fully up to date on the details of the romance, had found itself divided as to Yashmeen, some regarding her as a brave and modern young woman, like Kovalevskaia, others as a faithless harlot whose mission in life was to lure promising mathematicians into premature demise by duel, as the infamous Mademoiselle du Motel had done to group-theory godfather Evariste Galois back in 1832.

AMONG THE RUSSIAN VISITORS to Göttingen were some of decidedly mystical inclination. Yashmeen recognized them right away, having met, and on occasion eluded, several at Chunxton Crescent, but here, farther east, there was no avoiding the momentous events unfolding close by. By 1906 there were Russians everywhere, flown and fleeing westward, and many brought copies of young Ouspensky's book *The Fourth Dimension*.

An unkempt individual with a single name, vaguely Eastern, was observed hanging around with Humfried and Gottlob. "He's all right. He's a Theosophoid, Chong is. That's like a Theosophist, only not entirely. He's here to learn about the Fourth Dimension."

"The what?"

"And the others, of course."

"The other . . . ?"

"Dimensions. You know, Fifth, Sixth, so on?"

"He believes Humfried to've been his teacher in a previous life," added Gottlob, helpfully.

"How odd. There are educators among the invertebrates?"

"But look here!" cried Yashmeen, "that's no Chinese Bolshevik—it's old Sidney, well blimey if it isn't old Kensington Sid, with some vegetable dye—I say Sid! it's I! old Yashmeen! Cambridge! Professor Renfrew! Remember?"

The Eastern personage gazed uninformatively back at her—then, seeming to reach a decision, began to speak with some intensity in a tongue no one could identify, not even by its language-family. More cognizant listeners understood this as an attempt to distract.

Dr. Werfner of course had spotted him right away and assumed he'd been sent out as one of Renfrew's operatives, as did Yashmeen, who assumed he was there to spy on her, for he did seem to show an uncommon interest in the Russians who passed through town. Whenever they sought out Yashmeen to discuss the transtriadic dimensions, Chong was sure to be there.

"Four is the first step beyond the space we know," said Yashmeen. "Dr. Minkowski suggests a continuum among three dimensions of space and one of time. We can look at the 'fourth dimension' as if it *were* time, but is really something of its own, and 'Time' is only our least imperfect approximation."

"But beyond the third," persisted one of their Russian visitors, "do dimensions exist as something more than algebraists' whimsy? Can we be given access to them in some more than mental way?"

“Spiritual,” declared Gottlob. As far as anyone could recall, it was the first time he had ever used the word.

“The soul?” Humfried said. “The angels? The invisible world? The after-life? God?” By the end of this list, he had acquired a smirk. “At Göttingen?”

KIT MEANWHILE HAD BEGUN to frequent the Applied Mechanics Institute. Since Prandtl’s recent discovery of the boundary layer, things over there had been hopping, with intense inquiry into matters of lift and drag, powered flight poised like a new-feathered bird at the edge of history. Kit had not thought much about aerodynamics since his brainless sojourn in the Vibe embrace, when in the course of golfing parties out on Long Island he had become acquainted with the brambled guttie, a gutta-percha ball systematically roughened away from the perfectly spherical by molding little knobs all over the surface area. What he could not help noticing then, even though he was not all that crazy for the game, so inordinately populated by the likes of Scarsdale Vibe, was a particular mystery of flight—the undeniable lift of heart in seeing a struck ball—a tee shot especially—suddenly go into a steep ascent, an exhilarated denial of gravity you didn’t have to be a golfer to appreciate. There being enough otherworldliness out on the links already. Finding himself more and more drawn to the microcosm on the other side of the Bürgerstraße, Kit soon understood that the brambling of the golf-ball surface had been a way to keep the boundary layer from detaching and falling apart into turbulence which would tend to drag the ball down, denying it its destiny in the sky. When he mentioned this in conversations at the saloons along the Brauweg frequented by engineering and physics students, some immediately suggested implications for the Earth, a brambled spheroid on the grand scale, in its passage through the Æther, being lifted not in the third dimension but on a euphoric world-line through Minkowski’s “four-dimensional physics.”

“What happened to vectorism?” Yashmeen teased.

“There are vectors,” Kit replied, “and vectors. Over in Dr. Prandtl’s shop, they’re all straightforward lift and drift, velocity and so forth. You can draw pictures, of good old three-dimensional space if you like, or on the Complex plane, if Zhukovsky’s Transformation is your glass of tea. Flights of arrows, teardrops. In Geheimrat Klein’s shop, we were more used to expressing vectors without pictures, purely as an array of coefficients, no relation to anything physical, not even space itself, and writing them in any number of dimensions—according to Spectral Theory, up to infinity.”

“And beyond,” added Günther, nodding earnestly.

IN HILBERT'S CLASS one day, she raised her hand. He twinkled at her to go ahead. "*Herr Geheimrat*—"

"'Herr Professor' is good enough."

"The nontrivial zeroes of the ζ -function . . ."

"Ah."

She was trembling. She had not had much sleep. Hilbert had seen this sort of thing before, and rather a good deal of it since the turn of the century—since his own much-noted talk at the Sorbonne, he supposed, in which he had listed the outstanding problems in mathematics which would be addressed in the coming century, among them that of the zeroes of the ζ -function.

"Might they be correlated with eigenvalues of some Hermitian operator yet to be determined?"

The twinkle, as some reported later, modulated to a steady pulsation. "An intriguing suggestion, *Fräulein Halfcourt*." Usually he addressed her as "my child." "Let us consider why this should be so." He peered, as if she were an apparition he was trying to see more clearly. "Apart from eigenvalues, by their nature, being zeroes of *some* equation," he prompted gently.

"There is also this . . . spine of reality." Afterward she would remember she actually said "*Rückgrat von Wirklichkeit*." "Though the members of a Hermitian may be complex, the eigenvalues are real. The entries on the main diagonal are real. The ζ -function zeroes which lie along Real part = $1/2$, are symmetrical about the real axis, and so . . ." She hesitated. She had *seen it*, for the moment, so clearly.

"Let us apply some thought," said Hilbert. "We will talk about this further." But she was to leave Göttingen shortly after this, and they would never have the chance to confer. As years passed, she would grow dim for Hilbert, her words those of an inner sprite too playful to frame a formal proposition, or to qualify as a fully habilitated Muse. And the idea itself would evolve into the celebrated Hilbert-Pólya Conjecture.