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## Chapter 18

### The Home Stretch

Piecing together the story from accounts given me over the years, it seems that emeritus professors Wiegenlied Wissenschlaf and Régard Nombriil, then in their late 60's, were lingering over a chess game in the Graduate Lounge of the Mathematics Department one overcast afternoon in September of 1963. As befits eminent retirees, they were reminiscing more than they were playing, and it occurred to Wiegenlied to ask the question no one had articulated for almost a decade. It is easy to imagine him waving an index finger in the air and rocking as he asks:

"What even happened to Aleph McNaughton Cantor?"

Befuddlement at the question prompted Régard to look up from the chessboard: "McNaughton Cantor? McNaughton Cantor? Hmm; don't recall the name. It does ring a bell. What's he done? What's his field? "

Wiegenlied stretched out his legs , sinking lower into his chair, enabling him to make better use of his paunch as a snare drum for idle fingers:

" I have a vague memory of him showing up here in 1948 with a remarkable paper he'd done on the disintegration...or was it the fusion? ... of the rings of Saturn .... He was quite young, I recall. Let's ask Bob."

Bob Boolean had just turned 42. Presently the department chairman, he was sitting by himself before a table at the opposite

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end of the room. Horn-rimmed and partly bald, wearing a suit a size or more too large for him and suggestive of a frayed doormat, everything about him contributed to his air of learned distinction. An active figure in the developing field of Several Complex Variables, he'd been too preoccupied with stretching the rubber homeomorphism sheet over the arm of his chair to overhear their conversation.

At the sound of his name he turned around, laid down his pipe and, with the defensive squint of a shy scholar, pushed the spectacles to the bridge of his nose, the better to regard his colleagues.

" Bob, " Wiegenlied continued, " Do you know what Cantor's up to these days? Have you heard anything about him? He must be at some university somewhere. That is, if he's still living. "

" Cantor? Cantor? " Boolean's brow furrowed. His left hand covering his chin and most of his mouth, his body resumed the posture to which a life dedicated to deep thinking had accustomed it. With some perplexity he replied:

" I haven't seen hide nor hair of him since.... about 1956. The department gave him some gut courses to teach after he got out of the mental hospital because we felt sorry for him , things like pre-calc and linear algebra. Then I heard somewhere, quite recently in fact, that he was preparing a thesis in 'philosophy' " - his tone of voice indicated derision -

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" or some such thing. Where I don't know. Cantor made quite a splash in 1951 , didn't he, with that paper on the moons of Jupiter? Hasn't done a thing since. Never will, I warrant."

Nombril's hair fell over his brow as he stared at his navel, ",,,moons of Jupiter...moons of Jupiter..." He'd fallen into one of those states of deep introspection, from no worshipper at the shrine of Science would dare awaken him. Boolean and Wissenschlaf continued to discourse on various topics until Régard emerged spontaneously from his trance and cried:

" .... Gentlemen! That paper was published in 1944 , not 1951 , by a very famous Polish mathematician by the name of Kantorowicz . You'll find it in the *Comptes Rendus* of that year!" But a few moments later, with a gesture indicative of weariness and recollections of better days he shook his head: " No ... that can't be right.. the war was still on. I don't know. My memory is shot to hell I fear "

" 1944? That's impossible! ", Boolean concurred " I was only 18 then, and still in high school. But, you know..." Bob Boolean began gesticulating in the air, making calculations on his fingers ....." Cantor gave a talk on that paper in front of the whole university in .... 1948! Yet he couldn't have been more than 12 or 13 at the time.. *That's right* !" Boolean snatched up his pipe and bounded out of his chair:

" *That's the whole point ! He was only thirteen years old !* " He began pacing about the room in eccentric convex ovals:

" That's why everybody was so fired up about him! " Pausing to gaze for a minute out the window, searching for the lost lemma.

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One sensed that he was reliving memories that were fairly painful to him. When he turned back to address the Lounge, his face his face was flushed with emotion:

"Prodigies of his caliber were always being picked off by Princeton, or Chicago, Cambridge, Göttingen. Later they were being wooed by Harvard, Berkeley: institutions with clout or money. With the acquisition of Aleph, Zelosophic U. stood in a fair way of having its name engraved in the hallowed halls of mathematical history: *Aleph McNaughton Cantor! The pride of Zelosophic U. The Math Department's bid to immortality !*"

A dozen graduate students were gathered about Boolean's feet - to be more precise the old clod-hoppers he'd worn for the last 6 years - hypnotized by his rapt evocation of these recently vanished pages of departmental folklore:

"Why, not even Zelosophic's illustrious founder in the 18th century, a man of extraordinary versatility, no less distinguished in public life than in the arcades of science, whose very name serves even today as a byword for Renaissance achievement ... " Boolean coughed ; his fulsome encomium had robbed him of breath. Taking a sip of tea followed by a drag on his pipe he continued " ... ever did anything as fabulous as producing a major result in Astrophysics at the age of 12!

" Its no exaggeration to say that for the next two years, Mathematics glowed in the reflected aura of that wretched Aleph Cantor... that criminal Aleph McNaughton- Cantor! That!...That!" Like ...like", Boolean's hands clutched after an appropriate image:

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*"in the same way that a complicated, technically demanding yet essentially trite theorem in higher mathematics .. ( Analytic Number Theory for example ) ... will miraculously radiate in unimagined glory from the adjunction of a single corollary !"* He was close to tears,

*" Then , gentlemen ...all too soon ! The day of reckoning came ! It was the end of *Le Temps des Illusions Perdues* !" His shrug indicated bitterness:*

*" The marriage soured long before the end of the honeymoon! No sensible person, no-one endowed with normal intelligence, could have predicted that Aleph McNaughton Cantor, having brought forth an astonishing tour-de-force at the age of 13, would then proceed to do absolutely nothing for the rest of his life !"*

Outbursts of sympathetic indignation could be heard from every part of the room:

*" Had our department not been so shamelessly betrayed we would not now be sitting in a threadbare lounge , scratching our heads trying to figure out why all the NSF grants are going to Columbia or Princeton instead of us! Or why the ICSHA <sup>1</sup> - I would remind you that Hans Mengenlehre was its president for 10 years - passed us up altogether and held its inaugural conference at the University of Michigan at Ann Arbor. Or why there isn't a single top-echelon European research mathematician who responds to our calls for exchange scholars. All we ever get are the mediocrities!"*

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<sup>1</sup>The International Conference of the Slice Homology Association

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A Danish Visiting Scholar stood up and walked out of the room, slamming the door behind him. Boolean wagged a finger in his direction and glowered, " You see! Yes, that's what I'm talking about! I don't give a damn what he thinks, it's the truth!"

Their running feud had been the talk of the department since his arrival at the beginning of the school year. Most of the faculty agreed that the young Dane was actually quite a good mathematician, but that Bob Boolean belittled anyone working in Knot Theory:

" Or why the radio telescope being built out in the suburbs as a joint project between Haverford College and Bryn Mawr wasn't given to our ideally situated observatory grounds near Wilmington, Delaware.

*" Gentlemen! : The aureole of Cantor's ignominy has cast its pallor over everyone of us! It is he, and he alone, who bears the responsibility for the sad fact that we've acquired the reputation of a provincial backwater."* Boolean spread wide his arms and blubbered: " The sad truth of the matter is, that we have nothing to offer our graduate students beyond the memory of past greatness, a greatness that slipped away in the very moment of its conception !"

Bob Boolean sank into an easy chair, overcome with a sense of defeat. A long silence ensued as he sipped his tea. His left arm fell over the side of the chair almost to the floor; indeed his whole posture seemed to indicate that he might prefer it if he were rid of this earthly existence entirely. Wiegenlied Wissenschlaf was the first to respond:

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" Can't something be salvaged from this mess?"

Régard Nombril concurred: " I was thinking somewhat the same thing myself. Where is Cantor these days ? He must be working on something! In 20 years, one would imagine that even the most backward idiot can contribute *something* to humanity ! "

Boolean grimaced in disagreement: " I don't know. He was a teaching assistant here until around 1955; then he just disappeared. I assume he got his Ph.D. from somewhere, though I've never seen his thesis. We may be able to do something with that. It won't be another "moons of Jupiter" of course ; yet the combination of that thesis with his earlier work might interest the editors at *Springer-Verlag* . To tell you the truth I don't know where to begin looking for him. "

That seemed to end the subject for the time being. Turning away from his audience, Bob buried his face in that month's issue of the *Bulletin of the American Mathematical Society* . In a few minutes he had to lower the magazine, aware that everyone was continuing to stare at him. He fidgeted uncomfortably, clearly not immune to twinges of conscience:

" Well, all right. We should try something, shouldn't we? There may be somebody over in Bantam Hall who know what he's been up to. I'll get them to let me look at the records. " Then, as if transmitting some profound universal truth he'd just discovered he added: " It's impossible for anyone to completely vanish in this day and age."

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A week later an excited Bob Boolean strode into the Graduate Lounge brimming with news: " I set up an interview with the Provost. She made a few phone calls. The people she spoke with informed her that Cantor changed majors after he got his B.Sc. in 1958. For a year or so he was enrolled in another department . She wasn't sure which one it was, but suggested I visit Philosophy.

" So, yesterday I did go over to Philosophy. They denied Cantor's relevance in 1960. The present chairman's an old friend of mine and promised to keep me posted. Just this morning he called me up to say that Cantor had switched to Biology. His information was second-hand and several years out of date, but he suggests that we pay a visit to Agassiz Hall. They should be able to tell us where he is."

The following Monday in a pouring rain, a group consisting of Bob Boolean, Wiegenlied Wissenschlaf, Régard Nombriil and two math graduate students entered Agassiz Hall, making straight for the office of the chairman, Dr. Wilfred Stoma.

"Cantor? McNaughton Cantor? Yes; I guess you might find him vegetating in some evolutionary niche around here."

"*What ??*" Beside himself with astonishment, Bob once again readjusted his spectacles : "*You mean he's still around ???!!*"

"Suppose so. I ran into him in the lobby a few days ago. Odd habit of his, the way he stares up at that statue of Linnaeus - awful thing, I can't get the university to get rid of it - as if he's onto something that puts the old man in his place. I don't keep dossiers on people around here. He doesn't impress me as the kind of person that's easily gotten rid of."



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Confused glances imbued with latent anger passed between Boolean, Nombriil and Wissenschlaf. Bob Boolean turned back to Stoma and said:

" I'm sorry. This does come as a surprise, you see. We assumed that after getting his Ph.D., Aleph would have gone somewhere else."

" *P.H.D.??!* " Stoma snorted , " We've been waiting for his thesis for years so we can dump it in the official crank file !! " Outraged by this new evidence of provincial prejudice against other sciences, and by what appeared to him to be an unrelenting posture of insolence towards a student who'd once distinguished himself as a mathematician and undoubtedly still had a great deal to offer, Boolean sprang out of his chair:

" Where do we find him?" he snapped.

" Oh, he's got a lab somewhere down in the basement. There's lots of junk down there. You'll just have to poke around like we all do."

Apoplectic with rage, Bob led his contingent out of the chairman's office, down the staircase and into the basement. Halfway down the murky corridor, Wiegenlied banged his head against a case of skeletons and passed out. They lay him out on the stone floor and covered him with a blanket. His condition didn't appear to be serious enough to warrant calling in outside assistance. One of the grad students remained behind to watch over him as the others continued on their way.

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The heavy rains had engendered an in-house fog throughout the premises . Down in the basement it was thick as melted butter. Bob, Régard and the student meandered about the web of corridors, racing past the lurid squeals and shrieks emerging from private torture chambers, bumping into bottled monstrosities, slipping on raw tissue and other slops, goaded by the clankings in the overhead pipes that had the effect of a symphony of exploding shrapnel.

In a haphazard fashion they knocked on the doors of various laboratories before stepping inside them. The reception was rarely friendly. Entering the wrong laboratory unannounced became the prelude to a quarter hour of mutual embarrassment involving elaborate apologies, suspicions questions and hostile commentary before they were allowed to extract themselves and continue on to the next one . It would have been worse had Bob not made it clear that he was chairman of Mathematics: under normal circumstances campus security would have been called in to eject this deliberate sabotage of the inexorable advance of biological inquiry. As for the whereabouts of Aleph Cantor's lab, no-one had known where it was located , nor showed any interest in finding out .

Eventually they found someone who told them that Harry Malakoff, up on the third floor, was my only friend in the building. Boolean and Nombril groped their way back out to the elevator, picking up Wiegenlied Wissenschlaf *en transit* . He'd recovered sufficiently for them to be able to walk him to the elevator, up to the 3rd floor, and into Malakoff's office . With

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Harry's help, Wiegenlied was laid out on a cot to sleep it off. His reception was cordial :

" Cantor? Cantor? Oh...you mean ' *Huxley* '!" Harry laughed. He'd been calling me by that nick-name for so long he'd forgotten my real name, "Sure; he's around. I haven't been down to see his lab in 3 years but I can show you how to get there."

Harry sat down in front of his worktable. Brushing away the carcasses of a thousand plant lice, he drew them a diagram.

" Let me see .. I think ...it's ..two turns to the right and one to the left - I'm not sure, it's been such a long time. It's a tiny door without any window . You can't go wrong if you keep a lookout for the stacks of bottles of pickled fetuses. He's right in there between them. "

Harry walked them to the door: " Give *Huxley* my regards , will you? Funny, I didn't know he had any other friends on campus. His work's not worth a damn, but we get a kick out of shooting the breeze. " Bob snatched the map out of his hands. Scarcely pausing to say thank-you or good-bye, he pushed Régard and the students before him out the door .

Back down in the basement they once again lost their way. Their fundamental mistake was to make a third turn to the right. On an impulse Régard grabbed the doorknob of the office closest to hand and strode - right into the lab of "Dr. Mabuse"! A single glance encompassed the lay of the land; Régard fainted dead away.

Complementary to the fiendish procession of half a dozen or more dogs suspended on the walls with interconnecting rubber pipes between mouths and stomachs, now there were flayed dog

skins piled up in heaps and draped over chairs and tables. In the time since I'd visited him Mabuse had signed contracts with souvenir shops in Atlantic City for lampshades, decks of playing cards, and other items manufactured from his dead animals.

Mabuse must have thought that Régard was already dead; he rushed to the front of the lab and hovered over his prostrate body with a scalpel. Speaking in some strange patois of English, Czech and German he ordered Bob to drag the body out at once, else he would claim the corpse for purposes of trade. As Bob was too stunned to reply at once, Mabuse began kicking him in the shins.

The two students wrenched the scalpel out of his hands, pushed him into a swivel chair and tied him up with the sections of dog intestine lying about the floor. Then they lugged Nombri's body out into the corridor. There was the familiar procession to the elevator and up to Malakoff's lab. After laying it out alongside Wissenschlaf, Bob left the grad students to attend to the two casualties of war, while he returned to the basement alone. The obsession to find me at any cost had taken total possession of him.

"Cantor!" he muttered, "Aleph McNaughton Cantor! All these years...and it's been Cantor all along...He's have to pay!! .. He'll have to pay !!...Oh, he'll pay all right !! "

Boolean's left knee crashed into a glass case. Like torpedoes thrown out by a sinking submarine, bottles spilled out in all directions. Soon a maelstrom of broken glass and pickled babies was floating down the corridor on a river of formaldehyde. Boolean's feet squished doggedly through the revolting slime. The knowledge that he was nearing the end of his quest had rendered

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him insensible to personal comfort. As the groping fingers of his right hand reached out to close around the brass knob of the door to my lab, he slipped on a knotted bundle of umbilical cords and fell into the gook with an enormous splat. My door flew open and I looked up to see my former collaborator, colleague and friend, Dr. Bob Boolean, crawl into the lab.

The only illumination in my compartment was supplied by a brightly burning unshaded lightbulb hanging from the ceiling. The small amount of available space was packed solid from floor to ceiling with boxes holding records, data sheets, notebooks, thousands of typed and handwritten pages, reams of graphs, files, photographs, diagrams: the accumulation of 4 years of patient labor.

As Bob stepped gingerly around this warehouse of boxes he discovered me sitting in a far corner of the room (if a room this small could be said to have a far corner) hunched over the radiator on a high stool, totally absorbed in measuring the size of various sites on the body of a garter snake with a pair of calipers.

Formaldehyde poured in from the corridor in great gouts, dragging in arms, tails, eyes, pieces of marinated baby flesh and other strange vestiges of gut and tissue. All of my records from the years 1959 to 1961 were thoroughly soaked. It would take me months to separate out the pages and dry them. Had I not rushed to the door and slammed it shut all of my work might well have been ruined.

The rest is quickly told. Boolean turned the university upside-down to get the authorization to move me and my research

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into the Math-Physics building. Many of the rooms on the top floor were vacant and I was assigned lab space of an order of magnitude comparable to Harry Malakoff's. A special grant from the 1793 Endowment enabled me to buy all the lab equipment I needed. I even had funds and space for housing and caring for the big apes, the gibbons, chimpanzees and orangutans required at this stage in my research.

Of course there had to be a *quid pro quo* : my part of the bargain was in the form of a solemn promise to produce a recognizable thesis by the end of 1964 , within 15 months on the outside. As Bob frequently reassured me, It didn't matter if the thesis didn't set the world on fire provided it demonstrated the abilities of a competent scientist . Yet the triumvirate of Boolean, Wissenschlaf and Nombriil made me understand in no uncertain terms , that if I disappointed Mathematics again I would be hounded out of Zelosophic U., perhaps the whole city of Philadelphia . Taking a page from the way that non-persons were created in the Soviet Union, every record pertaining to my association with Zelosophic, even my very presence on the campus at any time , would be incinerated. Boolean swore that he would make it his personal commitment to see to it that I never obtain a university teaching position anywhere for the rest of my days.

At the time his threats had little effect on me. Unfortunately he was too busy with administrative duties and preoccupied with his own research to listen with more than half an ear to anything I tried to tell him. Had he bothered to listen, the concrete evidence that I was able to marshal - even at this stage - in defense of my

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ideas would have convinced him that, in addition to being sensational, my present work would amply justify the faith in my brilliance that had inflamed the department in the late 40's. Indeed, when compared to my present findings, my childhood accomplishments would loom in the world's optic like the charming doodles of kindergarten.

