The Mongoose and the Tennis Serve

Prosthesis and Computer in Lars Gustafsson's *The Tennis Players*.

by Jonas Ingvarsson

> The aim of all commentary on art now should be to make works of art – and, by analogy, our own experience – more, rather than less, real to us.
>
> Susan Sontag, 1964

As N. Katherine Hayles have claimed, bodies *in* the texts also inspire the body *of* the texts. Since bodies always interact with artifacts, the relation between bodies and artifacts become a crucial motif for revealing the true body of the text. Moreover, in his remarkable book *Prosthesis* (1995), David Wills suggests that it seems productive, in speaking of artifacts and texts, to establish the prosthesis as a guiding metaphor. These will be the points for departure in making some notes on the connection of texts, bodies and machines in Lars Gustafson's novel *Tennisspelarna* (1977, *The Tennis Players* 1983 – quotes here from English translation).

In the novel, a very popular professor at the University of Austin, Texas (as it happens not unlike Mr. Gustafsson himself) recounts the events from a few years back, in 1974. One day one of his students hands the professor a »small dusty volume», with the title *Memoires d'un chimiste*. A polish scientist named Zygmunt I. Pietziewzskoczsky writes the book in 1899. This book reveals that Zygmunt and some other Poles in exile formed an anarchistic group in Paris who actually were living upstairs from August Strindberg, in the Hotel Orfila. Strindberg's *Inferno* written in 1898 describes Strindberg's alchemistic experiments in the hotel, and his increasing paranoia, believing the Powers were persecuting him. The novel has historically been explained as an absinth fantasy, or as a result of the author's madness, or simply as a fascinating piece of fiction. This book – *Memoires d'un chimiste* – proves Strindberg (or his fictional alter ego) indeed was right: these Polish anarchists really *were* after Strindberg – or rather: they wanted to get hold of his alchemical results, his attempts to produce gold.

One student suggests that it would be possible to compare Strindberg's *Inferno* and Pietziewzskoczsky's memoirs day by day by running the two volumes through a computer, and program it to check the day-by-day correlation between the two narratives. In the year 1974, as the reader of this paper may remember, the computer wasn't the everyday working tool it is nowadays. And the interesting idea seem to get lost in the lack of access to »computer time» (this being another forgotten condition nowadays for doing research in the 1970s and 80s…).

The Tennis Serve

Beside trying to explain to the American students that Nietzsche's »Übermench» is *not* to be mistaken for Superman, the narrator spends quite few hours every week on tennis; playing tennis, speaking tennis, reading tennis, even dreaming about tennis.

The game of tennis is thus given a deep existential meaning to the protagonist, and he is convinced that the only two things that would really, really impress an alien visitor from another planet is *Don Juan*, by Mozart, and – the tennis serve:

> In world tournaments, the Australian Open for instance, it may happen that a player makes three double faults in a row.
> This says something about the degree of difficulty. No one really knows how to serve. You know in theory, of course, but nobody who's just about to make a serve can feel confident of his success. There's really only one way, and that is to commit yourself to the dark, wordless side of your personality, to rely on it and leave it the hell alone. Only then will you be able to carry through the breath-taking act of muscular co-ordination, thousandth-of-an-inch adjustments of wrists, ankles, and back muscles which constitute a serve.
> The tennis serve is a window to the unknown.
>
> (p. 7)

Immediately, thus, the novel establishes a description of the relation between Man and his tools (the tennis racket, the ball, the court), which clearly reflects the connection to the feedback-and-control-system as presented by Norbert Wiener, and the theory of cybernetics. Moreover, through the game of tennis the professor becomes closer acquainted with Chris, one of his newly found tennis partners, who is into cybernetics:

> »When I was twelve my stepfather gave me one of Norbert Wiener's books. There was a place in it that fascinated the hell out of me: that's where Wiener explains cybernetically why the mongoose will always defeat the rattlesnake. Once I'd grasped that I was able to grasp everything else. I was into programming and computer language at an age when all the other guys were collecting stamps. I kept it up through college, and I kept it up in grad school. I think I can say that I know quite a bit about programming and computers.»
>
> (p. 42 f.)

Let us hesitate for a moment at the parable of the mongoose and the cobra. This story tells us something significant about cybernetics and tennis. The mongoose, Norbert Wiener tells us, could fight the snake because when the snake is making his attacks, he makes them in a predictable pattern, while the mongoose actually only feints, but with every feint he is coming closer, until finally attacking when the cobra is not in a position to react rapidly.[1] This parable suggests that the mongoose is a better prospect of a tennis player than the professor – since

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[1] Wiener, Norbert, *Cybernetics 1961???*

the mongoose always takes advantages of its previous moves. Therefore he eventually would end up *actually knowing* how to perform a tennis serve, something the professor believes is impossible – or at least refers to as »a window to the unknown».

Chris is working at the Strategic Air Command, monitoring the Southern Air Defense District's operating computer in Fort Worth. This happens to be one of the most powerful computers in Texas, and Chris often uses the surplus capacity for his own calculations. The professor now suggest that they should use this surplus capacity to feed the two books about the Hotel Orfila into the Southern Air Defense computer. After a couple of days Chris announces that he has managed to convert the two books into Gödel Numbers – which we learn is a pretty advanced piece of mathematics – and then fed the machine with these numbers. What we will get when the computer is done, says Chris, is a *third book*: »The Third Book about the Inferno.» (p 68-69)

What is suggested here is the possibility of transforming intellectual manifestations into pure information, something that used to be a dream of many programmers and artists. In a way this is echoed in HUGO, the human genome project, which a few years ago managed to transform the human DNA into a string of numbers.[2]

Another notable effect of this aspect of Lars Gustafsson's novel is the presence of the computer as THE Machine. I will soon get back to that.

The Prosthesis

As David Wills notes, in *Prosthesis*, the early 1550s makes a perfect point for departure.[3] In 1553, Thomas Wilson publishes his *Arte of Rhetorique*, the first rhetoric to appear in the English language. In this volume, the word prosthesis is introduced for the firs time.

In 1555 Petrus Ramus publishes *Dialectique*, a French translation of his own Latin rhetoric first published 1543. Whereas Wilson's rhetoric is strictly Ciceronian, and thus traditional, Ramus book is an attempt to overthrow traditional rhetoric. But what concerns us here is that the translated rhetoric of Ramus is the first volume using quotation marks to indicate segments of the text originating from other sources. This technical and typographical device, then, introduces another break; a splice or a coupling. A coupling in the written, printed language.

Finally, the year 1552, the barber (and later the king's surgeon) Ambroise Paré publishes an account of how to successfully amputate a wounded leg. A few years later he

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[2] It also echoes the computer in Douglas Adams cult novel *Hitch-Hikers Guide to the Galaxy*, which after calculating for seven and a half million years on the question of the meaning of life, ends up with the answer »42».

[3] The account for Wilson, Ramus and Paré is from the chapter »Cambridge, 1553», in Wills, David: *Prosthesis*, Stanford University Press, Stanford, CA 1995, p. 214-249.

publishes a drawing on the construction of an artificial leg with 15 movable parts – the first modern prosthesis.

In Thomas Wilson's rhetoric the word »prosthesis« is assigned – as it should – to an extension. But it is assigned to a *grammatical* extension:

> Of Addition. As thus: He did all to berattle hym. **Prosthesis**
> Wherein appereth that a sillable is added to this
> worde (rattle.) Here is good nale to sel, for good ale.

Arguably, this is the first time the word prosthesis appears in print. And when it does, it appears as a linguistic, and not as a physical, addition. At the same time Petrus Ramus introduces the quotation marks – the accentuation of the insertion of non-original writing into the body of text.

Once again history shows how the construction of the bodies within the texts also interact with the body of the text. The perhaps surprising combination of Ramus, Paré and Wilson enables us to make a productive construction out of: the quotation, the (mechanical) prosthesis and the (grammatical) prosthesis. All of them aiming at establishing a coupling: a joint.

Let us finally consider some modern aspects of the prosthesis, in the writings of Norbert Wiener and French media theorist Bernard Stiegler. In his last book, *God & Golem inc.*, Norbert Wiener makes some crucial remarks on what we may call the »nature« of the prosthesis:

> [T]his type of engineering need not be confined to the replacement of parts that we have lost. There is a prosthesis of parts which we do not have and which we never had. The dolphin propels itself through the water by its flukes, and avoids obstacles by listening for the reflections of sounds which it itself emits. What is the propeller of a ship but an artificial pair of flukes, or the depth-sounding apparatus but a vicarious sound-detecting and sound-emitting apparatus like that of the dolphin? The wings and jet engines of an airplane replace the wings of the eagle, and the radar its eyes, while the nervous system that combines them is eked out by the automatic pilot and other such navigation devices.[4]

This suggests – as did Thomas Wilson and Petrus Ramus – that the prosthesis is not only a replacement of a lost quality – a leg, a hand or an eye. Moreover it could be *an enhancement of qualities already there*, or an *addition of qualities we never had*. The tennis racket, then, is not a replacement of a lost piece of arm and hand structure, but an addition to the abilities of moving and swinging. The tennis racket, thus, is a prosthetic device.

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[4] Wiener, Norbert, *God & Golem, Inc. A Comment on Certain Points where Cybernetics Impinges on Religion* (The M.I.T. Press, Cambridge, Massachusetts 1964), s.76.

Bernard Stiegler put it this way:

> La pro-thèse n'est pas un simple prolongement du corps humain, elle est la constitution de ce corps en tant qu'«humain» (les guillemets appartenant à la constitution). Elle n'est pas un «moyen» pour l'homme, mais, sa fin, et l'on sait d'essentielle équivocité de cette expression, «la fin de l'homme».

A pro-sthesis, says Stiegler, is not a supplementary device. It is an essential part of the constitution of the »human» body (and Stiegler put quotation marks round »human» to underline the construction – as did Petrus Ramus in 1555). The prosthesis is not a means for Man but his goal. This, Stiegler claims, makes up for an interesting ambiguity in the phrasing » the end of Humanity».

Apocalypse – How?

The end of Humanity is actually at stake in *The Tennis Players*. Towards the end of the narration the professor reads The Daily Texan and among all the headlines, one is certain to arrest his attention:

TWO HOURS OF BLACKOUT IN NATIONAL DEFENSE SYSTEM

Apparently, and much to the confusion of the Pentagon experts, the whole data system of the strategic air force, from Alaska to the Canal Zone have been out of order for two hours. The professor calls Chris over the phone:

> »Hi,» I said, »*I see from the paper that your Strindberg research is progressing.*»
> »Oh well,» Chris said, »it boiled up rather fast yesterday, I've never experimented with the whole national system before. [– – –] There's nothing to get upset about, they're going to have a disarmament conference in Helsinki anyway.»
> »Watch out you don't get into any accidents,» I said.
> »I will,» Chris said. »The rest is very simple. In a couple of weeks you'll have the third book about the Powers.»
>
> (p. 85)

The main use of the computer in the 1960's and 70's was of course for military strategy, and governmental or corporate administration, and the fact that in those days the computer indeed was a MACHINE comes into play, when associating the computer with control and power. It is also a Machine believed to possess hitherto unknown knowledge:

> I wrote into the computer, »DØES EVIL EXIST?»
> »What do you think yourself?» Chris asked.
> »I don't know. Well, yes, I believe it does exist.»
> »INSTRUCTIØN INCØMPLETE,» the machine remarked discreetly.

>»STØRE QUESTIØN MEMØRY 12,» Chris vengefully tapped back on the keyboard.
>»YØU ARE A BLØØDY KILLER,» I wrote.
>»INSTRUCTIØN INCØMPLETE,» answered the servile machine.
>»STØRE INSTRUCTIØN MEMØRY 3,» I added on the sly.
>»SIGNATURE,» the machine blinked angrily at me.
>»He wants to know who's programming this memory. You've got to have a series of numbers that shows you've got the right to enter Memory 3. That's one of its best memories.»
>»GØD,» I wrote.
>»SIGNATURE UNSATISFACTØRY,» the machine challenged me.
>»SHUT UP YØU BLØØDY MØTHERFUCKER,» I wrote.
>Strangely enough it did. Right away.

>>   (p. 57 f.)

This passage clearly demonstrates what we might call »the metaphysics of computing»: the almost animistic assumption that computers properly addressed could deliver answers to any question. From a historical point of view this situates the computer in Gustafsson's novel in a intersection between what N. Katherine Hayles has described as a shift of epistemological dominant from »presence-absence» to »pattern/randomness» (Hayles 1999, s. 116 ff). This is also a shift from a human-mechanical perspective to a posthuman/digital.

>One could focus on pattern in any era, but the peculiarity of pattern in these texts is its interpenetration with randomness and its implicit challenge to physicality. Pattern tends to overwhelm presence, leading to a construction of immateriality that depends not on spirituality or even consciousness but only on information. [5]

>>   (Hayles 1999, p. 35)

In contrast with the presence-absence dominant, where a text is a result of a physical print, the text in the pattern/randomness mode is a production of codes and digits. It is interesting to see how already in the 1960s and 1970s these patterns emerge, and how they affect humans as well as texts and bodies. The outcome of the Gödel-numbered books is indeed »patterned» rather than »present». At the same time, the circumstances of the »third book» is rather a case of ”presence-absence” – either the computers are in use, resulting in an potentially automated and impersonal society; or they are not in use, perhaps resulting in something else. The giant SUPER-MACHINE from the dystopic scenarios we are reminded of in Gustafsson's novel, however, is not what we have today. Nowadays, computers are pervasive in another sense, having become microcomputers, and as a result, digital techno-logy today – becoming more or less what we call »ubiquous computing» – rather than being observable physical objects, is to be seen as the *subconscious* of our culture.

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[5] Hayles, N. Katherine, *How We Became Posthuman. Virtual Bodies in Cybernetics, Literature and Informatics* (The University of Chicago Press, Chicago & London 1999), p. 35.

Thesis-Antithesis-Prosthesis

In the »third book on the Inferno» we have one of the most apparent features of what might arise when performing a prosthetic reading. Seeing Strindberg's *Inferno* as the *thesis* we could assign the Zygmunt Pietziewzskoczsky's *Memoirs d'un chimiste* as the *antithesis* – what eventually (if ever) will come out of the strategic defense computer is the third book; and not the synthesis but the *prosthesis*.

It is also apparent that all functions of prosthesis is at work in *The Tennis Players*: The quotation and the grammatical prosthesis is apparent in the use of Strindberg's novel, spliced into the body of Gustafsson's text. But also we may notice a kind of biographical quotation, since the places and many of the events in the narrative reflects Gustafsson's own life in Austin, Texas, be it with or without the tennis skills and polish anarchists. For the biographical author Gustafsson, this novel indeed may fill the same function as the Southern Air Defense District's operating computer. Lars Gustafsson, the author, puts himself into a different program, so to speak, trying to establish new couplings.

The mechanical prosthesis is evident in the game of tennis (although Wiener's mongoose seems to do that better), and of course in the computing of the two books. Clearly they do not substitute anything in the novel. Moreover they create new opportunities, new couplings.

The fact is that there *never surfaces any third book* in Gustafsson's novel, only the thought of this monster computer »desolately ruminating year in and year out on [– – –] the drama that once was acted out at the Hotel Orfila in Paris, in the 1890s, the whole drama with all its variants, with all the alternative dramas and possible complications». But I think it is possible to make the claim that this never surfaced volume is more interesting than the final product, which may not have been a prosthesis at all but a synthesis. And we do not want that, since the truth lies never in a simple fact – but always in an extension. What we aim at, therefore, is a construction that we may label: »Thesis – Antithesis – Prosthesis»

To explore this proposition, let us finally return to the transformation of Strindberg's and Pietziewskoczsky's books into Gödel numbers – *Why* Gödel numbers? There is no explanation of this in the novel itself, apart from the obvious reason that in order to compare the two books in a computer 1974, you need to transform them into some kind of numerical system. To perform a Gödel numbering (an operation introduced by mathematician Kurt Gödel 1931) is to transform any formula, or linguistic object, into a natural, albeit complex, number. Gödel numbering could be used to make linguistic or formal objects countable and enumerable. Inherent in Gödel's theorem is the notion of self-referentiality – Gödel's theorem actually proves that it cannot be proved (if it fails, it works...). For Gödel, this operation was used to prove his incompleteness theorem – the axiomatic description of the world will never be completed. Although this might be regarded as a negative assumption,

there is, paradoxically, always something to explore in the self-reflexive loops of this operation.[6]

There are actually quite a few events in the novel taking place »within» a tennis serve. The narrator describes the ball hanging in the air, in the exact moment before hitting a first serve. Here the story makes an elliptic turn into a new chapter and a new string of events, before (some 20 pages later) returning to that precise moment – the racket hits the ball, the serve spins nicely in to the service box. This elliptical turn in the novel could actually describe the narrator's urge to »commit » himself »to the dark, wordless side» of his personality. Although »wordless» may not be entirely accurate, what we read is an attempt to transform two pieces of literary work into pure information in order to get new information – making the computer "a window [sic] to the unknown». To succeed with the tennis serve, we have to commit to forces of which we are not entirely in command. And to succeed in the literary analysis we have to commit ourselves to the *server*.

Within every explanation lies the *destruction* of any objective description of the world, alongside a *construction* of all possible realities – as the awakened awareness of the self-reflexive moment in every construction of meaning. The Gödel numbers and Gustafsson's novel thus demonstrates the deconstruction of reality itself, but not in a pessimistic, or nihilistic, way. It shows the *process* rather than the final result. »In place of a hermeneutics we need an erotics of art», writes Susan Sontag in »Against Interpretation», 1964. True, and by performing the deconstructed dialectic Thesis–Antithesis–Prosthesis on any literary work, »The Rhetoric of Fiction» is replaced by »The Erotics of Friction».

Literature, thus, if used as a productive, sensual, formula, rather than as an object to be *finally* explained, becomes another prosthesis: a container of never completed tales about the Inferno crisis.

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[6] There is also a famous connection between Gödel's theorem and the discourse of Artificial Intelligence:

> The application of Gödel's theorems to fields outside meta-mathematics, notably the philosophy of mind, was initiated by Gödel himself. He had a strong philosophical bent towards realism/platonism which also motivated his (meta)mathematical discoveries [Feferman 88, p. 96], [Weibel & Schimanovich 86]. Gödel first thought that his theorems established the superiority of mind over machine [Wang 90, pp. 28-9]. Later, he came to a less decisive, conditional view: if machine can equal mind, the fact that it does cannot be proved [Weibel & Schimanovich 86], [Casti 89, p. 321]. This view also parallels the logical form of Gödel's second theorem: if a formal system of a certain kind is consistent, the fact that it is cannot be proved within the system. Gödel's more famous first theorem says that if a formal system (of a certain kind) is consistent, a specific sentence of the system cannot be proved in it.

Bojadziev, Damjan: »Mind versus Gödel», http://nl.ijs.si/~damjan/g-m-c.html. Other Gödel resources used in this article is Hofstadter, Douglas R.: *Gödel, Escher, Bach. An Eternal Golden Braid* (Anniversary edition), Penguin, London 2000. Rosing, Hans: »Att resonera logiskt: Inledning till logikens grundbegrepp och metod», www.abo.fi/fak/hf/filosofi/HRlogik/kapitel9.pdf; Aaby, Anthony »Gödel Numbers and Gödel Numbering», http://cs.wwc.edu/~aabyan/Logic/Book/book/node171.html.