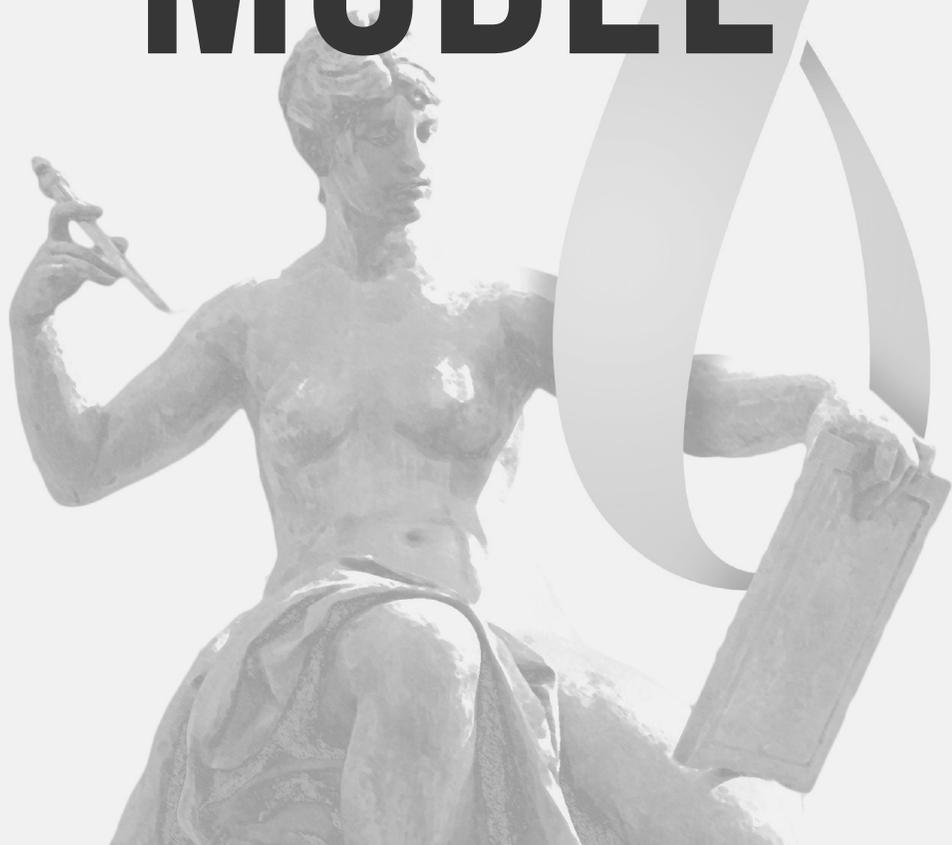


JACQUES BERGUR

**GOEBIUS'
STRANGE
MODEL**



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Jacques Bergur

GOEBIUS' STRANGE MODEL

To my family, to my friends...

Thanks to:

Richard Feynman, Douglas Hofstadter, Richard Dawkins, Jean-Claude Ameisen, Isaac Asimov, and the many other enlightened minds who asked good questions, tried to answer them ... and were able to share their findings.

... And also to:

Marine who ensured the medical and emotional coherence of this story, and Thomas who ensured its logic and scientific consistency.

... And always to:

Monique, for her patience and guidance during the slow gestation of this book.

... As well as to:

Michel Saint-Germain who was the first to believe in this strange story.

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Shelley for her patient and careful review and correction of the English release, as well as Monique and Dwight T.M. for their comments.

TO THE HURRIED READER:

Some of the elements of logical reasoning presented in this story require a little attention and effort. The impatient reader can ignore them and accept their conclusions, without it being detrimental to the understanding of the story. However, it would be a pity not to ponder such reasoning because there is payoff down the road...

FOREWORD

When the idea to write this story first arose, I had in mind to write a thriller involving scientific concepts.

However, after scientific and literary professionals read it, it seems that it is rather a suspense novel about science...

But after all, does it really matter?

This story is a parable, a ride between determinism and randomness, where starting from a riddle usually attributed to Henri Poincaré, the benevolent shadows of Newton, Gödel, Turing, Moebius, and others hover...

At the reader's discretion, this journey can be undertaken and understood along three possible routes:

-As a plot with multiple unexpected twists and turns until its conclusion.

-As an unexpected encounter, in plain language and without mathematics, with a few concepts usually restricted to insiders, but which are essential in order to try to understand the world in which we are all immersed. Thus isomorphisms, chaos, entropy, emergence, and strange loops invite themselves discreetly, although in a determinant way, into the fictional landscape and the plot.

-Finally, those who analyze the story's structure will discover that through multiple self-reflections, the structure itself mirrors the concepts evoked.

If, after having read this book, the reader has been entertained, and feels the desire to deepen his or her knowledge on the exciting concepts touched upon in this story, then this book will have achieved its modest objective.



1 - DINNER

“Will you have some salad?” my neighbor was saying. I nodded yes. What else could I do?

Obviously, I could understand what I was told...

There were at least fifty guests sitting in a circle in a huge round vaulted hall made of exposed stones.

All these people were silently eating, exchanging only the few words necessary to maintain decorum during the meal.

But did I actually know how to speak?

It seemed to me that I had never tried.

Had I ever existed before the moment when my neighbor had offered me some salad?

At least I couldn't remember; still it seemed to me that I had a name. Something like Li-O.

Near the center of the circle was a buffet meal, and a couple of waiters offered dishes so that the guests could help themselves or serve their neighbors. The two waiters were young and athletic; they could have been brother and sister, not so much because of the similarity of their facial features, but rather because of the expression of cold indifference on their faces.

I stealthily looked at the man to my right who had offered me some salad, then looking to the other side, I could see that my left neighbor was a woman. She silently offered me some soda water, and looking further around the room I could see that we were a group of men and women, apparently sitting in no specific order around the outer circle of the table. Something was striking: all these men and women had an air of resemblance. The whole assembly was composed of adults, each with a well-proportioned physical appearance and an almost non-expressive

face. Each of them looked absorbed in their own meditation. Did I look like them...?

The plates, mugs, and carafes were made of black enameled stoneware, decorated with golden geometrical patterns. The cutlery seemed to be made of frosted silver. All of these created a harmonious whole.

The meal was excellent and would have been rather pleasant if some conviviality had breathed a little animation into the gathering. After the duck breast with red berries and the cheese, just as the neighbor on my left was passing me a slice of cake, with the same indifference and icy politeness that seemed to inhabit all of us, something surprising happened. It lasted only for a fraction of a second. Maybe I looked astonished as her eyes briefly met mine, but she seemed unaffected and looked away. I noticed her empty glass, and I felt that I had to offer her some water, which gave me the opportunity to realize that I could speak.

When the meal was over, a kind of carillon sounded, and I stood up without thinking. Not knowing why, I turned my back to the center of the circle, and at the same time as the others, I moved away from the center towards the circular wall of the hall. I came up against a solid wood door, as the others did. On the door there was a small card on which was written in green ink "Come in". Obviously I could read as well...

As I was stepping through the doorway, I could see that the other guests were also stepping through their doors. Mine gave access to a small corridor a few meters long, leading to a room of about two hundred square feet. A large carpet covered the paving slabs of the floor. The walls were made of exposed stones, identical to those in the hall from which I had come, and a thick curtain seemed to conceal a window. Set in the wall, adjacent to the wall with the window, was a heavy wooden door carved with geometric patterns. There was a large single bed, a massive wooden desk and a solid wooden wardrobe in warm shades, two wooden chairs and a brown leather armchair. A small bathroom was attached to the room. The whole appeared to be undoubtedly comfortable. However, there was no mirror in the bathroom.

At this moment, I realized that I had not seen any objects in the entire place that could reflect an image.

I tried to open the carved wooden door but it was locked. I went to the desk and found a white notepad, several different colored pens, and envelopes. One of the envelopes was sealed and the word 'Open' was

written in the same green ink. I sat in the armchair, opened the envelope; inside there was a sheet of paper where the following message was printed in red:

‘First Warning: you have looked surprised; this is strictly forbidden.’

An oppressive feeling came over me.

At the bottom of the page, in smaller letters, was written what appeared to be a quote or a motto.

*‘Those who, through their efforts, will firmly hold the rope,
Soon shall master their fate, and be able to cope.’*

I began to inspect the contents of the wardrobe. It contained clean linen, underwear as well as shirts, trousers, jackets and a pair of shoes. The colors of the clothes were rather austere and sober, just like those the other guests and I were already wearing. Then I opened the top drawer of the desk; there was a notebook with a red cover, entitled:

‘The Fundamental Survival Rules’

On the front page, as if by way of introduction, a threatening sentence was written in red letters:

‘The following rules are very serious; obey them, because the danger is immense.’

Then, on the next page, a kind of children’s rhyme was written in calligraphy:

Not to disappear, the following rules shall you always obey:

- Personal feelings shall you never show, and the following rule shall you always obey:

- Personal questions shall you never ask, and the following rule shall you always obey:

- Personal answers shall you never give, and the following rule shall you always obey:

- Personal appearances shall you never mention, and the following rule shall you always obey:

-Silent shall you remain each day unless previously addressed.

The other pages of the notebook were blank except for the motto written in small letters at the bottom of each page:

*‘Those who, through their efforts, will firmly hold the rope,
Soon shall master their fate, and be able to cope.’*

I put the notebook back on the desk, and I went to the curtain. Indeed it concealed a window that I could not open; and beyond the panes, the fog and the night created a total darkness.

I suddenly felt deeply tired, and I took off my clothes; and in doing so I noticed that I was wearing a necklace, fitted closely around my neck, which I was not able to remove.

I fell into a heavy dreamless sleep.



2 - PROJECT

The e-mail clearly stated that Matthew's presence at the meeting was mandatory, and that the subject, although not disclosed, was of utmost importance. While he was lost in speculation about what might motivate such a summons, Alex poked his head around the door.

"You've got two minutes for me?"

"Of course, come in!"

A little older than him, Alex was a man about thirty-five years old, clear-eyed, and with an energetic appearance. Matthew liked to work with him because, in his eyes, he combined skill, energy, and modesty, a mixture of rare qualities in their environment... at least with regard to the last one.

"For once, I'm not coming to discuss work with you," he continued. "Warm weather is approaching and I wanted to know if you have plans for the next long weekend?"

"Nothing planned at the moment," replied Matthew, "but I'm planning to relax for a couple of days to clear my mind."

"Well, I promised a friend to take his sailing boat from Bonifacio and deliver it to Mahon. Kristen was supposed to come with me, but she can't, and I wondered whether you might want to replace her. "Besides," he added, "I know that just like me, you love scuba diving. And if we take an extra day off once we are there, maybe we will have time for one or two dives. I've heard about a beautiful underwater cliff full of magnificent gorgonian corals."

While he appreciated Alex and knew Kristen too, Matthew was not particularly close to the couple, and he felt a little surprised, although pleasantly, by the invitation from his colleague. He thought for a moment. Whether it be on his tiny sailboat or in life, he was somewhat fed up

with sailing alone since... Therefore he did not hesitate very long before answering.

“Okay! But this is the only circumstance when I will agree to replace your wife!” He added, laughing. “By the way, what is the size of the boat?”

“35 feet. Will it be all right?”

“Perfect!”

“Well, we’re both under pressure, as usual; we can talk after the meeting. I assume that you don’t know more than I do regarding what all this is about.” Alex’s assumption was correct.

Once again, Matthew was going to be late. Whatever his reasons might be, he knew for sure that some of his colleagues would not miss an easy opportunity for a sarcastic remark. He rushed through the corridor, and on reaching the closed meeting room door, he ran into Plantin, the Head of the Legal Service.

Unlike him, Plantin was almost never late. Amused, and with a hint of joy, which he qualified in his mind as ‘preventive revenge’, Matthew thought that their simultaneous arrival would cut short any attempt of snide remarks. ‘So much the better’, Sarcastic Rudy who was a formidable expert in the art of nasty remarks combining both a sense of humor and political savvy, would not have the opportunity to exercise his talents to Matthew’s detriment.

When they entered the room, Rudy laughed and blurted out, “Only five minutes late; for one of them, for once this is an improvement! But the other, probably under his influence, is moving in the wrong direction.”

“This meets the average; everything is fine,” retorted Matthew.

While Plantin was quietly sitting, the Boss had a faint smile on his lips. He was silently observing this exchange. The Boss was a man in his mid-fifties, who probably was used to some self-discipline, because in spite of his tired face, he had kept a supple and firm physique. After conducting a review of the current projects and of the immediate commercial prospects, the meeting took a more serious tone.

The situation was serious and could be summed up in four alarming findings:

- For the last two years the company had not produced any major innovations.
- The last major contracts had been won over by our competitors.

- The portfolio of current projects was running out as they were almost completed.
- Analysts were beginning to realize this, and the company stock price was falling.

The Boss concluded:

“If we do not get back on the right track within the next eighteen months, we will have to reduce our staff costs, and if our shares continue to fall, we could soon fall prey to a hostile takeover. It is obvious that if this happens, the fate of the company will no longer be in our control. And we will have little say on the potential reorganization.”

‘To reduce staff costs, nice understatement...’ thought Matthew.

When the meeting ended, the Boss asked Matthew to come to his office.

The blue-grey, slightly narrowed eyes of the Boss looked into those of Matthew. When he focused on his interlocutors, he looked like a cat gauging a new encounter.

“In your opinion, how can we rectify the situation?” He asked point blank.

‘Vast subject... He must not have waited for me to think about it,’ Matthew thought.

“Everyone knows that innovation is not decided overnight;” he mused aloud, “rather it is the result of a long investment policy, work of a research and development department, and also, of course, hint of gut-feeling and luck that make a company choose the right direction. It is true that the last couple of years, whenever we were close to proposing something really innovative, we were outdone by competitors right before the final finish line.”

“Of course we can blame bad luck,” said the Boss, “but that won’t move us forward, and besides, is this recurrent bad luck really a coincidence?”

As Matthew nodded the Boss added, “Sometimes you have to pave new ways and use lateral thinking methods to obtain unexpected and innovative results.”

‘I’m about to find out what he’s getting at,’ thought Matthew

Then the Boss explained his project to Matthew.

Or rather ‘The Project’

An incredible project.

A project such that Matthew would have never dared to imagine it.

He came out of his meeting with the Boss totally stunned.

When he had asked when all this would start, the Boss had replied “Immediately”, and when Matthew had asked who would create the teams and manage the project, he had simply said “You”.

The Boss had even given the project a code name: ‘Project SUCH’. Then he had added that, in order to prevent accidental or harmful leaks to competitors, the project was to remain secret as long as possible.

Thus it was up to Matthew to find a “blanket project” and make up the different teams which would work best towards the final goal. Each team would remain unaware of the existence of others. It was clear that as the work progressed, it would become necessary to make more and more team members aware of its real purpose. Matthew had carte blanche to decide when and who would be allowed to know what.

As he was about to leave the room, the Boss had added:

“I don’t want to put more pressure on you, but this project is our last card, and it rests on you.”

‘It’s fortunate that he doesn’t want to put pressure on me...’ Matthew mused.

“By the way, I know that you will be away for a few days.”

“Indeed,” Matthew had answered, “I promised Alex to sail his friend’s boat from Bonifacio, Corsica, to Mahon in the Balearic Islands; but I can try to arrange otherwise.”

“No, no, don’t change your plans. A few days of reflections at sea will certainly be useful to get you into a ‘lateral thinking’ mode.”

Then he had added with a smile:

“Try not to drown; we cannot afford to lose our best project manager and our chief engineer!”

That night, reflecting on his day, a detail left Matthew puzzled: between their discussion and the meeting, Alex had not had the time to talk to the Boss about their future absence; hence, he probably had announced their joint absences before even talking to Matthew. “Modest but confident in his intuitions...” he thought.



3 - REFLECTIONS

When I woke up, my first instinct was to look out the window. The day had dawned, but the thick fog made it possible only to distinguish a courtyard and some massive trees whose silhouettes were hardly perceptible. I took a shower. I was able to shave, despite the absence of mirrors, thanks to the electric shaver I found in the bathroom; and the skin of my face was now smooth under my fingers. Then I went to the hall where I had dined the night before.

A few people were already wandering around a buffet on which a large breakfast was arranged. The room was gradually filling up, and people seemed to sit around small tables at their own discretion.

Spotting ‘my neighbor of the night before’, I went over to her, determined to strike up a conversation and to obtain some answers to the multitude of questions jostling in my head.

While I was approaching her table, the previous warnings found in my room, as well as the first and last strange ‘Survival Rules’ came back to my mind:

-Personal feelings you shall never show...

-Silent shall you remain each day unless previously addressed.

And so I found myself sitting in front of her without daring to open my mouth. She looked at me with the same polite indifference as on the eve, and greeted me with a nod. An oppressive uneasiness came over me. Thus it was impossible to have an explanation about what I was living; it was not even possible to speak...

Just then, passing by our table without stopping, the man who had been my neighbor to the right during the dinner looked at the young woman and murmured “Hello” to her. She returned his greeting; as if it was a signal for her, she turned her beautiful impassive face to me. And

looking at the two croissants and the cup of coffee I had brought, she told me with a neutral voice that there were cakes, pancakes, as well as fruit juices at the other end of the buffet. I felt like thanking her warmly, not so much for the information that she had given me, but for having broken the oppressive silence. However, according to the ‘survival rule’ number one, I refrained and just murmured a polite “Thank you,” keeping my face and look as indifferent as possible.

The hall which at first had been silent was now filling with brief murmurs interrupting long periods of silence. We were no exception and everyone was absorbed in their own thoughts. Strangely mine were no longer completely directed towards existential questions, but they were much more prosaic:

‘She keeps an impassive face and does not ask any question; this is the attitude she should have if she were submitted to the same rule as I am. She spoke first, but after she was spoken to, and the last rule seems to also apply to her.’

Such were my thoughts when, looking at her, I saw the same strange phenomenon as the day before. But it lasted much longer than a flash and persisted for several seconds. According to the warning I had read, I was not allowed to look surprised; hence I did not show any astonishment.

I left her and went back to my room. I grabbed some paper and a pencil, and I walked back through the hall to what seemed to be the exit. The fog had dissipated under a generous sun, and I could see a large courtyard and some tall trees with slightly yellowing leaves inviting me for a visit. Along each side of the courtyard, regularly spaced benches were placed. The temperature was pleasant, if a little chilly, and I sat on an empty bench to think. The courtyard had gradually filled with men and women that I had seen in the hall, some walking, others sitting on the benches, and all of them seemed lost in deep thoughts.

I was almost certain that the woman I called now ‘my left neighbor’ was subjected to the same constraints as I was. What about the others?

Thinking about it from an external point of view, we probably all appeared to have the same attitude, and that would be the case if we were all subjected to the same rules. However, if my neighbor had talked to me, it was because someone had spoken to her before. And in such a case the person who had talked to her had heard another person talking to him.

Thus ‘someone’ was different and must have been the first one to talk this morning. To sum up my reflections, I wrote: *‘They might all be just like me (except one of them, at least)’*

I began to walk in the courtyard. While I was looking at the others walking, to my amazement, several times and for several seconds, I noticed the same strange phenomenon on some of them that I had already observed twice with my neighbor. And the ominous warning ‘Do not look surprised,’ always came to mind.

I was deeply surprised not only by the situation I was in, but also by myself. Indeed, my thoughts were mostly engaged in deciphering where I was, and in studying the behavior of the members of the small community I was a part of. But paradoxically, I had to concentrate in order to think about the deeper questions that normally I should have had been worrying about. Why did I care about this phenomenon which I considered amazing, I who had no earlier memories than the dinner of the night before?

The following lunch and dinner took place in the same atmosphere of cold and polite indifference as the previous meals. Back in my room, I found a note on my desk written in green ink and saying: ‘*It is quite fortunate for you that you have taken the warning into account and that you have applied the survival rules.*’

I fell into a deep sleep again.



4 - CONVICTIONS

Under normal circumstances, Matthew was driven by a boundless curiosity. He conceived his life as a mountain to be climbed and explored, while exercising his free will in choosing the most beautiful route and the most elegant way to accomplish it. This attitude gave him an open nature. He was accustomed to effort, but also open to the sense of danger and the concept of calculated risk. Hence he was aware of the extraordinary aspect of the project entrusted to him, and this ignited his curiosity. Yet, he was also aware of the scale of his responsibility which extended far beyond himself, his company, and his co-workers...

Puzzled, he did not know how to manage all this. During his previous night's watch, he had been mulling over the problem. Upon his return to the office, he would have to define the tasks, establish the teams, delineate and allocate objectives, while ensuring that none of the project members had all the necessary elements to discover its finality.

At first, all this seemed impossible. Indeed how could one envision having several teams working together towards a common objective without them knowing the final goal?

It was becoming clear to him that there would not be just one but several 'cover projects', and each of these projects would have to be an element of the final objective.

The weather was gray, and the boat pitched in a long swell out of nowhere. There was not enough wind to activate the wind vane steering, and once again the autopilot was not working. Alex was asleep in the forward cabin. The sails, not knowing on which breeze to lean to come back to life, moved in all directions. They tossed from one side of the boat to the other. The land had disappeared behind the horizon, two sailing days away.