

A Bloom Torn From The Silence

Stefan Markovski



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1.

The death from a metastatic colorectal cancer of the revolutionary scientist announced by the mainstream media that day stressed out not only the planet's scientific circles. The deceasing of the researcher who, for not very long succeeded to transform the entire world of science and became a science icon resonated as a shock among ordinary people, world leaders, fellow scientists, intellectuals, artists and influential figures on the social networks, planting bitterness in their souls and hope that the future will bring minds that will further develop the brilliant discoveries born from his pen.

The burial was followed by the world public as an event of highest category of importance, and was immediately given merit and recognition from the political leadership of quite a few countries.

2.

Years earlier, a Thursday in August, the Neurosurgery Clinic at the University Hospital in Bilbao resembled a giant box in which the employees seemed like trapped microbes trying to find themselves in the melee. The dynamic atmosphere in room no. 133 required constant, concentrated engagement of the neurosurgeons and the medical staff, jointly using the benefit of emerging medical technologies for removing brain tumors.

The computer-navigated probe provided the tumor location.

The opening of the sulcus allowed access to the gyrus where the tumor was located, the doctor started cutting it, millimeter by millimeter, with extremely stable, super-slow movements.

After the extraction, the doctor put cotton balls soaked in hydrogen peroxide in the resulting after-cut cavity to assist the oxygen to further destroy the tumor cells on a micro-scale, after which the space was covered with a hemostatic agent and enclosed with titanium micro plates, screws and bone material.

The clock struck noon when in the hall of the Intensive Care Unit at the Clinic, one next to another, stood a man dressed in a brown, light-cotton linen suit and a doctor-specialist.

"I am glad that I met you, Sir. She will have to spend at least four more days here. Her situation, as you know, was, to say at the least, close to hopeless. As if a supernatural force intervened in order for our team to complete the surgery impeccably. You know, she will be under constant and comprehensive surveillance and you'll be promptly informed about any new situation..." the doctor explained before showing the way to the bed.

Shortly afterwards Isaac, talking on the phone, entered the S-121 room and after a good look around he found the patient he was looking for.

Ending the conversation, he slowly bent over the woman's face hidden to the half behind the inside of the breathing machine's translucent hemisphere.

"Oceana, I came" he spoke to her.

The soft fingers of the palm slowly straightened, and Oceana gently moved her face aside.

"The doctor said that in a couple of days you'll be able to go home", said her husband.

The trembling of the eyelids on her face was barely noticeable.

"You'll be fine. Sorry I couldn't come during the operation" he said pursing his lips, "these days I was freakingly busy, as you know, with the Institute's new research project."

The angular position of the woman's face remained unchanged.

A few days later, Oceana was wide awake and already capable for more complex movements. She was allowed to use the bathroom and go to the balcony from where she could watch the nearby clinics and various types of trees in between. She could barely see, so they looked to her like a blur of colorful-green rags from the hospital's section which brought freshness, and breathed easily.

It was just before 10 am when she and Isaac left the hospital. Isaac drove carefully, briefly stopping on every prominent curve before finally arriving.

"How are you?" he asked, opening the door of the house.

The woman slowly opened her eyes.

"I've been better," Oceana replied, "time will tell. I just hope the vertigo will pass soon."

"And the eyes? Are they ok?"

Oceana turned slowly towards him, and with a slight smile on her face replied:

"I suppose they will be."

"Aren't they now?"

"Vaguely. As if someone embedded a blurry lenses to them."

"It's post-surgery. The doctor warned me," said Isaac, "about temporary side effects. "

"Yes, I guess that's it," the woman nodded, blinking again.

Their wedding from few months ago could get all epithets of luxury and wealth, with many upper class visitors, scientists, family friends, many relatives... One of Isaac's closest childhood friends, who was also a colleague-professor at Donostia International Physics Center, took the role of ultimate godfather.

From the few Oceana's relatives that remained, her uncle with his family, her aunt from the mother's side and few distant cousins came.

Isaac declined her desire of inner circle wedding, promising her one of the greatest moments in her life.

Through the fresh air of the out of the city hotel garden, a variety of live musical content, from traditional Basque, Spanish and French folk tunes to jazz and pop-rock could be heard.

Like never before, Oceana was dancing, tasting, talking to different guests and photographing with almost everyone in attendance. After the surgery, she was adjusting to the low vision, which conditioned her with better memory of the bodily movements and increased her general focus on what she could visually differentiate.

Exhausted, she sat on her seat and instinctively recognized one of the cousins who wanted to take a picture.

The photographer set the camera and, at the moment of shooting, Oceana felt an uncontrollable shaking in the limbs and a loud echo of voices inside her head. Breathless, she ran to the bathroom covering her ears with her hands before slamming and locking the bathroom door.

"No!" she shouted out loud, "I'm not crazy! This is not happening! "

The volume of the sounds was increasing...

"No, this curse is a side effect of the surgery too!" she said with tear-covered eyes, "no ..."

For a moment, her face turned red and her hands from her shoulders to her palms trembled like uncontrollable ocean waves. The sounds increased further. Her look was indistinct for a long time, locked in an infinitely small point of the golden lock.

"Oceana, open it," she could hear the voice of her spouse.

"Isaac?" she asked.

"Oceana, what happened to you?"

"Isaac?" repeated questioningly Oceana, opening the door.

Isaac looked at her stunned, standing with his arms opened.

"What happened? You've been locked up in the bathroom for an hour," he said, "I thought you were kidnapped by an uninvited guest, even though the wedding was too secured for such an adventurist jeopardy. "

Isaac, I think I heard cries from the fire ... my mother ... my father. I'm afraid I'm losing it. "

Isaac was pacing up and down his cabinet, smoking and carrying a half-filled cup of bourbon from which he drunk big gulps.

"I'm telling you, we were completely convinced of the success of the surgery," said the voice from the other side of the line, "and the tumor has been defeated."

"Her vision... doctor, she's more than a brilliant theoretician and ..."

"With all due respect, but are you aware, professor, of the long-term side effects which such a craniotomy can cause?"

"Doctor, I pointed out that's exactly what was I afraid of."

"The fact that we were able to defeat the disease with terribly fast deteriorating tendencies does not exclude side effects even on a long-term scale," said the doctor "and you were both warned."

Isaac took a slug of whiskey.

"What's left is to simply wait. Pituitary tumors press the optic chiasm. It's part under the hypothalamus where it comes to crossing the nerves that transmit visual stimulation from the eyes. The vision almost always comes back completely. "

"Almost always?"

"We will have to do specific analysis. More complex side effects are also possible. Given the positioning and size of the tumor, there's a possibility for the side effects to take the shape of a cognitive or aspects concerning the articulation of some aspects of reasoning ", said the doctor" ultimately, there is a possibility of a second intervention. But let's see how things will develop. "

"All right, doctor," replied Isaac bringing the ashtray closer to put out his cigarette, "we'll stay in touch."

"Have a nice day, professor."

Isaac took a gulp and returned the bottle to the desk. Not having enough time to put it on the massive mahogany desk, the cellphone rang again.

"Just want to remind you about tonight, mister professor," a female voice on the other side of the line emerged.

The rope which was tied to the boat was unusually difficult to untie and she staggered trying to do it faster, quickly returning it to the marked place afterwards.

She turned the boat battery on, put the oars inside and went across the bay.

Across the Pasaia bay where her native San Juan or Donibane as the Basques called it was situated, she used to sail for hours just to hear the waves and feed the fish.

The stopping of the progressive tumor, which over the past months caused unbearable headaches, transformed her dinky voyages into the ocean into a meditation that allowed experiences of tranquility with minimal visual stimulations. The direct sensing of the ocean motivated her intuition, so needed for work.

At a distance of three hundred yards from the coast and two miles from her home, the water on the surface seemed indestructible peaceful. Oceana took two bags, one with tiny fishes, and the other with fish food.

Widely opening the arched turquoise eyes in front of which the image of the outside world was slowly but surely beginning to return, she tried to follow her scaly friends from the depths, knowing the right moment to feed them.

In a moment, she started losing her balance again and sat down.

She covered her ears with her hands firmly, dropping her head.

For Lord's sake!?, she told herself.

She lifted her head and tried to separate her hands from the ears. In just a blink she heard an unclear, unnatural sound, and covered her ears again.

She closed her eyes, took few deep breaths, and exhaled slowly.

After a while, she opened her eyelids again. Slowly began to separate the thumb parts of the hands that seemed hermetically glued to her ears. The sounds were reduced to a metal trembling in recurring rhythms through the air.

Oceana's pale look lifted up to the sky while her hands turned on the engine of the boat, which soon returned her to the shore.

The experiment results in the Vandellòs plant in Catalonia were within the expected and Oceana made couple of suggestions about the methodology of the analysis that was to follow.

One of the project's assistants, José, was sympathetic and kind enough to read her results, which she commented in the notebook in the form of equations and formulations. Her hand movements, which implied the formulations and graphic representations, were already pictured in her mind, thus excluding the possibility of any mistakes; the manuscripts were further examined by José and the rest of the team.

The next phase consisted of making suggestions for certain modifications in the future experiments.

Oceana in her seven years job as a researcher had additional experience in nuclear power plants in Spain and France and from time to time, she was serving as a visiting researcher in England, Switzerland and Germany.

As a graduate of the Department of Theoretical Physics at the Bilbao University, where she met her husband during the student days, she applied and received multiple invitations for freelance projects across the continent.

The Second unit of the Vandellòs plant belonged to the third generation of nuclear power plants in Spain with an annual production of over nine thousand gigawatts energy. The PWR reactor functioned on the basis of high-pressure water cooling, implying that the water was pumped into the core of the reactor, where it was being heated from the energy emitted through fission, after which the warm water was transferred into a separate compartment meant for generating steam and electric generator turbines, giving the water a dual role as a water cooler and a neutron moderator.

Oceana's laptop was carelessly put on one of the low metal storage cabinets in the middle of the workroom, when a signal was heard.

Mail, at last, she said to herself, pointing to her own computer. *I'll go to Geneva next year*, she added, goggling her eyes.

On the screen there was a message with an invitation for an extraordinarily important event for the theoretical physics under which one could notice the recognizable logo of one of the most significant organizations for modern science.

My God, CERN, finally, she whispered to herself, packing the laptop.

In shortly, after checking the password card and passing the security protocols, she found herself in front of a massive building located near the E-15, the so-called Autopista del Mediterráneo or the Mediterranean Highway, linking Barcelona and Valencia.

On the parking lot there was an old shiny metallic SUV in which she entered and a minute later, accompanied by José, she left the complex in direction of Tarragona and the official residence during the work responsibilities associated with the plant.

After a few days, the experiments were over and Oceana was ready to return to Bilbao.

It took an unusually long period for Oceana to fully stabilize and recover her vision, and with it, a strange sensations in form of sounds came.

Driving on the highway to her home, in the middle of the ride she often took notes crossing her mind, usually related to the obtained results.

Getting to a part of the road with no particularly large turns and curves ahead, she put the vehicle in the third SAE¹ level of the driving automation, the so-called *conditional automation*, which allowed occasional breaks from driving and handing control over the vehicle to its partially autonomous AI system.

Decreasing the volume of the radio, she took the notebook and pen and quickly added several equations, comparing the comments of the results obtained. Then she turned a new page.

The same sounds again. The same blend of refined ultra-softness and cumbersome micro-noise.

She picked up the pen and brought it closer to her ear. The sounds became clearer. In disbelief, she removed the pen for a moment, then put it and hold it close to the ear again.

Undoubtedly, it was absolutely the craziest experience beyond any imaginable framework of reason.

The sounds came from some *deeply buried* inner world of the overly ordinary pen.

She grabbed it again and on the opened page of the notebook wrote two of the modern physics' most famous equations: $E = hf$ and $E = mc^2$, Planck and Einstein's determinations of the mass, below them, adding: $m = hf / mc^2$.

"The mass expressed through the frequency for determining the photon energy and the Planck constant...", she said rapidly writing the formulations. "The Higgs field possesses a high-frequency potential expressed as a Higgs boson, but such that has no interaction with photons. Because of this, they do not have a mass. On the other hand, energy has a mass that curves space-time, and since photons are energy carriers, they are carriers of mass, which is also supported by experimental findings according to which the rest of the photon mass can not be reduced to exact zero. "

At that point she stopped for a moment. The sounds became highly phonic and clearer simultaneously. She picked up the notebook and brought it to her ear. Different sounds were coming from there. She put down the notebook and continued.

"If we can make changes to the Higgs field, we could also change the energy that would be released from a given mass, according to the Einstein equation... but we could not always make those changes because the mass of the particles is not always generated by interacting with the Higgs field. For example, the mass of the photon is due to motion. The whole Higgs mechanism is but a special case."

The self-steering system of the SUV signaled the need for a small human intervention and Oceana instantly set herself behind the wheel. Shortly after crossing a column of vehicles, she returned her focus to her notebook.

¹ Society of Automotive Engineers or SAE International

"On the one hand, the partial interaction of particles with the Higgs field results in having a mass, but on the other, mass is an inherent feature, including the photons that are composed of massive particles of opposite charge that generate electric fields, and from their movement magnetic fields arise, that is, the resultant electromagnetic fields. Each particle, including the photon and the gluon, inherently possesses a mass, but also, at the same time partly bases it as a result of the interaction in accordance with the Higgs mechanism, similar but not identical to the one derived from CMS and ATLAS². "

Completing the last sentence, she picked an old rock radio station when a rare recording of *Beginning to See the Light* from The Velvet Underground was emitted, a track she didn't listen to since her early 20s.

The sky above Bilbao was shrouded by heavy clouds unwilling to leave the city. The rain, which with several interruptions was falling for a week before its sudden pause, announced a return after a barely two-day period.

Oceana didn't sleep all night, and early in the morning she was still writing endless mathematical strings in the notebook and her PC, equations and descriptions of phenomena which were hers and Isaac's specialties in the field of subatomic physics related to quantum mechanics and the theory of quantum fields.

While her look was spotlessly focused somewhere in the urban horizon offered by the wide and elegant metallic aluminum windows amidst the 16th floor of the red brick building not far from Nervion river and at the same time almost without movements of the neck muscles, she penned extensive mathematical strands, occasionally reaching for thick porcelain cups from which the smell of coffee seemed unwilling to cool down and dissolve.

Perhaps because there was absolutely no such dosage of coffee enough to charge up all the energy necessary for a comprehensive mathematical enrollment of new realities, she thought before each turning on the coffee machine and putting more of the dark source of extra mind speed.

The pages were written by themselves, as thoughts themselves melted into systems of mathematical statements from the telepathically obtained information.

² CMS: Compact Muon Solenoid; ATLAS: A Toroidal LHC Apparatus - particle detector experiments taken in the Large Hadron Collider (LHC) in CERN

Late in the afternoon, Isaac, cutting through the rain with a new car along the wide avenue leading to a very tall monument of a mildly subdued Jesus in the heart of the metropolis, stopped. A girl in the late twenties, before stepping out of the car and walking in the direction of a household equipment store, gave him a kiss and provocatively straightened his lump, to which the professor grumbled, grabbing her almost gently by the hair and sending her a warning stare. A moment later, the car's engine began humming again providing a path through the traffic jam of El Botxo, the capital of Biscay.

The rain was too warm and soft to miss the opportunity for a walk by the river, and Oceana completely forgetting about taking an umbrella, put on her shoes, caught the elevator and in a few minutes found herself in the nearby park.

Completing the main equation section of the work in accordance with the abstract and the outlined points, she felt an immediate need for a respite.

The movements of her irises in the middle of the large sclera were alternating between abrupt and fairly slow as she sat quietly at one of the benches and leaned her head on the wooden backrest.

They could be heard. She could hear them. The endlessly minuscule indestructible tenderness of what she had been searching for decades by devising clever experiments could be touched by carefully listening to the soundtracks in the air. And the wood, and the air, and the pen, the notebook, and every imaginable part of the space, had a voice that could be heard.

The woman spent an indefinite time with her widely open eyes having an almost fixed straying look and a head tilted on the wooden bench when in the park a familiar sound from a new, distracting car could be heard.

"I have never witnessed any similar extraordinary effort from any colleague, Oceana," Isaac said calmly, looking at the papers he was given. The semi-innate smile on the woman's face was concentrated in the right corner of her full lips.

"By denying or promoting the understanding of Higgs mechanism, you suggest a literal redefinition of the foundations of modern physics. Do you realize that?"

"Additional experiments are needed, Is," she said. "Yes, it is a scalar particle with a zero spin. Yes, it has a positive parity and also the final breakdown outcomes are those provided by the current Standard Model."

"So this is not denied, but a new context of Higgs boson has been set up?" Isaac asked crossing his hands.

Oceana, holding the same fixed view, nodded.

"Okay, I have to consider this in detail. Can I take it? "

"Of course. The final part is not ready. But this contains the fundamentals of a new theory."

"I understand. Tell me, how do you come to these conclusions?"

"We always find ourselves halfway."

"Excuse me?"

"The conclusions... they were already there. In the form of voices. I just managed to read them on that basis and in accordance with my knowledge to compile an equation and theoretical system."

"Voices? Do you mean, like sound waves that move through the space at a speed of 343 meters per second?" Isaac smiled slightly.

Oceana shook her head.

"You are not achieving superluminal communication? Actio ad distans in the context of phonons with a long wavelength? I'm joking. I'll read this, Oceana."

Isaac came close to her and with his hands touched her face.

"But please," he said "try to relax ..."

The woman nodded her head.

Artificially pumping his mouth with air, the physicist with half-closed eyes, turned his head and left the room.

Oceana's look remained sealed in a dead end on the horizon from which it could reach the view from the window.

The office was like a holy temple to the professor; there he could concentrate on solving of some, while, on the other hand, continuously formulating other emerging problems whose adequate resolution awaited his echo in the world of modern quantum mechanics.

The professor scrolled and made corrections and notes on a hundred-pages document, inserting them into his ever-switched laptop until his cell phone rang. He took a deep breath, exhaled, and answered.

"Yes. Yes, I was looking for you," he said, "See, for many years you've come to know my seriousness as a man and a researcher. I'm afraid, I'm really afraid about her health ... mental health. I'll explain it to you. Are you free tonight?"

The stiff deep female voice on the other side monotonously confirmed.

"Okay, I'll call you soon."

Isaac, bringing a glass of water to his lips, lowered the mobile phone instinctively, turning his eyes into a sharp curvilinear, almost elliptical arc from bottom to top right.

3.

May was in full swing when an event took place in the sanatorium not far from the central city area, involving a simultaneous activity of several professional musicians with patients. A few days earlier, patients with affinity for painting completed a cycle of paintings, some of which were sent to students for analysis, and some were given to a humanitarian auction to provide funds for children with cancer.

Several canvases remained exposed in the long main corridor of the ground floor.

There were not too many people, and the rooms were clean.

In one of them, under the wide cloth blanket a middle-aged woman with wobbled hair was cramped in a half-laid position. In a panting manner she could barely be heard, repeating as a mantra some difficult-to-understand sentences.

Few prominent and branched wrinkles passed through the middle of her cheeks.

"The equations are flower petals, and the flower - a complete fulfilment. The understanding is a flower torn from the gloom of stupidity, " she uttered by repeating the same phrase for a minute.

She grabbed the pen firmly, preparing to write something, when the nurse interrupted her.

"You have a visit," she said, and the next moment in the room, elegantly natty, Isaac stepped in.

"Every piece of reality hides its truth in the shadow of the whole," she repeated again.

Isaac came closer.

"Do you know that?" she asked, staring at him.

"I know that every piece of our reality hides its truth," answered Isaac.

"In the shadow of the whole. Every piece of reality hides its truth in the shadow of the whole. Every piece ... " she repeated with a blurry glimpse.

"I know. You told me that, "Isaac said, and noticing a leather notebook on the bed, reached for it.

"You? Who's *you*? Who are you? As if I know you... "

The notebook on one side was disorderly strung with hardly readable mathematical expressions, matrices, functions, factorizations, proofs. On the other, there was a picture, a colorful flower.

"What is this?" the physicist asked.

"It's a graviton."

"A graviton?"

"The particle that in some way keeps us all together. Together with the other three particles that quantify the fundamental interactions. "

Isaac swept the pages curiously. At the same time, he tried to take an apple from a bowl placed in the middle of the table in the center of the room, but dropped it and it fell to the ground.

"The graviton has no mass. And how do you know that the graviton looks like a flower? "

"Like the others, I can feel it. The flower is a display of its inner state", she said "you do not have to have a mass to have an internal state. "

Isaac put the apple up and with an ultra-fast scanning look restored his focus on the mathematical expressions while turning the pages.

"Hmm, non-Abelian Lie groups," said the physicist, "chromodynamics, strong forces ... weak forces plus electromagnetism. This looks like ... ", stopped on one of the pages," this looks like a proof that... for... for every compact simple gauge group" he said,"there is a non-trivial quantum Yang-Mills theory in a 4-dimensional Euclidean space. Isn't it?"

Oceana slowly blinked.

"The theory that corresponds to the gauge group is axiomatic?"

Isaac's thoughts remained absorbed in the cognitive centrifuge with a mathematical brain storm imprinted on the pages of the leather notebook.

"For God's sake, are you serious? A Yang-Mills solution means a million dollar reward. Plus, you have both atomic and quantum-mechanical descriptions. Let's not talk about the potential opening of one of the possible paths to a framework for the Theory of everything. "

"How can I be serious," Oceana said, "when I'm in a mental hospital?"

The professor turned his head off with a bitterness. From the inner pocket of his jacket, he picked up an identical furry notebook and replaced the old one. He picked up Oceana's notebook and put it inside the jacket.

"How can I be serious when I'm in a mental hospital?" she repeated the question.

The solid green apple was crunching not very loudly under the physicist's teeth.

"I think I want to kill you ... but who would I kill?"

"It's the disease, my dear physicist. The disease, not you. "

"Indeed, I can not recognize you because I'm sick."

Isaac ate the apple and threw it into the bin, taking a blunt look at the watch.

"I was glad, but I have to leave now."

"Again?"

"Yes. Do you remember? "

"Maybe."

The physicist left the room with a smile, hurryingly.

Before she laid down, Oceana put her hands under the bed and pulled out a thick folder of papers scribbled with mathematical expressions.

It was 13:03 pm, a period when every patient could freely devote to his skills and hobbies.

The freshness of the spring air in the hospital garden inspired freshness and thought clarity. Its tranquility enabled a sense of sublime equanimity and serenity that gave Oceana the desire to sit for hours, telepathically speaking to the atoms, particles and all infinitely small parts of the space whose voices only she could hear.

"I could be crazy... maybe," she said, listening to the echoes of the subatomic particles inside the chamomile petals.

The sunset in the distance was announcing almost perfectly harmonious, cloudless and windless spilling of the rest of the diminishing daylight into the sky's darkness that was about to take over the city.

A blooming day in autumn

The roads are hugged by branchless Christmas trees
A beam cuts them like scalpel and gives
the morning summerly autumn to the squirrels
the natural hair of the street clown has whitened from too much fun
the loneliness steals large canvases from the cinemas
and sews itself in the dandy suits with which
pedestrians go to work
the tiny lights slowly set behind the grain mills
The Earth is loaded on airships that change its orbit
the fruits are planets in the yards
the thoughts are safely stationed in a temporary parking
like a hemisphere
and the body chooses to juggle at crosswalks to the red light
Gothic castles show the way of the soul with their sharp peaks
the roundabouts calmly blossom
autumn pastorals from the mouths of vagrants and few bums
that burn those parts of the soul that are reflection of
Heaven in you.

07.09.18,

Bayonne