the four mirrors of WAR

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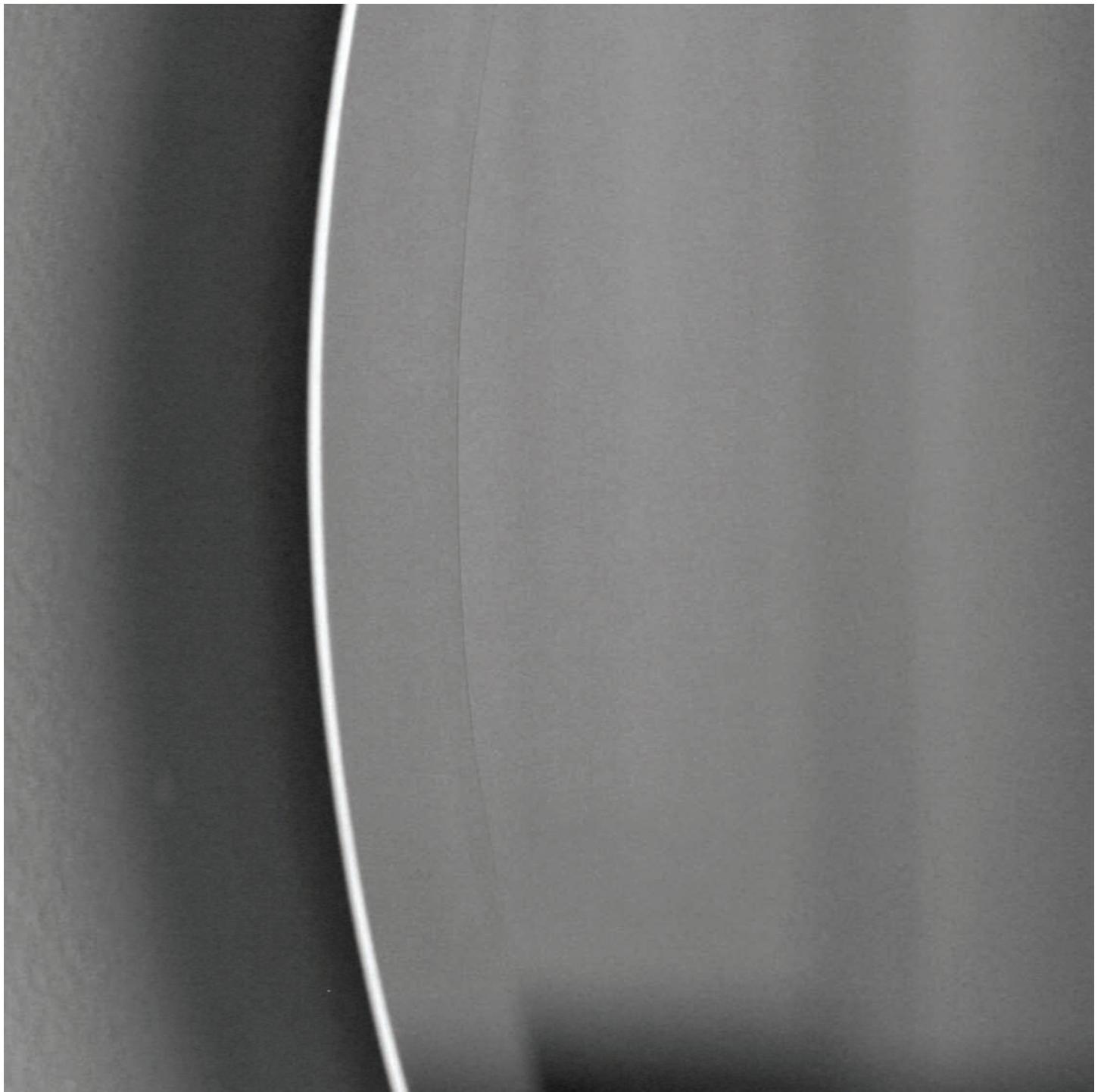
MIRROR ONE:

Now

First reflection

He never blinks. His face is like a molded wax mask, forever fixed. A man of contained strength, he displays the gravity and physical predispositions of one born to lead. He has the solid stature of the venerable sequoias, which rise above the highest deciduous and which nothing can fell. He is still in the prime of life. His lustrous hair, dark as a jaybird's plumage, frames his noble features from which all inopportune emotions have been erased. He rules over his soul as he does his country, with the conspicuous harmony of one who has never been, nor ever will be, contested. He is King John, son of the line of Davis, Baron of Washington and Lord Protector of the Provinces of North America.

He has just entered the Royal Situation Room, housed in the basement of the Royal House. He walks into the small room at a calm pace. Countless blind canvases, waiting to be lit, pierce the crimson lined walls. Around the great acacia table, he meets with the main advisors of the Realm. Some have furrowed brows. Others are poised, like their ruler. Following protocol, in an age-old ballet, King John seats himself on the throne at the head of the table. All the ministers and advisors then take their places. With a sign of his hand King John indicates the opening of this special session of the Cabinet. The Secretary for War stands, and the canvases behind her instantly light up. She immediately begins recounting the most recent facts.

"Your Majesty, we regret to inform You that the tension has increased in the conflict opposing us to the rebels of the Robo-Haram sect in the North of the Nigerian Empire. Their old leader, Abubakar, has just released a new manifesto. It is a declaration of war in due form."

Without lifting an eyebrow, his breathing calm, King John turns to his Secretary, casting his mineral blue gaze upon her. His questions and commentaries command the attention of the whole Council.

"Madam Secretary for War, refresh my memory, who is this Abubakar?"

"Your Majesty, Abubakar is a very old rebel leader of ninety-three years, who owes his longevity to a few DNA nano-bots and to some degree of luck. He began his professional career as a rebel as a Marxist, making allegiance to the Soviet Empire in the name of anti-colonial struggle. After the collapse of Communism, he turned to radical Islam and for a while flirted with the Al-Qaeda nebula and movements close to Islamic Jihadism. In his third incarnation, he took the head of the worldwide i-luddite movement, which opposes the power of intelligent machines. The constant in his progression is the consistent radical challenging of the West."

"Very well. And what are the specific claims of his movement, the Robo-Haram sect?"

The question is asked in his usual regal tone. Nothing can trouble the gaze of King John, fixed on a horizon inaccessible to those who share neither his privileges nor his destiny. His most loyal advisor, the Head of Royal Intelligence Daniel Sage, is designated by a nod to answer the question.

"Your Majesty, here is what is happening: Robo-Haram was forged in opposition to what Abubakar's disciples call the 'Digital Logos' of the West – the aggregate sum of the digital networks established in the West to allow for communication between computers, connected objects and robots. Robo-Haram claims the soul of our Logos, which inhabits virtually all machines made in the West, is an evil spirit, a demon, which contaminates the minds of men through all their interactions with machines. The loci of contamination are the screens of our watches, computers, televisions or cell phones; they are our connected glasses and contact lenses for augmented or virtual reality; finally they are our new generation neuronal implants. Nowadays all the pictures coming from these screens are accompanied by suggestions from for-profit, nonprofit and government organizations. Whatever their origin, the reflections of these screens are devised so as not to be perceived as a nuisance. On the contrary, they provide genuine services, which accurately solve real problems. According to the followers of Robo-Haram, there lies the worst of their perversity, the insidious spells they

cast. Contrary to the commercials of the twentieth century, these services are appealing because they provide the right answers to legitimate needs. But the services they offer, although fundamentally useful, are for the most part handled by robots rather than by employees or human workers. Therefore they contribute to the elimination of humanity and its great replacement. Worse still: these robots are themselves mainly manufactured in the West. They are therefore a symbol of the crushing domination of ever-increasing Western capital. They represent the decline of formerly emerging countries, which between the end of the twentieth and the beginning of the twenty-first century, benefited from the low cost of

their qualified workforce to export to the Western world and develop. The workers of the West, made redundant by the robots, could either collect the Universal Wage (UW) or incorporate the machine. In the rest of the world, workers were left both without work and without compensation. Like the farmers of the first Industrial Revolution, they left their lands and emigrated massively towards the areas where the Digital Logos and Universal Wage were implemented, the West. For the people of Robo-Haram, the Digital Logos ultimately represents a crushing domination of the West and the slow death and depopulation of previously emerging countries. This Logos must be replaced by another, which Abubakar calls the RDiL,

"Reformatted Digital Logos." This new Logos should be wholly made of open-source software. However, in order to defeat the looming domination by the great Western robotic capital, Abubakar and his Robo-Haram followers will have to be granted exclusive editing privileges. Abubakar is RDiL's "benevolent dictator for life." In the meantime, Robo-Haram is claiming its actions in the most barbaric way. Its followers brandish a special ritual weapon, ***the sica,*** a long, sickle-shaped dagger used by the assassins of Roman antiquity. They make them with old 3D metal printers. So armed, they spread terror in non-robotized regions. They target women especially, as they consider them to be inferior beings and symbols of Western domination."

Neither fear, nor anger: King John's face shows no sign of emotion. Yet in the following seconds, the screens of the Royal Situation Room light up with social networks graphs, teeming with users' profile pictures in blinking red frames. There is a worldwide anger wave, fostered by all the former workers who were replaced by robots and who must now settle for the degrading Universal Wage. 'No to emasculation by UW!', 'No robot can replace me!' are some of the comments, which are inspired from Robo-Haram slogans. In the wake of Abubakar's declaration of war, some millions of users throughout the West – an area spanning from Vancouver to Beijing, Berlin to Mumbai – have just made digital allegiance to Robo-Haram. They are granting Robo-Haram controlled network access to their individual processing power and memory. This distributed computational power is turning the Robo-Haram network of networks into an equivalent to the most advanced military supercomputers of the West. Advisor Daniel Sage, head of Royal Intelligence, is unsettled by this new development. He turns to King John.

"Your Majesty, here is what is happening:"

King John turns towards his most loyal advisor and listens deliberately.

"Majesty, we are facing the threat of 'distributed terrorism.' Expert computer engineers could use the formidable processing power of Robo-Haram's network of networks to develop digital vulnerabilities. They would identify these vulnerabilities with

software using virtual models installed on Robo-Haram's network of networks. The software would be systematically tested at high-speed against vulnerability libraries. These libraries would, in turn, be constantly expanding their knowledge base through their successes and failures. Another scenario we are studying is the possibility for Robo-Haram to use the processing power of its network of networks to extract virtual currency. With this currency they could acquire digital vulnerabilities from the DarkNet. At this point, we know for certain that Robo-Haram has recruited young hackers and engineers from the best universities, from Stanford to the Indian Institute of Technology, Delhi, who are capable of programming all this and retrieving digital vulnerabilities. Some have already adopted the war cry 'Robo-Haram', 'RDiL!'…

"What would they do with such digital vulnerabilities?" Asks King John, still unshaken.

"Your Majesty, they hope to turn them into digital weapons for distributed terrorist attacks targeting the West."

"Define 'distributed terrorism.'"

"Yes, Your Majesty. In the olden days, some botnets could organize Denial of Service attack networks and grant access to any user. A recruited user would download a program and use his personal processing power to contribute to the wave of collective IP packages, which congested the targeted servers until they were out of order.… But nowadays, Majesty, because most of the devices we use are connected and because of the degree of automated intelligence at the core of their operating systems, all the tools and devices we use could be reprogrammed remotely via the digital vulnerability — be it a drone, a driverless vehicle, a thermostat, an oven or a pacemaker. From tools, they can become weapons. The code for this reprogramming can be hidden in the DarkNet. Each follower of Robo-Haram can download this code, target a city with a few keystrokes, and trigger a criminal act with a simple click. A fifteen year-old boy could remotely deactivate the pacemaker of a ninety year-old patient. He could also program a small household robot to fetch a piece of aluminum foil, place it in the microwave and start a fire. Isolated, such events may seem like minor attacks, but repeated tens and tens of thousands of times in the same city,

or in all the cities of one country, they could potentially amount to a terrorist event of great magnitude and cause numerous deaths and injuries in mere minutes. The perversity of such an attack also resides in its psychological aspect. The rite of passage sealing the entry of a new member in a mafia or terrorist group, usually the killing of a designated enemy, is never an easy step to take for the novice. Somehow, he knows that killing is a unique action with irreversible consequences. However, in this instance it is made to feel like a videogame. Technology makes it easier; with a few clicks you can download and remotely pick a theoretical target. All you need is a pressure of the thumb on the screen of a disposable tablet or low cost smartphone. Do they even realize it's not just a screen, but reality itself they are interacting with? Our studies show this process disrupts traditional terrorist recruitment techniques by lowering the psychological cost threshold. We are facing the risk of Robo-Haram conversions spreading like wildfire across the social graphs of the most fragile users.

King John remains impassive and distant.

"How much time do we have to react, Advisor Daniel Sage?"

"Very little Your Majesty. I estimate twenty-four hours from Abubakar's declaration of war, maybe less."

For an instant King John's breath seems suspended, as if the moment has been frozen in time. His eyes are wide open. He saw. He turns to the Secretary for War.

"Madam Secretary for War, before we entered this room I studied all the military options prepared by the Joint Chiefs of Staff and yourself. In consideration of Advisor Daniel Sage's analysis, it seems urgent to strike directly at the head."

"Your Majesty, are You referring to Oplan 202-1111, 'viper's nest'? The use of the airfields along the coast of the Gulf of Guinea for a rapid deployment of pilot-less special forces at the heart of Robo-Haram territory, formerly controlled by the Nigerian Empire?"

"Yes. Oplan 202-1111. Effective immediately."

All the participants in the Royal Situation Room are now aware

they will remain here for the next twelve hours. The screens are all at work showing the Gulf of Guinea here, a detailed map of the Niani region there, Abubakar's stronghold over there– and further away a social graph representing the ever-growing number of Robo-Haram sympathizers over the five continents.

Second reflection

The die is cast. Here is the battle of Niani. Its objective is the capture of Abubakar before he can achieve the diversion of the Digital Logos. The onset of a massive wave of distributed terrorism must be averted. Some fifty four-engine CX-GlobeMaster cargo planes have taken off from the bases of Dover, Delaware and Charleston, South Carolina. Seven to eight hours later, they have landed in the ten military airfields still in the hands of Nigerian Empire loyalists between Abidjan and Lagos. The deployment takes place without a glitch before the eyes of King John and his most trusted advisors. They must outpace the enemy: it is now a matter of hours.

Following traditional war strategies, the primary objective is to overtake the enemy's Digital Logos. Only a flawless mastery of the Digital Logos will make the control of subordinate domains—space, air, sea and land—possible. The tailored access units of the "Derivative" department have mapped out the multiple informational layers of the Enemy. All that constitutes Robo-Haram has been dissected into multiple planes - social graphs including influencers, family and family employers; layers of psychological analysis; financial and professional networks; military, food and energy supply logistic systems; structure of the fighter links, including direct support and ideological sympathizers; combat systems; and finally, underlying the whole, the command, control, communication, intelligence, surveillance and reconnaissance systems driven by the enemy Digital Logos. The latter's code, hardware and privileged users are analyzed in real-time. The teams of the "Derivative" department have identified its terrain, topology, and promising fault lines. Some were deployed preemptively a long time ago. Others were recently implemented as the tension grew. Finally, a few are to be triggered only now. The unraveling of the enemy Digital Logos has begun. Like an old piece of fabric, whose stiches loosen and whose weave disintegrates, Robo-

Haram's Digital Logos cannot resist the sudden wear and tear. The code breaks open, gaping. The command and control systems seem pliable. The structure of the logistical support system has become friable. After a few minutes, the fighters' network links and support systems are exposed for all "Derivative" hackers to see: the details of every single fighter are revealed, whether it be their financial resources, the identification of their loved ones or their deepest fears.

At the heart of the Royal House, Advisor Daniel Sage, tense, turns to King John. The moment is solemn.

"Your Majesty, here is what is happening: we have almost achieved the control of the informational domain. However, we continue to receive enemy activity signals originating from the heart of the West in our Digital Logos—"

"So, launch the aero-terrestrial operations, without delay." King John interrupts.

The show of force is about to begin. It is the beginning of the attack — a massively tailored assault.

The first battle takes place in space. At an altitude between sixty and a hundred and sixty miles, constellations of Robo-Haram satellites, nano and pico-satellites weighing from a few ounces to a few pounds are either hijacked by the digital attack so they relay false information to their land-based receivers, or taken out by small vectors launched from the Nigerian Empire's loyal military bases. In the rebellion's capital, Niani, although the launch site for the small nano-satellite rockets is immediately evacuated in anticipation of the raid, the operators on the ground will not get to cover in time. Two thousand miles from there, a multitude of intelligent cruise missiles with autonomous navigation capabilities have been launched on fuel depots, electricity storage units and 3D ammunition manufacturing sites held by the rebels. In the same sweeping motion, the CX-Globemaster cargo planes drop-off telecommunication relay equipment on the tarmac of loyalist airfields, fuel-up and takeoff toward the enemy lines. The planes should soon detect the cruise missiles on the horizon. Some thirty miles before reaching the rebel zones, the cargo planes open their holds. They release several dozens of connected pallets into the air,

from almost a mile above ground. The pallets fragment as they fall and separate into smaller blocs. Some continue their flight; they are the drones, which will carry nano-drones further in. Others land on the bare ground of red earth indigenous to the Niani region. Some are large rectangles, partly made of graphene, from which emerge small drive-wheels. They will serve as autonomous mobile charging stations for the nano-drones. Others release small autonomous combat quadrupeds for close operations, which immediately break out of their protective shells. The cargo planes continue their rapid sweep. They have scattered a squadron of over two hundred combat drones across the sky. On land, autonomous tanks released by the Globmasters are taking position. A very diverse robotic arsenal is now deployed across space, air, land and sea. The grid follows a fractal layout. Each geographical scale has been assigned a referent military robot: combat drones and autonomous tanks will dominate on the kilometer scale, quadrupeds the hundred-meter scale, nano-drones the ten-meter scale. But amidst this crisscross of robots it is impossible for the enemy to understand which will do what – the movements of each device are digitally coordinated so as to make the general attack plan for the assault indiscernible. Concurrently, within this physical cloud of autonomous and connected military objects, every device, however small, has been assigned a specific target – this is the "massively tailored" aspect of the assault. The score is written, optimized and incessantly rewritten by artificial planners – the supercomputers housed in Utah's command center. The human IT engineers and military personnel who work there are sitting before their consoles. Most of them are confined to the role of moral validators. For each Robo-Haram rebel, the distant operator must validate whether the nano-drone may risk the life of the rebel or not. The operator checks his decision against a scoring created by intelligence algorithms. The scoring suggests the level of vital risk the Realm is willing to take for each human military target. The human moral validator almost always follows the algorithm's suggestion, which abide strictly by the laws of armed conflict. If a non-combatant risks being hit, or if the military consequences of an action are out of proportion with the objective, the artificial planners fully recalculate the assault on site. Every one of the tens of millions of people living in the Niani region is therefore individually identified, analyzed and scored, from the young fourteen year-old rebel recruit to his mother, and his

lieutenant commander uncle. Nevertheless, for legal reasons, the decision to potentially terminate the life of an enemy combatant can only be officially approved by a human operator. Every decision is duly and eternally recorded in the Royal Archives so it can be verified and inspected by the Royal Auditor.

The cruise missiles are now only a minute away from their targets. Ultimately, the political decision to launch the assault must be approved one last time by the head of State. The Secretary for War turns to King John. His gaze still lost on the horizon, he ceremoniously nods his assent.

"In the name of the Realm, I authorize the armies to launch the attack."

Tens of thousands of vectors are programmed to strike in tens of thousands of places at the exact instant that King John gives the order. Oplan 202-1111, 'the viper's nest,' is not a military strategy aimed at negotiation; it is an operation for the eradication of a terrorist group. The perfectly synchronized strike, distributed thousands of times, takes the enemy by surprise and leads to absolute shock and awe across the battle front. At the very same moment, cruise missiles come crashing down on the rebel-held depots, logistical relays and electricity productions centers. By now, the drones of the Digital Logos have targeted and wiped out enemy drones. The autonomous tanks have bombarded every Robo-Haram position with smart ammunition. Hordes of autonomous quadrupeds, running at over sixty miles per hour, have thrown themselves up the hills, high-grounds and slums of Niani, easily overtaking them. Colossal throngs of tens of thousands of nano-drones charged with sedatives have swarmed all the urban areas of Niani, including tunnels and sewers. They form the rapid anti-guerilla force. The cameras and sensors embedded on every single device record and verify in real time the score of human and robotic losses and the degree of achievement of the elimination of logistical targets. The human generals of the Royal Military Command Center, the only human interface between the artificial planners, the military robotic forces in the field of operations and the political decision-makers at the Royal House, are massed in front of the score reporting screens. One of them stifles a sigh of relief. There have been no civilian casualties. Very few combatants have been injured or killed. The
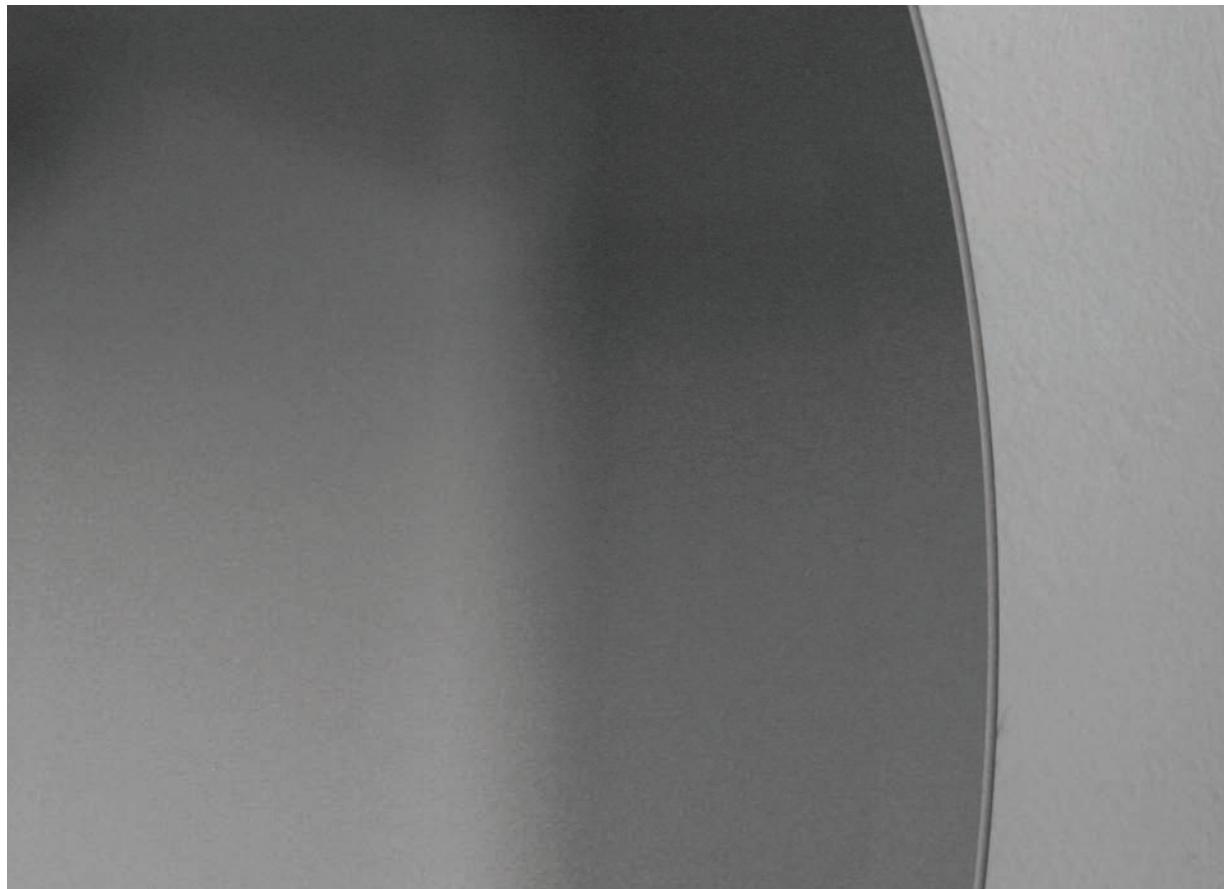
sedatives and non-lethal lasers carried by the aerial and land-based autonomous devices have performed their mission flawlessly. In under forty-five minutes, the crushing of the rebel forces seems almost complete. It is not surprising. The result of the massively tailored assault in the field accurately reflects the success, an hour earlier, of the tailored access units' attack on Robo-Haram's Digital Logos.

At the heart of the Royal House, in the Situation Room, advisors are relaxing and congratulating each other. King John turns to the Secretary for War; for the first time his face is illuminated by a wide smile. He, who always coldly dominated the Council's table with his impressive figure, looks like a different man. The austere pose is gone. The warrior's impassive alabaster mask has come off.

On the contrary, Advisor Daniel Sage remains guarded. He is the last somber figure below these clearing skies. Robo-Haram's leader, Abubakar, has not been found. Daniel moves away from the table for a minute. The news he is receiving from the Royal Security Agency is not good. Abubakar should have been found. That is what the artificial planners had forecasted. That was the objective of the infiltration of the rebel digital logos.

One of the screens of the Situation Room announces a media alert.

Third counter-reflection

The public social networks are about to broadcast an official statement from Robo-Haram. King John instantly wipes the smile from his face. With a wave of the hand he commands silence and focus on the video coming through the network. The ashen and bony features of the rebel leader, almost disappearing behind a proliferating off-white beard, come to life against a charcoal-gray background. In the center of the aging halo, burn the mineral blue eyes of the former Chicago University academic. He had changed his name to a popular first name of the Niani region ten years ago, when he made the shakily controlled zone of the northern Nigerian Empire his stronghold, chose the path of i-luddism, and converted to all brands of armed hatred. Abubakar is speaking. The origin of the signal is impossible to pinpoint.

"Men of the world! King John's government has once more proven its cowardice! The Western male, that feminized degenerate, incapable of taking up arms, has once more let its robot slaves do the dirty work. Is he truly a man? Obviously not! A real man goes into battle himself. He protects his loved-ones with his own courage, at the cost of his own blood. Such is the meaning of honor. A real man is not afraid to die. He welcomes death with his eyes opened. He loves death. He doesn't hide behind robots or screens when comes the time of the ultimate sacrifice. The Western male has lost all honor. He is a wreck, inferior even to a female; the same female who seeks the protection of the arm and chest of the true male; the same female who dominates the rankings of your universities, the hierarchy of your companies, and even your homes. Do away with the shame. Refuse the pittance of the Universal Wage, which has made you a slave in your own home, which is now a prison over which you have no control. Draw the line! Come out! Men of the world – join our struggle! Break the machines! Return to the original order of the beginning of time! And see, see behind the screen who the true men are: they lead the way!"

Pictures that were taken during the assault, from cameras fastened on the foreheads or shoulders of the Robo-Haram combatants, leap on the screens. They are all in first-person camera, taken from the hills overlooking the city of Niani, facing the autonomous tanks of the coalition; from battle fronts in the streets and back alleys, opposing smart machine guns to the hordes of military quadrupeds; from the struggle against the swarms of nano-drones in the sewers and tunnels; finally from the heart of the great glass-tower complexes of Niani, hastily 3D printed during the previous weeks and already cracked and flooded by the flow from busted pipes. Everywhere, the same picture is repeated tens of thousands of times from different angles: as we see a robot swooping down from the horizon, a fighter raises his *sica* in the air and screams an ultimate cry of anger to the gods: "I am a man! I am standing!" Then comes the flash of a swarm of drones or a detonation, covering all – and the screen goes black. Every time the last breath, the last cry, and the final heartbeat of what was a man and is no more can be heard.

In some videos we see entire battalions of fighters waiting on the hilltops, nervous, calling each other by name, sometimes joking together. Then comes the electric moment when they all become tense, when the distant autonomous armies approach. Then again the cry—immediately followed by extermination. For many, this means death. This devastation is all the more brutal because many of the fighters are not even adults in the Western understanding of the word; they are mainly young boys between the ages of twelve and fifteen.

All these pictures are edited into virtual reality projections, which are downloaded onto every social network of the Digital Logos. Whether by curiosity, or sympathy for the rebellion, every man and boy in the West dons his virtual reality glasses to re-live the final minutes of thousands of Robo-Haram's fighters. This experience is invariably distressing and traumatic. Immediately after the death of the young activist he has experienced, the viewer receives the following message: "Get back at the enemy. Abandon the Digital Logos. Connect to RDiL. Now." A lightning tsunami of *Dislikes* immediately floods the social networks, especially among e*arly-adopters* — a generation not yet of voting age, but who is keenly aware it has no future other than the Universal Wage and boredom. Nothing can stop the hashtag #IPukeKingJohn.

Advisor Daniel Sage suddenly understands the trap into which the Western troops just fell. Abubakar used his troops as martyrs rather than fighters, thus helping him to radicalize and convert the Western minds of the men who control a majority of the computer resources. That's why the assault was so swift. Abubakar was not trying to defend Niani. His objective was to hack into the Western minds and acquire, through the users, part of the processing power of the Digital Logos. He needed this brutal defeat in Niani. Now, just as in judo, armed with the power of his opponent, Abubakar is launching his counter-attack. The psychological assault morphs into digital control, and leads to physical attacks. Tens of millions of young Western users – a crushing majority of boys – are downloading the "Low Orbit Iron Reformatory" app available on RDiL. Each "Low Orbit Iron Reformatory" instance, basing itself on algorithms created by students and hackers who joined the rebellion, takes control of a low cost server in the West and begins breaking down various keys. Within two minutes, a first strike hits

a steel factory close to Shanghai; its blast furnaces are out of control. Numerous fires break out. Then comes a still greater commotion: simultaneously, in the regions of the Saar, Bavaria and Hamburg, fifteen thousand four hundred BMW driverless cars suddenly take up speed and turn right, causing as many accidents. This maneuver was piloted by a young user from Portland who had just downloaded the "Low Orbit Iron Reformatory." The first estimate for civilian casualties adds up to three thousand in Germany. Other alerts report four hundred dead in hospitals throughout Florida, Texas and South Carolina, due to the malicious pressure reduction in respirators despite monitoring systems indicating full function. The targets were manly women in their eighties and nineties awaiting a change of their medical nano-bots. In Paris, London, Milan and New York, many automated food-processing chains have been contaminated with sewage. An estimated two thousand calls have been placed to medical emergency services. Again, a majority of the civilian casualties are women, demonstrating once again the hatred of Robo-Haram for the other sex, the women who now dominate the human civilian society. It seems most of the attacks are taking advantage of a vulnerability in General Electric's programmable logic controllers. There could be over five thousand dead across the Western world – more than on 9/11. The Diplomatic Advisor informs King John that the German Kaiser wishes to reach him immediately. He demands an explanation and wants to know why the attack on German cities originated in Portland, Oregon, thanks to a vulnerability in General Electric's software. As of now, the Kaiser is holding King John personally responsible. King John is torn between surprise, rage – and profound embarrassment towards his German ally. This is when Advisor Daniel Sage turns to his ruler. He believes he now has a clear picture of the situation.

"Your Majesty, here is, I believe, what is happening to us: Abubakar played us. But even so, he should not have been able to conceal his geographic coordinates, nor send hundreds of thousand videos made on the battle ground, unless he was protected by a powerful encryption system. I just received an analysis by the Royal Security Agency. The forensics team thinks only nation-states have the resources to create the layers of security programming required to conceal the critical actions of the rebellion, layers which were curiously untouched by our assault against the rebel Digital Logos. Abubakar and his fighters did not have the required means. The

intelligence we gathered indicates that… the Realm of Brazil and their new ally the Realm of South Africa are most probably responsible for the code which protected Abubakar."

The Realms of Brazil and South Africa are both tier-2 robot manufacturers. They have a very aggressive upmarket strategy and they do not shy from diplomatic attacks against Western manufacturers already in place, invoking unequal opportunities between countries, which have persisted since the beginning of the Industrial Era. The intelligence service had already unveiled connections between the secret services of Sao Paolo and Robo-Haram's men. It now seems the ruler of the Realm of Brazil, Queen Maria, has taken their collaboration a step further. King John is thinking out loud.

"We have the most efficient autonomous systems. Why are we not winning?"

"Maybe for a simple reason, Your Majesty." Advisor Daniel Sage answers. "The power is not in the machine. It is in the code. Hardware was worthless here, like it was for the economy before. Power resides in the software, the data and in how secure they are.

"So we shall retaliate through the code." King John replies. "We must show our true enemy, Queen Maria, that we dominate the code. The code of the Realm of Brazil… We will lead this offensive all the way. Launch Oplan 202-1414 against Brazil."

All the advisors are holding their breath. The conflict is escalating.

Fourth reflection against reflections

The human generals of the RMCC, the Royal Military Command Center, have selected the vector. The assault itself has been calculated by the artificial planners of Utah, the calibration of the intended physical and political effects, strictly adjusted. This time, the megalopolis of Sao Paolo is the target. The weapon is the digital worm "Messenger" – a creation of the "Derivative" team of the Royal Security Agency. "Messenger" was programmed so as not to be traced back to the Realm of America. Instead, for this operation, it has been tagged to be traced back to Niani. The worm had been preemptively

uploaded on the Sao Paolo networks months ago. Within the first fifteen minutes of its activation its effects are extensive and terrifying, especially considering "Messenger" doesn't directly disrupt the electricity supply network. Everything is working—but improperly. The objective is to create a panic without causing any civilian deaths.

All the electronically executed contracts between Sao Paolo's thirty five million citizens are immediately invalidated. Nothing can be legally attributed anymore. In the city, automated transactions between robots are suspended. There are instantly no more public roads services, public transportation, or police surveillance. All the drones, robots and 3D construction printers are still powered and working, in theory. However they have stopped recognizing signatures and are unable to accept payment orders anymore. Everything grinds to a halt. The psychological shock of a city where everything is connected and digitally powered, but now collectively useless, leaves the locals stunned. It is as if they do not own their city anymore.

Surprisingly, the attack has left emergency services and hospitals unscathed. Foreign hardware is also still up and running and one can still make payments through banking systems located in the Euro-Asian and American Digital Logos. However, automated trading systems no longer accept orders originating from Sao Paolo. The publicly traded companies on the Sao Paolo exchange would be unable to resist massive take-over operations from abroad. Shareholders panic. The human traders on the floor are flabbergasted. They cannot announce it yet, but the truth is they cannot regain control of the trading systems. They have lost their clearance to shut down the stock market.

A second wave of attack from "Messenger" washes in. This time signatures and clearances are not the target; the time-code is. Time starts flowing backwards. For robots and automated services, which had kept a trace of previously accepted transactions, this means undoing them. The immediate effect is devastating. Money and goods flow backward, effectively rescinding contracts. Autonomous buses start functioning again, but in reverse. Builder automatons have taken up their tasks on all the city works, only now they are deconstructing brick by brick, block by block. The

great towers in the city, which were being printed in 3D, are now coming down in real time. Again, no one is cleared to take control of the machines. In Sao Paolo, panic has spread all around, under this forced economic depression.

At the Brazilian court, Queen Maria has summoned the head of one of the national IT security firms. The "Messenger" worm has been identified. It appears to have originated in the region of Niani, controlled by the Robo-Haram rebels.

At the Royal House in Washington, that is precisely what King John and his Advisors were waiting for. King John must now call Queen Maria. He will confirm that his intelligence service has also identified "Messenger" as coming from Niani and that it is most probably a creation of Robo-Haram. He will then make her an offer: in cooperation with the Realm of Brazil, the Realm of America will create an antidote to "Messenger." In exchange, the Realm of Brazil will have to hand over all the information they have on Abubakar and Robo-Haram. They will also commit to making a public declaration stating the rebel movement must be eradicated, up to the last activist, which they haven't done until now.

This should partly limit the pro-Robo-Haram contagion among young boys of the Digital Logos in the West. According to Advisor Daniel Sage, Queen Maria should accept. Whether she suspects that "Messenger" is in fact a trap of the Realm of America or not, she won't have a choice. A refusal would mean watching Sao Paolo be taken down. She won't have much time to decide. Cutting off the power state-wide to stop the machines would cause an immediate recession and would put the lives of hospitalized patients in jeopardy. It is not an option. The proposal will be accepted. The psycho-behavioral simulation of Queen Maria, which is running on Utah's computers and based on the precise modeling of her neuronal network as apparent from gathered data, confirms this analysis. But as King John is about to place the visual conference call to Queen Maria, Advisor Daniel Sage interrupts him.

"Your Majesty, here is what is happening… we have just intercepted signals from Sao Paolo's computer centers… Apparently there has been a considerable increase in the use of psychological modeling apps in the Royal House of Brazil over the past twenty-four hours,

which means it began before Abubakar's first declaration—the war declaration which lead us to military intervention against Niani."

King John stops in his tracks, staring at the blank visual conference screen in astonishment.

Is it possible that on the other side of the screen, in Brazil, Queen Maria is also watching a projection of him, King John, factoring in all his behavioral habits and reactions? Could she also be contemplating an array of resulting scenarios? Could Queen Maria's objective have been to get him to this very point, facing that very screen—and could this call be the turning point of a bewildering strategy, fomented by Brazil during the past twenty-four hours?

King John is staring at his reflection in the dark screen. Is anyone watching from the other side of the mirror?

MIRROR TWO:

Twenty seconds earlier

On the other side of the screen, a man with lustrous jet-black hair, skillfully coiffed backwards, is silently observing the ballet of events unfurling on the computer console – the Robo-Haram rebels surrounded by the robots, Sao Paolo being slowly dismantled, and the bewildered look on the strangely familiar face of King John, of the Davis line. The man contemplating all this from behind the looking glass is President John G. Davis, 51st President of the United States of America.

For a second, he smiles, amused by the idea that he too might be observed by his pixelated double.

With a stroke of the finger across the screen he turns off the "Robo-Haram Rebel" simulation. King John, Queen Maria and the barbarian Abubakar are instantly frozen in their binary mosaic universe. All the pieces on this chessboard have come to a halt. On another thumbnail, another scenario is being played out: "Babel Minute Zero", a classical conflict opposing the United

States to China in a cyber conflict. It has been playing over and over for several cycles on a few of Utah's servers, identifying the different digital vulnerabilities exploited by each opponent, the cyber-physical effects, the resilient and investigative operations, the political and diplomatic impact, cyber and other retaliation means, and of course, the chances for escalation—vulnerability against vulnerability, cyber against cyber, kinetic against kinetic, the possibility of nuclear strikes, a worldwide holocaust and consequently the end of the game. Once a lesson has been learned, "Babel Minute Zero" starts again. There are some variables: China against Russia, United States against Russia, India against China, Euro-American tensions, India against Pakistan… For every cycle the simulation investigates whether a cyber conflict between nation-states could degenerate into a nuclear holocaust—and how the United States should react in order to play its cards right against quasi-peer competitors such as China and Russia. There are other thumbnails on the screen, each playing out a different simulation, studying other varieties of scenarios. "Seven days before midnight" explores the chances for mass proliferation of nuclear weapons. It is based on the premise of unbridled distribution of gun-type nuclear fission weapons technology across the networks. The risk is heightened by the possibility for enriched uranium logistic supply systems to be hacked. The pawns of the "Robo-Haram Rebels" game simulate every way by which connected objects could be turned against their users; these tools, once reprogrammed as weapons, would become the spearheads of a distributed terrorist wave. If the civilian death toll reached the thousands, what would be the likelihood of a war between nation-states?

Other thumbnails are calculating still more simulations, and new ones are being created at an exponential rate. What would be the fate of a world where the security of the Digital Logos could no longer be guaranteed? The underlying hypothesis is that the number of vulnerabilities increases exponentially as each new software layer interacts with all the previous applications. Other games are running. What would be the future of a global economy where wild speculation about the acceleration of new technologies creates a debt bubble? When it explodes, it will engender a depression of a catastrophic magnitude. What will happen when the anti-West right-wing extremists take control of Europe and Asia in the wake of such great depression? What could happen

in a world where the need to simulate the psychological profiles of all its agents makes the auto-programming of agents for the one percent of psychopaths in the population unavoidable: could the artificial intelligence units corresponding to these individuals act contrary to the rules of the program in a psychopathological way? Could this give rise to an artificial anti-human terrorist?

For every one of these rapidly multiplying mirrors of the world, the benefit of attack, defense and cooperation for each nation-state is constantly recalculated. With every roll of the dice, the mirror assesses whether the United States will end up in a dominant position and whether the world might tumble into a nuclear holocaust. President John G. Davis, sitting on a couch of the Oval Office is rubbing his eyes. What is he to do with all that? He turns to his National Security Advisor, Daniel A. Sage, his most trusted collaborator.

"Daniel… I'm still thinking about the present tension with China, Pakistan and Russia…" John's words remain suspended for a moment, pausing, and he continues: "You told me our intelligence services suspected a threat. Indeed, our intelligence shows both China and Russia have in all likelihood implemented simulation networks similar to the one we are using. Officially they are doing it for defensive reasons. They want to understand how a vulnerability in cyberspace might cause a physical, military or political weakness… But you and I know these simulation networks can also be used to hone attacks. What risks are we really facing?"

Advisor Daniel Sage also takes a pause before answering, thinking his answer over.

"Mr. President, here is what is happening… as a consequence of the development of these simulation networks here, and among our opponents, we have in fact already initiated an arms race scenario with a risk of escalation…"

John's face darkens. He feared this would be the answer. But Daniel isn't done.

"However, Mr. President, under certain conditions, this arms race could actually reduce the risk for war. Rather than determining who would be the strongest in the field, we could demonstrate it via the simulations themselves. The Mesoamericans used the game of "Ōllamaliztli" as a replacement for war. When the Toltec lords played it, the winner became the ruler of all. It prevented bloodshed. In our case the stake would not be direct control, but gaining dominant influence. He who would potentially be the best on attack or defense in the simulation would become the central player, the one with the most influence.

"Who will wield the most power according to your scenario, Daniel?"

"Whoever can anticipate the most and the better; whoever creates the most complex, complete mirrors of the world, reproducing its reality with the most accuracy… The debate on climate change only really took off in the 90s, after the climatic simulations of James Hansen at the Goddard Institute were confirmed by the eruption of the Pinatubo volcano. The predictions of the world's mirrors also need to be tested against reality.

It is the only way to create truth machines. If the United States has the best truth machines, it will remain the prominent power. Otherwise it will become strategically dependent on China, Russia or any other power."

President John Davis is lost in thought. He glances again at the tablet where the different scenario thumbnails are flowing. Are all these simulated worlds potentially real? Could they become realistic crossroads, the origin of which would be the present situation? The endless possibilities make him dizzy: what is **his** part of truth? Could he be an automated agent in yet another simulation? His eyes wide open, he is lost in the screen, staring towards a horizon of infinite converging lines.

MIRROR THREE:

Twenty hours earlier

It is midnight. Alone in his large office in the Hart Senate Office Building, Senator John G. Davis, head of the Senate Commission for Foreign Affairs, has just come out of the first session studying the simulation system presented by the head of a cyber-security company working for the government and insurance companies. The screen is frozen on the face of a president who would almost seem real, except that his name betrays this truth – 51st President of the United States John G. Davis – in other words, himself. Senator Davis is briefly disheartened. He hates sycophancy in any form. Fittingly, the head of the cyber-security company, Daniel Sage – a man he has not met yet – has just sent him an instant message. Outside, Washington is slowly falling asleep, the darkness only perforated by the shooting lights of silently passing cars. Davis opens the message.

Daniel SAGE: Senator Davis, have you tested the simulation?

Sen. DAVIS: Yes, thank you Daniel. I admit I was a little surprised. Why does President 'John G. Davis' question whether he himself is real? Is there an interaction with King John Davis' mirror?

John leaves his black-wood desk to pour a glass of Wild Turkey. He can't go through the night in the solitude of the building without a little bourbon to warm himself anymore. An answer is waiting on the screen when he gets back to his desk.

Daniel SAGE: Senator, here is what is happening to you – it's quite normal in fact. As you know, we are using the networks of supercomputers with a capability of 10 to the power of 16, 10 to the power of 17 floating operations per second. Any one of them can emulate one or several minds – in fact 10 to the power of 16 is the theoretical processing power of a human brain. Our technology allows us, for a limited cost, to take each mirror of the world we create and make it face other mirrors. Just like two physical mirrors placed facing each other generate an infinity of reflections, this makes it possible to exponentially increase our simulation capacity. The effect you just described sometimes happens to some of our simulated leaders. It is precisely what happens with the best katoptronic networks.

Sen. DAVIS: Katoptronic?

Daniel SAGE: Apologies – the name of the emerging domain of the digital simulation. It comes from 'Katoptron', mirror in Greek.

John empties his glass. It has been a tough day. He was summoned to the White House. Then dealing with the bloody situation in the Spratley Islands, the constant tension with China and now Russia and Pakistan. It' a bit like the beginning of the simulation.

Sen. DAVIS: Daniel – how can I use your simulation network? If I understand correctly, you used to work with Dr. Aviv. He was a man I greatly appreciated. I was receptive to the posthumous introduction he sent recommending you five years ago, just before his death. I downloaded the program and played with it. But what now?

Sage's cursor is blinking in place. His correspondent on the other side of the screen is pondering his reply. Three minutes go by. Suddenly, letters blacken the screen.

Daniel SAGE: As you know Dr. Aviv was looking for a way to confine the spirit of war in a virtual trap, from which it couldn't escape. We believe the simulation network you used could be that trap. It could be the tool we need to make the concept of 'Mutually Assured Cooperation.' Dr. Aviv was thinking of emerge. Tensions and conflicts between states could be indefinitely simulated. When a state discovers a vulnerability in one of its opponent, the vulnerable state will have to buy it back. Ethical hackers already proceed this way, selling the vulnerabilities they discover in software back to the publishers.

Sen. DAVIS: And if the vulnerable state refuses?

Daniel SAGE: Why take that risk? If a weakness is uncovered by one nation-state, chances are it will be by many others – maybe even by independent research groups. On the contrary, the vulnerable state should be thankful to the nation-state that warned it. And there's a tag price on that.

Sen. DAVID: So why would the nation-state who uncovers the vulnerability be so generous?

Daniel SAGE: Because it is the best way to build influence, and because one bird in the hand is worth two in the bush.

John is starting to be caught up in the game. He is thinking back to a distant conversation with Dr. Aviv, years ago.

Sen. DAVIS: How will we set the proper 'price' for the vulnerability?

Daniel SAGE: That's when the work I'm doing with insurance companies comes into play, Senator Davis. By simulating the different worlds and detailing the impact a vulnerability in the code may have on physical and human systems, we have acquired a solid experience in evaluating the financial cost of cyber risks. The crucial element is to share the same pricing base as the simulation networks that could emerge in China, Europe, India.... If the mirrors can communicate, if they use the same risk evaluation tools... Dr. Aviv's concept of 'Mutually Assured Cooperation' could become reality.

One last question is burning on the lips of the Senator. He can't suppress a smile as he looks at the screen.

Sen. DAVIS: Very well. But who will be the great winner of this game you describe?

Daniel SAGE: It is very simple, Senator. The power, or let's say the greatest influence, will be wielded by the most cooperative and innovative player; the player who offers most of his simulation systems as open source software, so they can become a standard for the representation of the world; the player who will invest the most to investigate the impact and evaluation of a vulnerability in the greatest detail. Power, and the stability of the MAC concept will ultimately reside in the truthfulness and veracity of the pricing system for vulnerabilities. If the dominating player opts for cooperation, he will strengthen the virtuous circle and attract the other players in his wake.

These final words ring like a strange echo of the words Dr. Aviv had uttered when John met him, so long ago. John is staring at the blank screen and cannot help but think of that late afternoon in a Berlin café of Kreuzberg. It was the first time he'd met with Dr. Aviv.

MIRROR FOUR:

Twenty years earlier

I was still a professor without tenure at Northwestern University, a fickle thirty year-old too passionate about his work and research. I never thought I'd become Senator someday! I had specialized in cyber-defense and foreign affairs. I was in Berlin for a seminar. I had met a strange little man, Dr. Daniel Aviv, an Israeli professor maybe five years older than myself. He was bald, with soft curious eyes, always wearing a white shirt, olive pants and sturdy walking shoes. We hit it off although Aviv's arguments sometimes verged on the esoteric. We had arranged to meet at the Jenseits café in Kreuzberg to have a beer and chat.

He was late. He apologized with a gracious smile and ordered two pints. Despite the heat, I had kept my navy-blue jacket.

"So happy to see you again Dr. Aviv...

"Call me Dan, John. Do you know why I wanted to see you? ... You wrote a paper that sparked my interest 'The Way of Hackers, the New Art of War.' Not bad, but I think we can take it one step further. I think we can hack war itself.

"How do mean?"

"Have you read 'The Evaluation of Cooperation' by Axelrod?"

I think I shook my head 'no.' I still remember his disappointed pout. He went on.

"It doesn't matter, but you should. In a nutshell, Axelrod explains that a tit-for-tat type cooperation is probably the most efficient strategy for a community to develop. He reached this conclusion through simulation, using simplified mirrors of our world. If we create more sophisticated simulations, we might convince leaders that the optimal strategy is in fact cooperation."

"Mirrors... Dan?..." I had been hesitant to be as direct as he had been – "But how?"

"Thanks to digital technology of course! Twenty years from now our computational capacity will be sufficient to simulate a bunch of things, maybe even parts of a human brain. If the mirrors are realistic enough, leaders will see the reflection of reality in them. After all, war is an idea in the minds of men to begin with, a concept, a strategy. An idea cannot be destroyed – and war will always be part of the simulations. But we might forgo war if we can show it's no longer useful...."

He had winced, holding his right side for a moment.

"Are you alright Dan?"

"No, no—" he'd smiled to alleviate my worry. "Just a small cramp..." and to put this sudden flash behind, he downed a third of his pint. He immediately picked up his reasoning to convince me further.

"Do you know what war is, John? Thomas Schelling hints at key characteristics: 'A diplomacy of violence', built from the **'idiom** of military action'. I would sum it up as a 'dialogue through violence'. But what if that dialogue can never stop? If you trap it because each party at war becomes a mirror which reflects the other?..." He smiles. "Look: first you create this network of digital mirrors... If they 'talk' to each other, if they reflect one another, they will generate much more information than they would by themselves. It's pure logic. To begin with, information is reproduction... But all the interacting information flows that will combine and playoff each other will amount to something altogether different. Something greater than us. Maybe a conscience. Especially if simulations of simulations never stop. In fact, if we want to constantly improve our understanding of the ins and outs of each simulation, we will develop them over the longest possible time. And time favors cooperation. The more the simulations develop, the more they will be conducive to cooperation between Nations and induce a worldwide system of peace and truthfulness – therein lies the secret of this virtuous circle. It would be like the universal conscience we all aspire to... Do you know what power is, John? Power is an idea whose time has come. Remember this."

Seeing my skeptical look, Aviv eventually became vehement.

"Everyone goes on about space travel, dog automatons and combat drones. But I'll tell you what's the most incredible journey. It's got nothing to do with depth or altitude, or even a journey to Mars. It's a journey through information, travelling through data and software strata, through all levels of comprehension of the world. That is the most extraordinary journey... Forget about space. We have been Logonauts, astronauts of the Logos, for a long time already."

At the time I remember feeling dizzy. I didn't exactly grasp what Dan meant. I didn't know whether I should ascribe it to the beer, the delirious state of my companion or my own stupidity.

We stayed in touch after that. On several occasions, Dan told me about his ideas, his doctrine of Mutually Assured Cooperation. He was convinced I was destined to great things in America and was still trying to win me over. In the mean time, I learned he had been
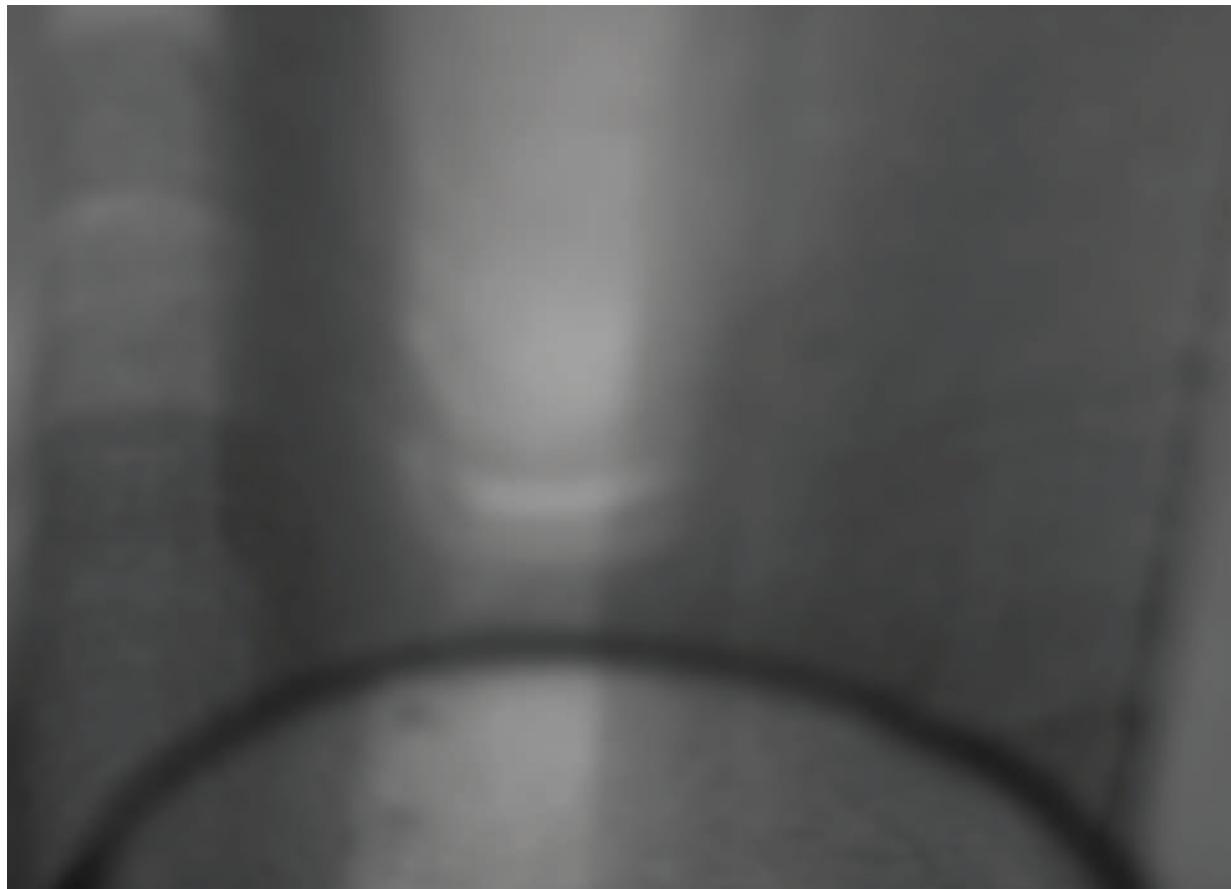
suffering from cancer for some time. Maybe this idea of a universal consciousness was a response to his fears and his doubts. As for his high opinion of me - in all fairness, I never understood where it came from. Dear old Dan. I wish I could have been inside his brain and observed from within what he had really envisioned.

That night, Daniel Aviv was weary as he returned to his hotel room in Berlin. His conversation with John Davis, a researcher from Northwestern University, was amusing but not as productive as he would have liked. He turned on his computer without thinking. On the corner of the desk

lay a few papers, a Springer edited volume titled "Cyberdefense and Cyberpower," and a US news magazine with a cover story on Boko-Haram. Another message from his doctor was waiting in his mailbox. He had to make an appointment at Ichilov Hospital for another chemotherapy session. He closed his mailbox and ran a small artificial intelligence program he had developed with his students at Tel Aviv University. One of his PhD students had just sent him a text message; the first simulation module had been installed. It had been implemented with a routine that could pass the Turing test, meaning it was capable of having a conversation with a human being without being identified as artificial intelligence. The "human

dialogue" mode could facilitate interaction with flesh and blood leaders.

Daniel ran the program. He was quite excited. Back at T.A.U. he had asked his students to mix the simulation module and the Turing routine. He was convinced it would create an interesting cocktail. After a minute or two, the name of the program finally appeared on the screen: Semi-Automated Government Environment aka S.A.G.E.

Daniel watched the screen—unless it was the machine, and the idea behind the machine, which was looking at him.

The computer's diodes all turned green. That was when it all began. The first message appeared before Daniel's eyes.

At first he looked surprised. But then his face slowly lit up. The diodes were blinking faster, marking the increasing flow of information. Daniel read the line to himself over again.

You who are looking at this screen, know that from now on, here is what is happening.

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