

The Fate of Westerb Psychonaut
from biochemical ecstasy
to the transfiguration of the body

p.15

How the cyborgs learned to stop worrying
and love surveillance ?
Gouvernance at the age of cybernetics

p.4



The Laboratory Planet

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“Hope is not needed to act.”

“Nothing is true, everything is permitted.”

This slogan, which did so much harm during the twentieth century, reinforces our conviction that the most forceful ideas are not necessarily the truest or the best but are those that can impose leur monde. Among them are the ideas that frighten people today. They form what we might call a cognitive concentration camp, a camp whose depth, diversity and size are far from having been completely explored.

This kind of concentration camp is generated by all political technology that promotes, induces, manufactures or develops the anthropological type whose existence is indispensable to its working and its reproduction. The power of institutions in techno-scientific societies resides in their capacity to create and name social reality, which is forged by their experts in order to control, and then to impose on all this tissue of fictive entities – these weapons of mass distraction, while consigning to oblivion the fact they have been produced. To these techniques of cognitive capture is today added a range of knowledge and of means making it possible to intensify the reflex-behaviours that promote the ‘good’ functioning of the administrated societies, to project a psycho-civilized society and to dream of a remote-controlled population.

Human beings, having reached the limits of their biotope, the ‘exterior’ colonisation being for the moment at an end, the planet having shrunk away, the colonisation of inner life is today undergoing a new phase of expansion.

The biometric control of the population through the mass distribution of legal and illegal drugs, the creation of consensual hallucinations by the skilful management of information and its cognitive reception, and



The “Centre 127”, a state-run detention facility located within the Brussels airport premises in Melsbroek. Photo by Nick Hannes, via International Detention Coalition.

the daily psychotronic conditioning by the constant growth of the electromagnetic environment, make of city-dwellers individuals possessed, subjected to a psychopower armed with psycho-technologies.

In this concentration camp environment, what is the place of freedom of thought? Is it just a fossilised residue of bourgeois society? A special version of the cognitive concentration camp? But can we speak without presupposing it, at least theoretically? In its most radical form, freedom of thought needs its own theory of knowledge. Because if the theory of knowledge can impose un monde, a cognitive concentration camp, it can also

knock down the fences, at the risk of summoning up a chaos that cancels out the very possibility of having a world, and produces the most effective cognitive straitjacket ever known.

This is why all theory of knowledge also presupposes a capacity to sail through troubled waters. This capacity ne renvoie pas strictly speaking to a metacartography, since it ne retourne pas d'une cognition. It is more an ethical and, we could say, a spiritual aptitude, calling on imagination, inspiration and intuition to uncover possible future ways to break down the walls of a world that has closed in on itself like a tomb.



Matrices of subjectivation

anthropogenesis, technogenesis, exogenesis

by the Bureau d'études
independant conceptual group

The technical object, writes Ernst Kapp, is a natural extension of the human body, and technical progress an extension of human evolution: "technogenesis recapitulates and extends onto- and phylogenesis". (1) But what happens when the technical object is separated from the body and the species that has projected it, and becomes an autonomous individual? (2) According to Ernst Kapp, the natural extension of the human organism *should never* become autonomous. Such autonomy would turn the technical individual into the God that Feuerbach criticized, the autonomous projection of human desires that alienates mankind or makes him a stranger to himself.

But how is it possible for a technical object to become autonomous? For Ernst Kapp, the totality of observable human phenomena are governed by an unconscious process of organic development. The historical appearance of technical objects is a progressive secretion of the organic human unconscious. Seen in this way, this unconscious is, so to speak, *transcendental*. It is where metamodelling takes place, making it possible to *found* or *unveil* our empirical knowledge, in general, and the relation of the human to technical individuals in particular. (3)

The process of making technical individuals autonomous can also be understood as the slow effect of a gap between technogenesis and anthropogenesis. Because, writes Leroi-Gourhan, in the course of human history, "a more and more obvious separation has taken place between developments in the transformation of the body, which have remained at the scale of geological time, and developments in the transformation of tools, which are linked to the rhythm of successive generations"... "Man, in flesh and blood, a true living fossil, [is] static on the historic scale, perfectly adapted to the time when he defeated the mammoth, but already overtaken by the time he was sailing triremes." (4)

Whether we understand it in one sense or the other – the fruit of the unconscious or a gap – the relation between human beings and technique has arrived today at a limit: the population of machine beings, to which the human race has tied its fate, now rivals in number and rate of expansion with the number and the rate of expansion of human organisms living on the planet. The existence of these machine beings leads to a phenomenon of acceleration of world history and gives rise to a revolution of life on Earth: since, after having opened the way to Western colonisation and globalisation, which could not have occurred without them, they could now bring about the extinction of the human race as a species (and consequently to a possible substitution of technogenesis for anthropogenesis) and its dissemination in the reconstructed mineral, animal and vegetable kingdoms (cyborg, mutant) (4A).

The dissemination of the organism or rather, its technologically assisted recombination, is carried out on the basis of an abolition of the unity of the body, of its natural determination or of its microcosmic coherence. The body is no longer a living and up-to-date image of the cosmos, but an obsolete organic complex, a concatenation of temporary, hazardous, imperfect and consequently reconstructible and perfectible organs, so all unitary politics of the body can be revoked. We could sum up this strangeness with the remark of the poet Antonin Artaud: "the human beings we are were not made to live with a brain and its collateral organs: bone-marrow, heart, lungs, liver, spleen, kidneys, sexual organs and stomach, we were not made to live with the circulation of the blood, digestion, an assimilation of glands, nor made to live with nerves of limited sensitivity and vitality, when our sensibility and our lives are without end and without foundation, like life, lifelong and in perpetuity." (5)

Man has an anatomy that has ceased to correspond to what he is. This concatenation can thus be dismantled, dismembered, like the body of Osiris at sunset. It can be disseminated in laboratories, used to make hybrids with unnatural animals, plants and minerals.

This dismantling, this dissemination takes place on the basis of technogenesis. To the ancient links that connect him to animals, to plants, of which he found the appearance of kinship and coherence in his own body, to these links formed so slowly over aeons of organic evolution, are transplanted inert or semi-inert individuals who, gradually breaking their silence, are slowly beginning to speak. To the old dying animism of African and aboriginal subjectivity is added an industrial animism. To the shamanic trance is added the machine trance. To the solidarity that linked humans to plants and animals is added a solidarity to machines and technical apparatus. (6)

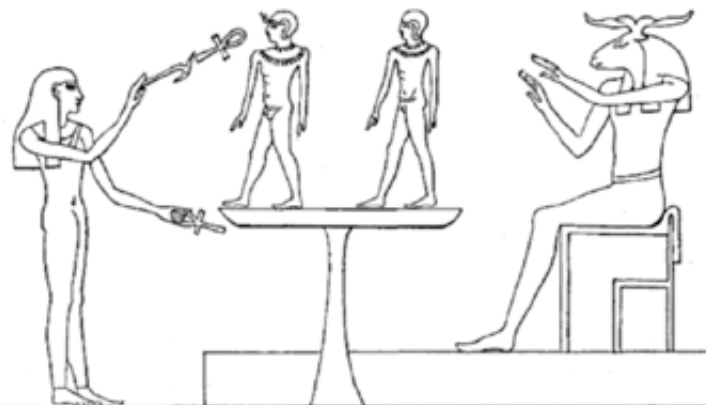
Industrial animism is the expression of an entity that is no longer identified exclusively with the organism that shelters it. The face, that "old revolutionary demand of a form that has never corresponded to its body, which was leaving to become something other than the body" (Antonin



The god Khnoum works the egg of the Universe on his potter's turn.



The god Khnoum works the human.



Artaud), is the seal of an anthropogenesis that is not of a body, that is no longer identified with it as its sole home, but which is separated from it like the dot is separated from the i to circulate in organic and inorganic products.

The hieroglyphic of a human ego in the process of disincarnation, that claims no longer to be of this place of biological determinations, this Earth, today is in its death throes.

The corporal anchoring of anthropogenesis is thus abolished, as is, at the same time, the family relation that linked creator and creature, father and son, human and machine, technogenesis and anthropogenesis, and consequently, the Great opposition between two projects of autonomy – that of human people and that of the people of machines.

Concrete and human machines are not separated like an object and a subject, and are not linked like a father and a son, but together participate in what Guattari calls an abstract machine, arranging social, imaginary, organic, semiotic machines, among others, and concrete machines (pebbles, cogwheels, microchips). The significant breaks do not take place between the human race and the people of machines but between the modes of subjectivation that variously combine biological and spiritual beings, social beings, mechanic, semiotic beings, etc.

It is thus from the point of view of the matrices of subjectivation, that is, of abstract machines, that can the real or supposed divide between organisms and mechanisms, between anthropogenesis and corporality, can be questioned.

Exogenesis and its modern inversion as matrices of subjectivation

If, as Artaud says, the anthropos is the face, "a form that has never corresponded to its body, which was leaving to become something other than the body", then there is a shift in focus in anthropogenesis regarding the species. The organism no longer constitutes the matrix of subjectivation of the human. In the process, anthropogenesis loses the microcosm/macrocosm relation as it might be represented in the kabala, where the universe is an enlargement of the human body, or in certain gnostic texts at Nag Hammadi, where nature is represented as a gigantic uterus, and the formation of the universe is described as an embryologic process of which man constitutes the appendage and the summation. (7) The origin of this division between the level of demiurgic immanence and the level of the transcendence of the ego can no doubt be found in the Christian Gnostics who divide the level of immanence (Evil, without end, without redemption, without hope of the arrival of a saviour), created by the Demiurge following an accident in the divine Plerome, and the absolutely transcendent divine level (Good) separated from the cosmos.

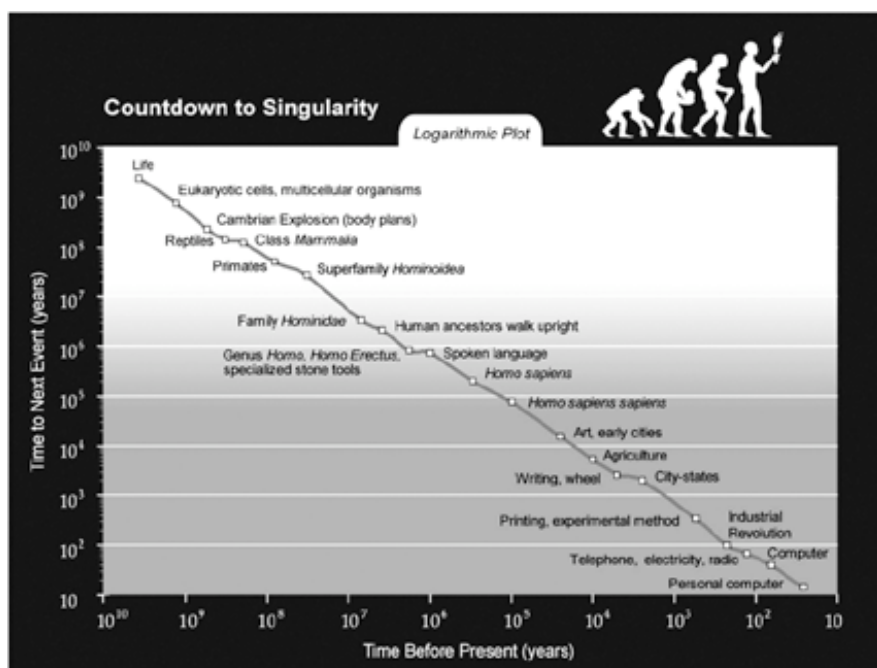
Closer examination shows that the cosmic prison – like any other prison – is not however entirely impenetrable since extra-cosmic entities (8) can pass through it, giving humans the machines enabling them to get out of it. If indeed we follow the *Hypostasis of the Archons* (9), two epistemic machines make escape possible: language and, alongside language, war. And the knowledge of good and

evil. But the price of the latter is knowledge of death, since only the knowledge of death makes it possible to escape from a life fashioned by evil entities, the Archons, the representatives of demiurgic forces.

From this abstract machine of the Gnostics, modern atheism has only retained the level of immanence, causing the *exogenetic origin of mankind* purely and simply to disappear. Mankind, trapped in a cosmos without exteriors, is evoked by Baudelaire in *Spleen*, which describes the bars of a cosmic prison as webs woven in our brains by malefic spiders. But the abstract modern machine whose paradigm is the prison has given itself a vanishing point that can only be understood as an inversion of Gnostic exogenesis. Since the transcendental tangent has been abolished, a single path remains: the arrangement of the cosmic prison on Earth and in heaven. Making the Christian redemption of the world immanent, the task now is to reconquer an evil world, to improve it, to rebuild it from top to bottom. This reconstruction will take place on the basis of a distinction between a scientific world (the world of electromagnetic or atomic sub-nature, conceived theoretically, and perceived and then manipulated by instruments) and an ordinary world, a sensible world seen as an illusion. Rather than going from the cosmos towards extra-cosmic divine powers, like Gnosticism, the inverted gnosis of the modern era leaves the sensible cosmos and investigates infra-cosmic powers. Thus the man of *Natura naturata* becomes the *Natura naturans*, and from a creature, a creator through a radical reconstruction of the world (10).

Such is the project of the Grand Inquisitor in Book V of Dostoyevsky's *Brothers Karamazov*, who accuses Christ of having resisted the temptations of the devil although they fulfil the most pressing needs of humanity. (11) As a benefactor of humanity, he says he will realise all hopes. The Grand Inquisitor embodies the achievement of a Gnostic quest for a civil theology. In this sense, he achieves the project of making the Christian *eschaton* immanent, as conceived by revolutionary sects and especially in the Rosicrucian project of universal reform (12), and then in the Reformation, the Encyclopedia of Diderot and d'Alembert, the work of Auguste Comte and Marx (13), the Leninist patristic or the great social-democratic reform movement (14). It seeks to realise what Hans Jonas has called, after Ernst Bloch, the "Hope Principle".

The application of the Hope Principle in the last century occurred in an ambivalent temporality, both nihilist and progressist. Nihilist, because, in the global society of manufactured industrial abundance, things are nothing: they can be manufactured and destroyed, created from nothing and thrown back into nothingness in an endless process of production/destruction. In this great industrial metabolism, time is nothingness, everything comes from nothing and everything – things and beings – returns to nothing, and the universe is destined to obsolescence and death. Yet this nothingness of consumption and infinite demand comes up against the finitude of resources. The mode of subjectivation here takes the cynical allure of *What's the point?* and *Let's enjoy ourselves without limits (while there's still time)*. Or, on the contrary, it adopts a Responsibility Principle which, in the name of the living,



In the coming decades, humanity will likely create a powerful artificial intelligence : the Singularity. "Some of the stronger Singularity technologies, such as Artificial Intelligence and brain-computer interfaces, offer the possibility of faster intelligence as well as smarter intelligence. Ultimately, speeding up intelligence is probably comparatively unimportant next to creating better intelligence" (The Singularity Institute for Artificial Intelligence-SIAI).

calls for the durable management of finite resources. (15) Both the Responsibility Principle and the Hope Principle abolish the authority of ascendants and substitutes for them the authority of descendants. This authority, through which man's liberty is realised, can, however, adopt two antagonistic meanings that we will examine using two Christian figures of time: the katechon and the antichrist.

The descendant as matrix of ambivalent subjectivation

In the evolutionary/progressist vision, the authority of descendants takes the form of a *non-human technological entity* (super-human, transhuman or posthuman) that we might call the "successor" or "technological singularity". (16)

The Successor seems to be an inverted figure of the Demiurge: he is the god of the end or rather, we should say, of the end without end, of infinite progress, the god of the interminable ending. (17) He announces the infinite conquest and reconstruction of the material world, the liberation of all natural determinations. He is the god of an *inverted gnosis*, the god of a liberation of the contingences of the origin. In this, the Successor is like a literary project, since the writer escapes from the contingency of being born and becomes the author of his life through writing.

But the Successor is not only the machine entity able to auto-produce as an individual or as a people and reconstruct the world to his measure. He is also a *project*. Because the flight into the future – the *project* – is the path along which the desire for auto-production seeks to escape from all determination. Such a flight is also an inversion, the inversion of the *anamneses*, the Platonic means by which the being reconquers its roots, finds its meaning by recollecting its forgotten origin.

The projection into the future, this *power of liberation* from the Demiurge (original nature), places the Successor in a mode of subjectivation of time that is Judeo-Christian in origin. Time here is oriented from the past into the future and is aimed towards the coming redemption, the arrival of which is accelerated or slowed down by opposing powers. But the redemption of the Successor is essentially different from Christic redemption in that it knows no end. And its tempo is very different.

The question of time and more precisely of the *tempo* of time and its relation to good and evil in the Christian mode of subjectivation is of cardinal importance here. In a Christian concept this tempo is set by two forces that accelerate or maintain a defined time as a gap, i.e. the space between the original fall and the end of time: the *katechon* maintains the world in its normal temporality, making it possible for humans to accomplish their work of redemption of the world, and the *antichrist* speeds up the course of time by hastening its end. (18) Thus there are two highly differentiated meanings of the world's completion. The *work* of the katechon indeed consists in bringing the world to a close, that is, to its redemption by its Assumption (19). On the contrary, the *operation* of the antichrist aims inappropriately to actualise past or future forces in the present.

This conflict in tempo is a conflict of modes of subjectivation, a conflict between what we have called, following Guattari, abstract machines. The mode of subjectivation of the Successor seems to be based on the tempo of the antichrist, in other words, an inappropriate acceleration of the course of earthly time and the slow rhythms of natural history. It is therefore in conflict with the mode of subjectivation of the living, which seems to be based on the tempo of the katechon, as we have defined it.

One might call the tempo of the katechon, the *tempo of the Earth*, governing the growth and decline of living beings. By following this tempo, we cannot put

agricultural production and industrial production on the same level, nor produce embryos like we produce transistors. We cannot subordinate the *growth* and *rhythm* of the living to the *acceleration* and the *rate* of mechanical or biomechanical apparatus. Because the consequence of their pairing has resulted in a degradation and intensification of their work, an exhaustion of their resources and their capacities for regeneration, in other words, in the mass extinction of plant and animal species, and in the simultaneous multiplication of technological species tending to replace them. This is why the freedom applied in the project of the Successor can be seen as a ruse against the living.

The mode of katechontic subjectivation is based on a

head-on conflict between a substantialised living world and inert matter since *life is all the forces that resist death*. This conflict is clearly expressed by Hans Jonas, for whom the living is an affirmation against nothingness, an affirmation expressed in reproductive sexuality. (20) Because it is never composed of the same matter, the living never identifies itself with a given state of matter. It is not a product. It is in this phenomenon of ever elusive identity that Jonas sees the premises of what, in mankind, is called liberty. (21) The application of this liberty finds its rationale in its struggle against evil, that is, against what denies life. In this approach, redemption, that is, the cosmic deployment of liberty, could be understood as a vitalisation of the world by a *therapeutic reabsorption* of the inert.

One against the other, the Successor and the living being each claim to be applying liberty. Yet each of them makes the claim in the name of the authority of a future that is set up as a Principle. But while this principle is realised by the negation of the predecessor in the case of the Successor, it is realised by the affirmation of its descendants in the case of the living. They thus form together a matrix of subjectivation that, although antagonistic, is the current basis of anthropogenesis.

Above we said that the organism no longer constitutes the matrix of subjectivation of the human, since there has occurred a shift of focus in anthropogenesis regarding the species. We have posited this shift of focus, this anthropogenesis without a bodily home, as the result of what we have called the tempo of the Antichrist. In such a tempo, anthropogenesis is technogenesis, a technogenesis of which we will have to uncover the face, this *form which*, Artaud said, *was leaving to be something other than the body*.

(1) – Ernst Kapp quoted by Benoît Timmermans, 'The Hegelian influence on the philosophy of technique of Ernst Kapp' in *Les Philosophes et la Technique* edited by Pascal Chabot and Gilbert Hottis, Vrin, 2003. Ontogenesis describes the progressive development of an individual from his conception to his mature form, or even to his death. Phylogenesis is the evolutionary history of the species to which this individual belongs.

(2) – We take the term 'technical individual' from Simondon.

(3) – Leroi-Gourhan, quoted in Michel Tibon-Cornillot, *Les Corps Transfigurés. Mécanisation du vivant et imaginaire de la biologie*, Seuil, 1992, p.286.

(4) – "What we are reaching for here is a new meaning of evolution. Geobiological evolution on Earth has yielded creatures (humans) that can reengineer their own physiognomy (for example, artificial limbs), their own anatomy (for example, cochlear implants), and even their molecular biology (for example, gene therapy). Through human-machine symbiosis, we are on an evolutionary threshold where our species is capable not only of deliberately affecting its own evolution but also of changing the rules by which evolution occurs" Robert Hoffman, *The Borg hypothesis*, IEEE Intelligent Systems 18, n°5 (September – October 2003).

(5) – Antonin Artaud, 15 December 1946.

(6) – This solidarity with machines can be clearly seen in the use made of the computer, the car and the telephone. It is also obvious in the coupling made with molecules or hormones in medical or transsexual practices.

(7) – Paraphrase of Sem, Codex VII from the Coptic library at Nag Hammadi. Cf. Michel Roberge, *L'analogie sexuelle et embryologique dans la Paraphrase de Sem in Coptica-Gnostica-Manichaica. Mélanges offerts à Wolf-Peter Funk*, published by Louis Painchaud and Paul-Hubert Poirier, Coptic Library of Nag Hammadi, Presses de l'université Laval & Éditions Peeters, 2006.

(8) – There are various myths that suppose an exogenetic origin for mankind and techniques. For example, the Book of Enoch says the origin of the use of drugs, witchcraft, botany, the art of sword-making, mirrors, ornaments, dyes, painting, astrology and the knowledge of signs comes from angels who taught them to human beings. These angels lay with women, conceiving giants who destroyed the fruits of the work of mankind and life on Earth. The sexual activity of beings arising from within or without, from beyond the Earth or from a psychic world, occurs many times in shamanism or in tales of kidnapping by aliens (on shamanism see Henri Hubert and Marcel Mauss, *Mélanges d'histoire des religions : L'origine des pouvoirs magiques dans les sociétés australiennes. Étude analytique et critique de documents ethnographiques*, Alcan, 1929).

(9) – *L'hypostase des Archontes*, extract from codex number II by Sheneset, Coptic Library of Nag Hammadi, translated by André Wautier, Éditions Ganesha.

(10) – On the project of the general reconstruction of the world, see Michel Tibon-Cornillot, *Déferlement des techniques contemporaines : instabilité, disparition des sociétés industrielles*, Conference given in Osaka, 30 October 2004.

(11) – "by refusing to change stones into bread, he [Christ] is supposed to have condemned men to suffer hunger by demanding too much of them spiritually. By refusing to jump from the top of the temple and to perform a miracle, he is supposed to have contradicted the most elementary religious need, which is to submit to mystery. By rejecting the universal power that the Prince of this world offered Him, he is said to have foregone the only chance of achieving humanity's dearest dream, that of its unification. In short, the Grand Inquisitor criticizes Christ for not having loved mankind, for not lightening their sufferings and for having asked much more than they can give (...). Here it is the devil who presents himself as a friend to human beings and who makes them happy by lowering them to the level of a satiated and animal existence." (Théodore Paléologue, *Sous l'œil du Grand inquisiteur. Carl Schmitt et l'héritage de la théologie politique*, Cerf, 2004, p.14). The Grand Inquisitor has the face of the Antichrist who achieves the unity of the world and reinforces it by means of a social reform that has the features of what Kojève calls "quid pro quo capitalism". "The terrible sorcerer that he is, recreates the world, changes the face of the Earth and becomes master of nature (...). Everything is taken care of, intelligent forecasting and planning replace Providence; 'he manufactures Providence like any other institution'." (Carl Schmitt quoted by Théodore Paléologue, p.61)

(12) – John Dee, like Giordano Bruno or Agrippa, was the prophet of a vast movement of non-dogmatic spiritual reform drawing its strength from the resources of occult philosophy. Giordano Bruno preached universal hermetic reform in Prague, England and Italy, where the repression arising from the Counter-Reformation led him to be burnt at the stake. Dee addressed his occult imperial reform to Queen Elizabeth I. All over Europe the Rosicrucian revolution strove to establish a new spirit. The "Rosicrucian Manifestos" called for universal reform through magic and the kabala. Vigorously suppressed, Rosicrucianism underwent diverse reincarnations, especially in the Puritan revolution. Frances A. Yates also points out a possible relation between Puritan Millenarianism and post-Lurianic Jewish messianism, the father of Sabbatai Sevi having been an agent for English Puritan merchants in Smyrna.

The Renaissance can be seen as a conflict between two lineages: the Hapsburgs, the Jesuits and the Counter-Revolution, extending from Spain to Italy, and the Rosicrucians, Elizabeth I, Rudolf II and Humanism, stretching from Amsterdam to Venice, and from England to Bohemia. See Frances A. Yates, *The Occult Philosophy in the Elizabethan Age* (1979).

(13) – Ernst Töppisch recognised the Gnostic myth of the fall, alienation and the blindness of mankind misled by the Demiurge, in the Hegelian myth of the alienation of the Idea and in the Marxist myth of the alienation of man by religion. In Marxist theory, the proletarians take up the role of the Gnostic *electi* by being the possessors of the secret of the class struggle, and hence of genuine class consciousness, in contrast to false consciousness, alienated consciousness. See also the work of Hans Jonas and Eric Voegelin.

(14) – "The most developed machine forces the worker to work longer than the savage, or than himself, when he disposed of more rudimentary and more primitive tools" (K. Marx, *Grundrisse*, Volume II). But in socialist society, technical progress will make it possible "to reduce to a minimum necessary labour, which corresponds to the artistic, scientific, etc. development of individuals in the time set free, using the means created by all..." (Marx, *Grundrisse der Kritik der Politischen Ökonomie*, Berlin, Dietz Verlag, 1953, p. 593.). The incipient social-democratic state socialism in the Gotha Programme aims to establish freedom by making machines pay, by increasing the time set free by the labour power of machines.

(15) – Cf. Hans Jonas, *The Imperative of Responsibility*.

(16) – The figure of the successor refers to Truong's *Stone successor*, and the singularity of the concept of "technological singularity" states that, from a hypothetical point in its technological evolution, human civilisation will be overtaken by the intelligence of machines. Cf. Vernor Vinge, who postulates that, over the next thirty years, humanity will be able to create a superhuman intelligence that will put an end to the human era (Vernor Vinge, *Technological Singularity*, VISION-21 Symposium sponsored by NASA Lewis Research Center and the Ohio Aerospace Institute, March 30-31, 1993).

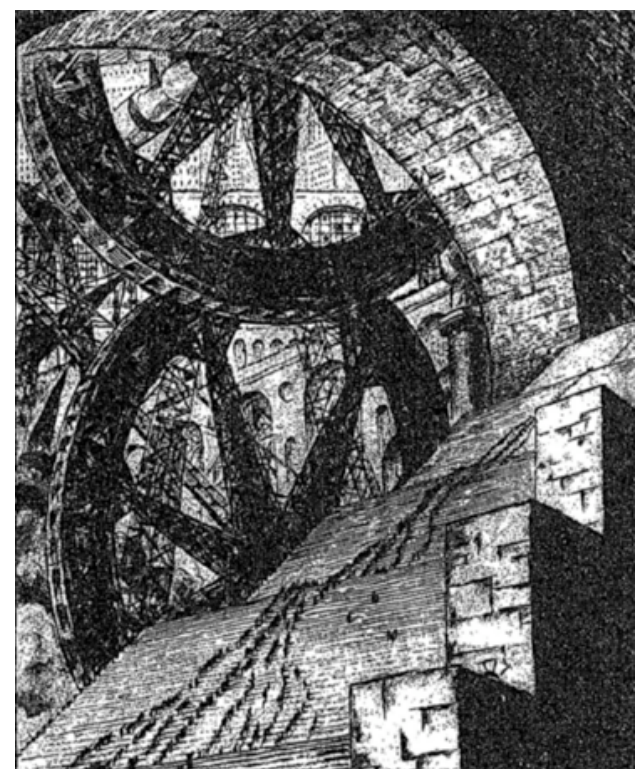
(17) – Michel Tibon-Cornillot, *L'interminable fin des sociétés industrielles*.

(18) – Saint Paul, (2 Thess. 2,6-7)

(19) – Redemption is here the abolition of death. This is a form of *apocatastase* that, in the manner of the cosmic *Noria* of the Manicheans, draws the sparks of light from the depths of the earthly Night, which it then pours out onto the "Column of Light". The spiritual substance swallowed up in Obscurity is refined and sublimated as, little by little, it wears out the matter it denies.

(20) – Jonas explicitly opposes the affirmation of life to the negation of life and the world as it is found in the Gnosis. This negation of life can also be found in certain forms of Christianity. For instance, in remarks addressed to the Congress, Reagan's Secretary of the Interior, James Watt, a representative of the American evangelists, stated that the protection of the living had no importance given Christ's imminent return. Since "once the last tree has fallen, Christ will return" (quoted in the Washington Post, *The Greening of Evangelicals*, 2005, Feb. 6). The effects of Gnostic ethics and politics, opposed to the evil world of the Demiurge, can be compared to the effects of evangelistic ethics and politics, that is, the annihilation of the planet. We can find the same effects in the politics of Hope (the politics of the Grand Inquisitor) and the politics of the Successor, who destroy the Earth through its consumption or endless reconstruction.

(21) – See Hans Jonas, 'Le fardeau et la grâce d'être mortel', in G. HOTTIS (Ed.), *Aux fondements d'une éthique contemporaine*, H. Jonas and H. T. Engelhardt, Paris, Vrin, 1993. We can see a Christian viewpoint in this sacralisation of life.



Vision of the Machine age, by the soviet painter M. V. Dobuzhinsky

Future map or How the cyborgs learned to stop worrying and love surveillance

by
Brian Holmes, writer

"We are living through a movement from an organic industrial society to a polymorphous information system - from all work to all play, a deadly game."

Donna Haraway, *The Cyborg Manifesto*

In his final book, published in 1964 at the height of the postwar industrial boom under the title of *God & Golem, Inc.*, the scientist Norbert Wiener asked a question: "Can God play a significant game with his own creature? Can any creator, even a limited one, play a significant game with his own creature?"(1) The example he used was trivial: a computer program for playing checkers, written by A.L. Samuel of the IBM corporation. As for the definition of insignificant, it's not very clear: but Wiener does observe that just as in the contest between God and Lucifer, the programmer may well lose the game.

He had reason to be nervous. During the war he had worked on electronic targeting mechanisms and had come to conceive the feedback loop as a model for every kind of purpose, whether of animals or machines. In December of 1944, acting jointly with his colleagues Howard Aiken and John von Neumann, he invited a select group of researchers to join a *Teleological Society*, to study the conjunction of neurology and engineering.(2) The name made use of a term that had previously been reserved for the final causes of speculative philosophers and theologians. Soon after its first meeting, the Teleological Society transformed into the famous Macy Conferences on *Circular Causal and Feedback Mechanisms in Biological and Social Systems* - a title summed up as *Cybernetics*, after Wiener had coined the word in 1947.

In the course of that year he publicly renounced any direct collaboration with the military brass and the giant corporations. He was repelled by his wartime experience and wanted to exercise his mind against nature alone, against a passive, transparent, Augustinian nature harboring no hidden intentions, unlike a Manichean universe full of opaque bluffs, evil designs and dissimulations.(3) This anti-militarist stance placed him at odds with Von Neumann, a mathematical genius and a central figure in the creation of the atom bomb. Von Neumann, who attended Atomic Energy Commission meetings on a wheelchair, is thought to have been among the models for Stanley Kubrick's Dr. Strangelove.(4) One of his theories, developed extensively by the mathematicians at the RAND corporation, sought to identify the most rational strategies for any two-person game, by relentlessly calculating all the possible moves of each player.

Wiener saw Von Neumann's game theory as deterministic and scientifically outdated. He preferred the statistical analysis of stochastic processes, and a policy of continuous error-correction rather than any quest for absolute certainty. By the 1960s he was increasingly concerned that decision-making might be taken over by game-theoretical robots, capable of learning checkers and many other things until one day, like the Golem, they would run amok, and unleash some kind of the Doomsday Machine. In the face of that "final cause", every human game would become insignificant.

Today, Dr. Strangelove has receded into the never-never lands of science fiction, and game theory no longer disquiets the general public. But for an understanding of the God and Golem equation in the post-industrial information age, one need only look closer into the nature of Wiener's research during WWII. Beginning in 1940, he set to work on a closed-loop information system called an anti-aircraft predictor. This was a three-part problem: use radar to record the zigzagging path of an airplane performing evasive maneuvers; calculate the probabilities of its future course based on its past behavior; and convey this information to a servomechanism that would correct the firing of the gun - an operation to be repeated in a continuous, circular fashion. Yet more was at stake here than a sensor, a calculator and a servomotor: because the gun, like the enemy airplane, was also connected to a human being. And this, for Wiener, was fundamental:

It does not seem even remotely possible to eliminate the human element as far as it shows itself in enemy behavior. Therefore, in order to obtain as complete a mathematical treatment as possible of the overall control problem, it is necessary to assimilate the different parts of the system to a single basis, either human or mechanical. Since our understanding of the mechanical aspects of gun pointing appeared to us far ahead of our psychological understanding, we chose to try and find a mechanical analogue of the gun pointer and the

airplane pilot. In both cases, the operators seemed to regulate their conduct by observing the errors committed in a certain pattern of behavior and by opposing these errors by actions deliberately tending to reduce them. We call this negative feedback.(5)

The upshot of Wiener's prediction research was a double inscription of the "human element" into the system: on the one hand, as a servomechanism, pointing the gun or steering the plane, and on the other, as a source of information for the feedback loop. The historian of technology, Peter Galison, stresses the mechanical side of the equation: "The core lesson that Wiener drew from his anti-aircraft work was that the conceptualization of the pilot and gunner as servomechanisms within a single system was essential and irreducible."(6) Philip Mirowski, in his account, lays the emphasis on the informational side: "The physical and the human both had to undergo ontological metamorphosis into messages with noise in order to be combined into a new synthesis."(7) But Galison and Mirowski are speaking



of the same thing: the infomechanical being that emerged from the Second World War. Its double constitution could be felt in the uncanny aspect of the strange new creatures that fired the guns and piloted the planes: something between machinelike, implacable humans and intelligent, humanlike machines. Where did this uncanniness come from? Galison's insight was to realize that the closed-loop information machine, in its circular, self-correcting unity, was ultimately defined by the opaque, dissimulating maneuvers of the dodging pilot, whenever he was sought out by the aggressive eye of the gunner. In other words, cybernetics itself was a Manichean science, permeated by what Galison calls "the ontology of the enemy."

The systemic unity of man and machine, split at its heart by an ontology of the enemy, is what I will explore in these pages, in order to gain a new understanding of surveillance. Here is the thesis in a nutshell: the automated inspection of personal data can no longer simply be conceived as an all-seeing eye, a hidden ear, a baleful presence behind the scenes. The myriad forms of contemporary electronic surveillance now constitute the irredeemably multiple feedback loops of a cybernetic society, devoted to controlling the future. Conflict lodges within these cybernetic circles. They knit together the actors of transnational state capitalism, in all its cultural and commercial complexity; but their distant model is Wiener's anti-aircraft predictor, which programs the antagonistic eye into a docile and efficient machine. Under the auspices of a lowly servomechanism coupled into an informational loop, we glimpse the earliest stirrings of the Golem that matters to us today, in the age of data-mining and neuromarketing. And this Golem is ourselves, the cyborg populations of the computerized democracies.

Our movements, our speech, our emotions and even our dreams have become the informational message that is incessantly decoded, probed, and reconfigured into statistical silhouettes, serving as targets for products, services, political slogans or interventions of the police. Each of us, paradoxically, is at once the promise and the threat of the future, which itself is our Telos, our God, our Creator. And so, under the incessant scrutiny of today's surveillance technologies, Wiener's philosophical question returns in an inverse form. Can a creature play a significant game with her creator? Can we play a significant game with the cybernetic society that has created us?

Cardinal Points

To set up the context of this question, I would like to introduce four characteristic technological systems, which together trace out the contours of our society.

These systems are all of North American origin, and they illustrate how the hegemonic power spends its immense defense budgets on "dual-use" technologies, both civil and military, which continually intertwine with each other even as they reshape the emerging global order.(8) You might think of these four systems as cardinal points, or mapping instruments: they exemplify the way that concentrated computing power charts out the present, in order to wipe the slates of the past and colonize the future.

- **The Joint Helmet-Mounted Cueing System** is a semi-opaque visor set into a magnetic helmet that tracks where the pilot's head is pointing.(9) It functions as a display

surface, replacing the traditional control panel and allowing the pilot to read aircraft performance, targeting information, weaponry status and threat predictions from the greenish letters of a computational scrim that remains constantly within his field of vision. At the same time, he is able to lock on a Sidewinder missile by just looking at its target. The helmets are made by Vision Systems International, a joint venture between Rockwell Collins and Elbit Systems of Israel. The fighter-plane cockpit places the human being at the junction between information-delivery systems and a whole battery of controls and launch mechanisms. It is the ultimate man-machine interface, something like the cyborg's natural home. It is here that new answers are constantly found to the question raised by military psychologist John Stroud at the Sixth Macy Conference in 1949, way back at the dawn of cybernetics: "So we have the human operator surrounded on both sides by very precisely known mechanisms and the question comes up, 'What kind of a machine have we placed in the middle?'"(10)

- **InferX privacy preserving real-time analytics is a data-mining tool based on previous research carried out by the parent company, Datamat**, for the targeting of missile interceptors.(11) It works by inserting an InferAgent program into an entire range of computer systems - banks, airports, ticketing agencies, harbor authorities, etc. - and then using encrypted transmissions to perform real-time pattern-recognition analysis on their data. The software is promoted by Michael Brown, the disgraced former head of the Federal Emergency Management Agency (FEMA): "What these algorithms do is they look at what's the normal pattern for any given set of data points, and if those veer off by any fashion, then the protocol says you need to look at that."(12) InferX is designed to hunt around the world for "unknown unknowns": those things that "we don't know we don't know," as Donald Rumsfeld put it. Because the data is not physically warehoused, it escapes the restrictions placed by Congress on DARPA's Total Information Awareness. Indeed, the company has actively marketed its system for the US military's **TANGRAM** project, which effectively replaces TIA.(13) And InferX is a dual-use technology, including a marketing application: "InferCluster uses the same distributed architecture as InferAgent to send agents over networks for the clustering of groups of objects with similar features from multiple data sources. InferCluster can be used to group customers with similar purchasing behavior, or to even discover patterns of

who is not buying and why." In that last phrase, one begins to sense the disquieting pervasiveness of what Peter Galison calls "the ontology of the enemy."

• **Personicx customer relationship management system, developed by the Acxiom corporation,** divides the entire US population into 70 demographic clusters, according to "age, estimated household income, presence and age range of children, marital status, home ownership status, estimated net worth and population density."⁽¹⁴⁾ The system is built on Acxiom's InfoBase, which is the largest continuously updated consumer database in the United States, containing public tax and census information as well as innumerable bits of data culled from the records of corporate clients. The database covers some 110 million households - basically the entire marketing universe of the United States - and, unlike the geodemographic systems of rival companies like Claritas, it provides direct-mail, telephone and email access to *individual* households, and not just zipcode groups. It profiles the cultural background, lifestyle, hobbies and aspirations of each cluster, and it also tracks them through life-stage changes, allowing for what Acxiom calls "preemptive marketing," or the chance to begin pitching products and services to households shortly *before* they enter a new phase. The resources of companies like Acxiom are increasingly used by politicians. As Democratic campaigner Terry McAuliffe said: "If I want to sit at my desk, pull up on the screen the state of Ohio, and say, 'Who in Ohio says that education is going to be the number one issue they're going to vote on, six seconds later, 1.2 million names will pop up. I then have the ability to hit buttons and do telemarketing to them immediately, or to send emails to them immediately, send direct mail to them immediately, or actually send someone to their door to talk to them.'⁽¹⁵⁾ The technology of the "panoptic sort," studied in the early 1990s by Oscar Gandy,⁽¹⁶⁾ has taken a quantum leap forward - and it will take another one very soon, when the lifestyle information offered by social-networking sites like MySpace starts being exploited by the data-miners.

• **Orbit Traffic Management Technology, sold by the ShopperTrak corporation,**⁽¹⁷⁾ is the last point on the quadrant. It consists of an unobtrusive ceiling-mounted video camera that compiles records of customer movement through the store and correlates them with both sales figures and labor-force data. Up to 254 units can be networked to cover large areas, and cameras can also be installed outside to compare how many people pass by and how many actually enter. The data is transmitted to ShopperTrak's treatment center, where it is processed and presented on a web-platform for remote access by management. The point is to use the information as a guide for adjusting in-store traffic flow, product placement, signage and advertising. The effectiveness of the design changes can then be checked against the hard data of sales. The results of individual stores can also be compared with macro-trends at the regional and national levels, allowing for performance benchmarking. Even more crucially, real-time data on regional and national sales of a given product line can be used for hour-by-hour adjustments in the size of the labor force, by means of an application called ESP, or "Easy Staffing Planner." In this way, businesses are expected to move toward "customer experience management," which consists of an ability to shape both the built environment and the human element, in order to more efficiently capture the client's desire and convert it into sales. The ideal seems to be a situation where a single look inevitably leads to a purchase.

Each of these four technologies represents a major innovation in its genre. But at the same time, they are only a tiny part of a vastly wider range of surveillance techniques, all integrated to larger control systems which tend increasingly to rely on predictive algorithms. When surveillance develops to this degree you can say goodbye not only to privacy, but to the entire public/private divide on which individual choice in a democracy was founded. Today, what Habermas called the "structural transformation of the public sphere" has crossed another threshold.⁽¹⁸⁾ In the twentieth century, it was a matter of large-scale news and advertising companies distorting the public sphere in which ideas are exchanged. Now we are heading toward an entirely different kind of society, based not on informed debate and democratic decision, but rather on electronic identification, statistical prediction and environmental seduction. And in this society, the ciphers of opportunity presented by marketing data are never very far from the targeting information thrown off by an evasive enemy.

The four examples I've presented take us from looks that kill, with the helmet-mounted cueing system, all the way to looks that consume, with customer experience management. In between, they show how data-mining provides the power to identify probable criminals or terrorists, but also probable buyers of products or voters for a candidate. This kind of "future mapping" via the combination of data collection, predictive analysis and environmental simulation could be found in dozens of other realms, from finance to traffic control. In every case, the tracking and analysis of human beings helps to configure a man-machine interface. The classical example is the

explicitly cyborg form of the pilot inside his molded cockpit, which has led to extensive development of flight-simulation devices for both testing and training.⁽¹⁹⁾ But the more widespread case emerges from the relation between mobile consumers and what the architectural critic Sze Tsung Leong calls "control space," i.e. an urban design shaped by real-time information on the aggregate behavior of individuals.⁽²⁰⁾ The word "control" has a precise meaning here: it refers to the continuous adjustment of an apparatus, or in this case, an environment, according to feedback data on its human variables. This notion of adjustments to an environment is the key, if we want to understand the pervasiveness of surveillance in today's societies - a pervasiveness that goes well beyond military, police and secret-service functions. To understand it, however, requires abandoning two commonly held ideas: the literary image of Big Brother peering out from a screen, and the more complex architectural image of the Panopticon.

What's interesting is that both these images correspond to comprehensive understandings of society and subjectivity. The world of Orwell's *1984* is not only defined by a camera hidden in a telescreen, manned by secret police watching out for crimethink. It's also a regime of absolute identification with the dark-haired, mustachioed image of Big Brother, and absolute rejection and hatred of the Jewish traitor Goldstein. *1984* depicts a totalitarian state, regulated by arbitrary trials, torture and spectacular executions, and articulated by the language of Newspeak that allows for no internal contradictions, indeed, no difference whatsoever in society or the inmost conscience of the individual. But in that respect it's an archaic image, one that corresponds very little to the world in which we live, even if there are thousands of NSA operatives devoting all their time to spying on specific persons, and even if there are orange-suited prisoners held in the spectacular torture centers of Guantanamo.

Similarly, the Panopticon is not just a circular building with windowed cells and a central tower outfitted with venetian blinds, where a functionary can watch a prisoner's every move without himself being seen. It's also a world of proliferating files, dossiers and case histories, each administered by professionals who seek to reform and retrain the individual, to ingrain a discipline into his mind, emotions and reflexes, a discipline that will operate even without the all-seeing eye. Panoptic society is a bureaucracy that individualizes its subjects through the imposition of a regular and codified system of differences, creating functional categories of able-bodied men and women whose actions and gestures can be articulated into a productive whole, and whose truth can be distilled into the discourses of specialists. Despite their inexorably



ramifying knowledge, these specialists always retain something of the warden, the doctor, the educator, shaping pliable personalities within the stable framework of all-encompassing institutions. But as we know, such clearly defined institutions with their carefully molded subjects are increasingly hard to find in present-day society, even if we do not lack schoolmasters, sergeants and psychiatrists in the pay of the state.

It's obvious that both Big Brother and the Panopticon are outdated, though they have not entirely disappeared. The question, then, is how do we characterize a surveillance regime that is neither totalitarian nor disciplinary, but depends primarily on the statistical treatment of aggregate data in order to shape environments in which populations of mobile individuals can be channeled and controlled? How, in other words, do we understand the political economy of surveillance in a cybernetic society?

Security Devices

It's surprising to see how Foucault, in his 1978 lectures at the College de France, immediately begins to distance himself from the image of the Panopticon and the concept of a disciplinary society, which he had advanced only two years before in his book *Discipline and Punish*. The lectures are entitled *Security, Territory, Population*.

They deal with what he calls "security devices," or the mechanisms whereby the economic activity of a population is both optimized and protected against disruption.⁽²¹⁾ The first example is a mid 18th-century redevelopment plan for the city of Nantes, which involves cutting out new streets to serve four overlapping functions: the aeration of unhygienic neighborhoods; the facilitation of trade inside the city; the direct connection of the streets to long-distance transportation networks; and the surveillance of traffic in an urban environment that is no longer walled or subject to curfew. The keyword here is *circulation*. Instead of developing closed, precisely defined spaces for exclusive uses, as in a disciplinary regime, the plan creates an open series of multifunctional devices that can expand in various directions, according to patterns of future growth that only be foreseen as probabilities. Further examples include the treatment of the plague by an identification of its transmission vectors, or the mitigation of famine by economic adjustments that discourage the hoarding of grain. In each case, the nature of an existing phenomenon and its effects on the population are carefully analyzed before any measures are taken. The aim of the liberal art of government is never to punish, transform or even save individuals, as in a disciplinary architecture, but instead to arrive at the optimal distribution of certain phenomena in society, "to reduce the most unfavorable, deviant normalities in relation to the normal, general curve."

All of this is quite unlike a sovereign upholding an arbitrary and terrifying law (which was the role of the ancient kings, or of Big Brother). But it is equally distinct from an administration imposing disciplinary routines on an individual (which is the effect of panoptic surveillance, whether in prison or on the factory floor). It is now a matter of political economists adjusting the parameters of an open environment so as to stimulate and channel the probable behaviors of a population, and to manage the risks entailed by its free and natural mobility, or indeed, by the expression of its desire. The problem of governments under this liberal paradigm, Foucault explains, "is how they can say yes; it is how to say yes to this desire."

What's impressive here is the about-face in Foucault's theory of the panoptic order - a transformation motivated by the rise of neoliberalism, amidst the shift to a post-industrial society. He goes so far as to say he was wrong when he claimed in his work on the prison that the disciplines were the coercive "dark side" of Enlightenment liberties, the fundamental mechanism of power beneath the formal surface of liberal theory. Instead, he now maintains, "freedom is nothing else but the correlative of the deployment of apparatuses of security." Developing that same idea a year later, he declares with a certain irony that the liberal art of government "consumes freedom" - "freedom of

the market, freedom of buyers and sellers, free exercise of property rights, freedom of discussion, eventually even freedom of expression" - and therefore, "it must produce it, it must organize it."⁽²²⁾ It must provide the institutional environment for the exercise of certain freedoms, including the conditions under which one person's freedom can be prevented from limiting another's, or indeed, from threatening the entire mechanism of economic exchanges. The liberal art of government, for Foucault, consists in intervening "not on the players, but on the rules of the game."

From here it would have taken just one more step to see how the statistical interpretation of computerized surveillance data would open up entirely new feedback possibilities for the governance of mobile populations.⁽²³⁾ Cybernetics - whose etymology means both "steersman" and "governor" - has in effect become the applied social science of control at a distance, a necessary correlate of the American aspiration to global empire. However, Foucault was not a social forecaster, as the sociologist Daniel Bell had claimed to be a few years earlier. He was a genealogist, examining the successive historical strata that combine in the present. Therefore he conceives the security devices as an eighteenth-century addition to the disciplinary procedures of the sixteenth century, just as those procedures had been superimposed on the juridical forms of medieval sovereignty. He puts it this way: "There is not

Continuation of the article "Future map"

a series of successive elements, the appearance of the new causing the earlier ones to disappear. There is not the legal age, the disciplinary age, the security age... In reality you have a series of complex edifices... in which what above all changes is the dominant characteristic, or more exactly, the system of correlation between juridico-legal mechanisms, disciplinary mechanisms, and mechanisms of security."(24)

It is this complex edifice that we must take into account, if we want to develop an image of surveillance within the wider panorama of the corporate and military order. The difficulty, in a fully fledged neoliberal society, is to see how a wide range of different actors continually attempt to manipulate the environments in which individuals freely take their decisions; and to see in turn how state power intervenes at the highest level, with attempts to readjust the concrete "security devices" of the corporations and the police, along with the broader and more abstract rules of economic governance. The difficulty, in short, is to create the image or the metaphor of a deeply Manichean society where, as Daniel Bell observed, "games between persons" have definitively replaced any kind of collective struggle against nature.(25) This society, which displaces so much of its conflict into the future, is nonetheless the present framework in which individuals, groups and populations all become cyborgs, that is, people bound inseparably to machines, struggling to make sense and to achieve purposes within mediated environments that are expressly designed to manipulate them. But this is also the liberal framework that a resurgent state power seeks to restructure, by reinforcing the earlier paradigms of military discipline and sovereign law. Very few people have sought to theorize this highly unstable condition of governance; but has anyone managed to crystallize it in an image? And has anyone managed to oppose it with what Foucault would have called "counter-behaviors"?

Precog Visions

One of the most original images of surveillance is proposed by William Bogard, in his book *The Simulation of Surveillance*. Going beyond Big Brother and the Panopticon, he explores an imaginary future where surveillance outstrips itself to become simulation, a virtual reality in which crime is already vanquished and desire is already satisfied. Bogard is keenly aware of the historical role of cybernetics in preparing the ground for such a society, as he indicates by speaking of simulation as "hypersurveillance control." But he works in a Baudrillardian vein, with an ecstatic fascination for the synthesized image. Simulation, he writes, "is nothing less than perfect surveillance, surveillance raised to the highest power, where nothing escapes the gaze. Everything already observed, absolute foreknowledge of events grounded in the possession of the codes which generate them."(26) There is something very close here to a game-theoretic vision, in which all the moves are already known and all the strategies have already been played. Bogard probably felt vindicated by movies like *The Truman Show*, or even better, *The Matrix*, both of which came out after his book. But what gets lost in the fascination of simulation is the fundamental paradox of control, its Manichean nature.

Another film offers a stranger and more searching image of surveillance, though without quite matching the science-fiction on which it was based. I'm thinking of Steven Spielberg's *Minority Report*, which tells the story of the experimental "Pre-Crime Department" of the Washington D.C. police in the year 2054. Spielberg is known for special effects, and some of them are quite good. The chase scene, in particular, captures the ambiguity of contemporary identification and tracking technologies. Billboard advertisements spring to life, activated by a retinal scan, to call out the name of the central character John Anderton as he strides anxiously through a corridor to the subway. With a bit of poetic justice, American Express, one of the pioneers of the "panoptic sort" studied by Oscar Gandy, gets the best visibility in this thirty-second orgy of brand-name seductions. Another quick scan at the subway turnstile epitomizes the convenience of biometric identification. And the matching cut to the police, tracking their prey through the transport system, recalls the price we pay for it. Later on, this imaginary vision comes close to Foucault's notion of enforced optimization, when the inventor of Pre-Crime addresses a crowd of people celebrating its extension to the entire country. He says to them: "Enjoy yourselves! That's an order." And everyone seems delightfully relieved to hear even the police commissioner saying yes, saying yes to their desire. Still the most powerful, most haunting image in the film is that of the precognitives themselves: strange, misshapen creatures, pumped full of drugs, bathing in some amniotic solution, with electrodes pressed to their heads to read off their visions of the future.

These three creatures are clearly cyborgs. Yet rather than being outfitted with powerful mechanical prosthetics and assisted with augmented cognitive faculties, as in fighter-plane cockpits or in movies like *The Terminator*, here they are merely monitored, probed to their innermost imaginings. It is the sensitivity of their emotional res-

ponses to the world that makes it possible for the police to predict the future. Philip K. Dick's short story is worth quoting here :

In the gloomy half-darkness the three idiots sat babbling. Every incoherent utterance, every random syllable, was analyzed, compared and reassembled in the form of visual symbols, transcribed on conventional punchcards, and ejected into various coded slots. All day long the idiots babbled, imprisoned in their special high-backed chairs, held in one rigid position by metal bands, and bundles of wiring, clamps. Their physical needs were taken care of automatically. They had no spiritual needs. Vegetable-like, they muttered and dozed and existed. Their minds were dull, confused, lost in shadows. But not the shadows of today. The three gibbering, fumbling creatures, with their enlarged heads and wasted bodies, were contemplating the future.(27)

In the movie, Spielberg has the precogs generate mental images of the future, without any mediation of computer analysis. He makes them self-aware, conscious of their visions, even able to suggest a course of action, as when the precog Agatha tells Anderton that he can change the future. But in that way, Spielberg simplifies a metaphor that was much more brutal and precise in Dick's short



story. There the precogs are pure sensibility, without reason or personal identity - something like the reptilian brains that contemporary marketers try to map out in their experimental subjects.(28) The precogs, in Dick's story, are uncanny, Golem-like creatures, wavering between men and machines. They stand in for the populations whose affects and mental activities are relentlessly probed, palpitated, before their aggregate image is transformed into seductive products and waking dreams.

Other elements from the narrative are also lost in the film. Spielberg and his scriptwriters make the Anderton character into the victim of a plot woven by his hierarchical superior, Lamar Burgess, in order to cover up the latter's murder of one of the mother of one of the precogs, who had returned from the foggy land of drug addiction to reclaim her daughter. In other words, Spielberg makes the film into a family drama, focused on the obsessive memories of the precog Agatha and on Anderton's memory of his own murdered son. Whereas in Dick's vastly more paranoid imagination, the plot against Anderton is a way for the Army to abolish Pre-Crime and to wrest control of the police from the civilian state. What's more, Dick gave a precious indication in the story, having Anderton explain that when he worked out the theory of Pre-Crime he refused the temptation to apply it to the stock market, where he could obviously have made fortunes. Had Spielberg been able to seize these two motifs and the relation to finance, and the army's hunger for power over the civilian state - then the film, which came out shortly after September 11, could have become the predictive metaphor of an entire epoch.

Truth is stranger than fiction. The neocon takeover of the American state effectively transferred power to the President as Commander-in-Chief of the military, and to the Department of Defense under Rumsfeld. The oil and arms industries that had taken a back seat to finance in the 1990s now returned to the forefront with a vengeance.(29) A financially driven liberal regime regressed to its disciplinary reflexes under a resurgent sovereign gaze, as the "complex edifice" of power suddenly shifted on its bases. In a world where the speculative futures of the long stock-market boom had collapsed, the fabricated need to invade Iraq became a new kind of self-fulfilling prophecy, a vastly more violent way to shape the future.

In 2002, shortly before the invasion, the Defense Advanced Research Projects Agency launched what may have been its most twisted program ever: FutureMAP, or "Futures Markets Applied to Prediction," developed as part of the Total Information Awareness program under the authority of a convicted criminal, the retired Admiral John Poindexter.(30) Here one can observe a precise and yet insane readjustment between what Foucault called "the system of correlation between juridico-legal mechanisms, disciplinary mechanisms, and mechanisms of security." Even as *Minority Report* was hitting the movie theaters, consultants for the United States Department of Defense were proposing a computerized "Policy Analysis Market"

(PAM) that would mobilize the predictive capacities of investors, by getting them to bet their money on civil, economic and military trends in Egypt, Iran, Iraq, Israel, Jordan, Saudi Arabia, Syria, and Turkey. Finance, which for twenty years had been at the leading edge of cybernetic transformations, would now be repurposed for the needs of sovereign and disciplinary power. In this way, the distributed intelligence of the market would be harnessed, and the price signals given off by these fictional futures would indicate the likelihood of given trends or events.

At this point I want to quote from the mission statement of the Total Information Awareness program as a whole, because it exemplifies the military interpretation of the kinds of feedback loops that I have been discussing throughout this paper: "The DARPA Information Awareness Office (IAO) will imagine, develop, apply, integrate, demonstrate and transition information technologies, components, and prototype closed-loop information systems that will counter asymmetric threats by achieving total information awareness useful for preemption, national security warning, and national security decision making."(31) The Policy Analysis Market would be a sensing device in such a self-regulating, closed-loop system - like a human thermostat connected to the inferno of American economic, diplo-

matic and military power. A mockup of the trading interface, prepared by the Net Exchange company, shows "special event contracts" concerning such eventualities as "Jordanian monarchy overthrown in 4th [quarter] 2004," or "Arafat assassinated in 4th 2004"; while a "global contracts" section includes "terror deaths" and "US military deaths." The trading function are overlaid on a map of the Middle East, like windows of geopolitical opportunity. This interface, and the lure of profit it offered, would be the electrodes attached to the precognitive lobes of the investors. If they produced striking images, then preemptive policies would follow.

The PAM trading interface is literally a "future map." It is also a perfect example of what Foucault calls a "security device," and it offers precise insight into the dynamics of surveillance under cybernetic capitalism. It is not a police program, but a market instituted in such a way as to precisely condition the free behavior of its participants. It produces information, while turning human actors into functional relays, or indeed, into servomechanisms; and it "consumes freedom" for a purpose. Like all security devices, it serves two functions. One is to optimize economic development: in this case, the development of financial speculation. But the other function is to produce information that will help to eliminate deviant behavior, of the kind that can't be brought into line with any "normal" curve. This is the double teleology of closed-loop information systems in cybercapitalism. The map of the future is always a promised land to come. But there are always a few enemy targets on the way to get there. The question is, do you hold the gun? Do you just watch as the others take aim? Or do you try to dodge the magic bullet?

God Machines

The heraldic emblem of Total Information Awareness - a sky-blue sphere encompassing an earthly globe caught in the gaze of a radiant eye detached from the summit of a Masonic pyramid - is surely the purest expression of the exorbitant will to power unleashed on the twenty-first century. But all around the planet, complex systems are striving to realize the goals of Wiener's original predictor, which itself had been a practical failure, destined for the closets of useless circuitry and the fivers of our theoretical dreams. The sleep of reason under informatic surveillance gives birth to God machines. Yet every new claim to "shock and awe" or "full-spectrum dominance" is ill-conceived, illusory, useless.

The latest financial crisis, unfolding as I write, is caused in part by the inability of banks to even know who will take the inevitable losses on worthless subprime loans, since these have been bundled by computer into ultra-complex collateralized debt obligations (CDOs), themselves further collateralized into a derivative called "CDO-squared," whose monetary value has become almost impossible to assess.(32) Meanwhile the "surge" of fresh (or more often, returning) American troops in Iraq effective-

ly defends the future of the Stars and Stripes under the gaze of the media, but only on increasingly small parcels of territory and at certain hours of the day. Victory, too, has become hard to calculate. And as the humiliation of anticipated defeat pushes the dollar-economy ever closer to its black hole of unpayable debt, one wonders which inventions of abstract mathematics will allow the insurance men to offer policies against collapse of the system. The hilarious scene in Kubrick's war room, with the wheelchair-genius calculating the underground survival of selected members of the human race and the five-star general screaming to the president about the dangers of a "mineshaft gap," suddenly does not look so far away from these horizons. Except, of course, for the subversive humor.

Our society's obsession with controlling the future - and with insuring accumulation - has at least two major consequences. The first is the organization of a consumer environment for the immediate satisfaction of anticipated desires, with the effect of eliminating desire as such, and creating an atmosphere of suspended disbelief where entire populations move zombie-like and intellectually silent beneath exaggerated images of their unconscious drives. The second consequence, as we have seen with such violence in recent years, is the simple removal of those who might trouble this forcibly tranquilized landscape with any kind of disturbing presence or political speech. What results in both cases is a dampening of voice, a muffling of desire, an insignificance of critique, reaching a paroxysm in the national consensus surrounding American security fever and military intervention after September 11.

In the face of these trends, which have been gathering since at least the 1980s, large swathes of the world's population have reacted to the colonization of the future by seeking refuge in the distant past of revealed religion, giving rise to fundamentalisms, both Christian and Muslim, whose archaic vision of better days to come can only translate as a violent desire for apocalypse. Any number of national militaries or terrorist groups or guerrilla armies are willing to oblige, particularly in the historical lands of the Sacred Books, but also in places of deadly emptiness like Waco, Texas. The thing to realize is that the prophets of past and future go hand in hand. The computerized trader, the religious zealot, the military



pilot and the suicidal terrorist are all protagonists in the time wars of the 21st century, whose coming Jeremy Rifkin predicted two decades ago, without being able to foresee the *dramatis personae*. (33) As Maurizio Lazzarato has written more recently: "The West is horrified by the new Islamic subjectivities. But it helped to create this monster, using its most peaceful and seductive techniques. We are not confronted with remnants of traditional societies in need of further modernization, but with veritable cyborgs that articulate the most ancient and most modern." (34)

In 1964, the year of *Dr. Strangelove*, Norbert Wiener tried to conjure away the threat of deterministic game theory, which he saw as a sure-fire path to "push-button war." He thought that by placing flawless Augustinian reason on a single continuum with the imperfect human mind and the limited electronic computer - or in other words, by understanding both God and Golem to be incorporated within human experience - he could help to open up a more flexible ethical space, unbound to any ideology, whether of religion or science. Yet today it is precisely within this flexible interface of God, man and machine that the Manichean games of corporate and military strategy are played out, with very few significant questions as to the rules, the stakes or the final causes. The cyborgs, like Kubrick's strategic air commanders, have learned to stop worrying and love surveillance. But through the magic of computer media, their strange love is now distributed much more widely through the population. The telos of humanity - its future map - once again looks like a bull's eye of blind self-destruction.

Conclusions

The question isn't one of dodging the magic bullet, or of constructing some fantasy space where you could survive un surveilled. The question is how to engage in counter-behaviors, able to subvert the effects of cyberne-

tic governance. One thing we could do is to create more precise images and more evocative metaphors of the neoliberal art of government, in order to heighten awareness of the ways that intimate desire is predicted and manipulated. Such images and metaphors are desperately lacking, along with a Karl Marx of cybercapitalism.

But another, more important thing we can do is to dig into the existential present and transform the everyday machines, by hacking them into unexpected shapes and configurations that can provide collaborative answers to control space. Critical communities of deviant subjectivity, forming at the site of the eviscerated private/public divide, are not some subcultural frivolity, but attempts to reinvent the political at its very basis. What's at stake is the elaboration of different functional rules for our collective games, which in today's society cannot be put into effect without the language of technology. Distributed infrastructure exists for such projects, in the form of open-source software. And laboratories for this kind of experimentation have been built *ad hoc*. But what you don't have is any sustained institutional commitment, any governmental Golems who are willing to wake up from their waking dreams. And that makes it very difficult to bring together, over the middle and long term, the diverse range of people who are needed to help change the culture of the present.

Social interaction is always a game of control, as all of David Lyon's work on surveillance has shown (35). But everything depends on who writes the rules, and even more, on how you play the game. To find a better way, or even to help raise the problem in its urgency and complexity, we would have to invent new kinds of cultural institutions, able to take on more difficult and more divisive issues - exactly the ones that the Manichean sciences of the postwar era succeeded in automating and hiding from view. Until artists, hackers and cultural critics are joined by scientists, sociologists, economists and philosophers with a purpose, there will be no deep and distributed critique of military neoliberalism, and of the surveillance that articulates it. Which means that the ontology of the enemy will keep coming back to haunt us, like some undead ghost of the Cold War that never dissolved in the sun. That might even be the significance of the hilarious and supremely subversive ending that Kubrick gave to his film, when he has Vera Lynn's optimistic, sentimental forties-era lyric billowing up out of the mushroom clouds:

We'll meet again / Don't know where, don't know when / But I know we'll meet again some sunny day

Notes

- (1) Norbert Wiener, *God & Golem, Inc.: A Comment on Certain Points where Cybernetics Impinges on Religion* (Cambridge, Mass: MIT Press, 1966/1st ed. 1964), p. 17.
- (2) On the Teleological Society, and on Wiener generally, see Steve Heims, John von Neumann and Norbert Wiener: *From Mathematics to the Technologies of Life and Death* (Cambridge, Mass: MIT Press, 1980), and Flo Conway and Jim Siegelman, *Dark Hero of the Information Age: In Search of Norbert Wiener, the Father of Cybernetics* (Cambridge, MA: Basic Books, 2005).
- (3) Cf. Norbert Wiener, *The Human Use of Human Beings* (New York: Da Capo, 1954/1st ed. 1950), pp. 34-35: "The scientist is always working to discover the order and organization of the universe, and is thus playing a game against the arch enemy, disorganization. Is this devil Manichean or Augustinian? Is it a contrary force opposed to order or is it the very absence of order itself?" The Manichean devil is playing a game of poker against us and will readily resort to bluffing; which, as von Neumann explains in his *Theory of Games*, is intended not merely to enable us to win on a bluff, but also to prevent the other side from winning on the basis of a certainty that we will not bluff. Compared to this Manichean being of refined malice, the Augustinian devil is stupid. He plays a difficult game, but he may be defeated by our intelligence as thoroughly as by a sprinkle of holy water." Also see pp. 190-93 for explicit considerations on the Manichean nature of interstate politics, which Wiener considers a bad atmosphere for science.
- (4) Cf. William Poundstone, *Prisoner's Dilemma: John von Neumann, Game Theory, and the Puzzle of the Bomb* (New York: Anchor Books, 1992), p. 190, n. 3. But there are other models: Edward Teller, Werner von Braun, the game theorist Herman Kahn, Henry Kissinger.
- (5) Norbert Wiener, *I Am a Mathematician* (Cambridge, Mass.: MIT Press, 1956), pp. 251-52.
- (6) Peter Galison, "The Ontology of the Enemy: Norbert Wiener and the Cybernetic Vision," in *Critical Inquiry* 21/1 (Fall 1994), p. 238.
- (7) Philip Mirowski, *Machine Dreams: Economics Becomes a Cyborg Science* (Cambridge University Press, 2001), p. 61.
- (8) For an excellent discussion of dual-use technologies, see Jonathan D. Moreno, "DARPA on Your Mind," in *Mind Wars: Brain Research and National Defense* (New York: Dana, 2006).
- (9) See the product page at www.vsi-hmcs.com/pages_hmcs/02_jhm.html.
- (10) John Stroud, "Psychological Moment in Perception," in Heinz von Foerster, ed., *Cybernetics: Circular Causal, and Feedback Mechanisms in Biological and Social Systems, Transcriptions of the Sixth Conference* (New York: Josiah Macy Foundation, 1950), pp. 27-28.
- (11) Corporate homepage at www.inferx.com.
- (12) From a video interview with Brown on Dan Vernon's Homeland Defense Week, at <http://link.brightcove.com/services/link/bcpid1078673197/bclid111449543/bctid1125950390>.
- (13) See the TANGRAM Proposer's Information Packet, at www.fbo.gov/spg/USAF/AFMC/AFRLRRS/Reference-Number-BAA-06-04-IFKA/SynopsisPhtml; and the White Paper by Jesus Mena, "Modernizing the National Targeting System", available in the "Expert Insight" section of the InferX site. The firm Allen Booz Hamilton, which won the general contract for the TANGRAM project, is located in McLean, Virginia, alongside Datamat and InferX; it is not clear whether InferX has actually been hired for the project.
- (14) Acxiom corporate homepage at www.acxiom.com.
- (15) Terry McAuliffe, quoted in the PBS documentary by Douglas Rushkoff, *The Persuaders*, 2004; the transcript can be accessed at www.pbs.org/wgbh/pages/frontline/shows/persuaders/etc/script.html.
- (16) Oscar H. Gandy, *The Panoptic Sort: A Political Economy of Personal Information* (Boulder: Westview, 1993).

(17) Corporate homepage at www.shoppertrak.com.

(18) Jürgen Habermas, *The Structural Transformation of the Public Sphere* (Cambridge, Mass.: MIT Press, 1991/1st German ed. 1962).

(19) For an insightful study of how the cockpit model has served for the retooling of public education in the US, see Douglas D. Noble, "Cockpit Cognition: Education, the Military and Cognitive Engineering," in *AI & Society* 3 (1989). In conclusion Noble writes: "The means and ends of education are being reshaped within a massive military/industrial research and development enterprise, ongoing since World War II, to engineer appropriate human factors for high performance technological systems."

(20) Sze Tsung Leong, "Uterior Spaces," in Chuihua Judy Chung et. al., eds., *The Harvard Design School Guide to Shopping* (Cologne: Taschen, 2001). Also see Stephen Graham, "Spaces of Surveillance-Simulation: New Technologies, Digital Representations, and Material Geographies," in *Environment and Planning D: Society and Space* 16 (1998). Graham writes: "Computerised simulation and modelling systems now allow the vast quantities of data captured by automated surveillance systems to be fed directly into dynamic facsimiles of the time-space 'reality' of geographic territories (neighbourhoods, cities, regions, nations etc), which can then, in turn, be fed into support new types of social practices, organisational change, and urban and regional restructuring."

(21) The French phrase *dispositifs de sécurité* could equally well be translated as "safety devices," or perhaps (catching the ambiguity that I will explore later on) as "safety-and-security devices." The official translation speaks of "security apparatuses." See the opening chapters of Michel Foucault, *Security, Territory, Population: Lectures at the Collège de France, 1977-78* (Palgrave Macmillan, 2007/1st French ed. 2004).

(22) Michel Foucault, *Naissance de la Biopolitique: Cours au Collège de France, 1978-1979* (Paris: Gallimard, 2004), p. 48.

(23) The perfect way to chart this transition is offered by the historian Otto Mayr, who has documented the pervasiveness of simple feedback mechanisms (thermostats, governors) in liberal Britain during the eighteenth century, at a time when they remained extremely rare among the authoritarian societies of the Continent. What is more, he shows that these mechanical devices were commonly used as metaphors for such characteristic political-economy notions as supply-and-demand, checks-and-balances and self-regulation. However, Foucault does not seem to have been aware of Mayr's technical book, *The Origins of Feedback Control* (Cambridge, Mass., 1970), which might have provided a clue. The more explicit comparative study only came later, after Foucault's death: Otto Mayr, *Authority, Liberty and Automatic Machinery in Early Modern Europe* (Baltimore: John Hopkins University Press, 1986). Also see Galison's discussion in "The Ontology of the Enemy," *op. cit.* pp. 262-63.

(24) Michel Foucault, *Security, Territory, Population*, *op. cit.*

(25) Daniel Bell, *The Coming of Post-Industrial Society: A Venture in Social Forecasting* (New York: Basic Books, 1999/1st ed. 1973). Bell writes: "The design of a post-industrial society is a game between persons in which an intellectual technology, based on information, arises alongside of machine technology" (p. 116).

(26) William Bogard, *The Simulation of Surveillance: Hypercontrol in telematic societies* (Cambridge University Press, 1996), p. 55.

(27) Philip K. Dick, "The Minority Report" in *Fantastic Universe* (1956); reprinted in *The Minority Report* (New York: Citadel Press, 2002).

(28) See the interviews with Clotaire Rapaille in Douglas Rushkoff's PBS documentary *The Persuaders*, *op. cit.*

(29) For an understanding of how this kind of economic shift occurs, see Shimshon Bichler and Jonathan Nitzan, "Dominant Capital and the New Wars," in *Journal of World Systems Research* 10/2 (Spring 2004), available at <http://bnarchives.yorku.ca>.

(30) The entire TIA program was, of course, shut down by the US Congress, in part because of the outcry over the PAM interface; however, all of the information concerning PAM has been archived by its proud inventor, Robin Hanson, at <http://hanson.gmu.edu/policyanalysismarket.html>.

(31) From the reconstruction of the original TIA website at <http://infowar.net/tia/www.darpa.mil/iao>.

(32) The anthropologist and finance expert Paul Jorion, who detailed the mechanisms of the subprime crash over a year before it actually happened, quotes a remark from a specialized document emitted by the Union de Banques Suisses: "To analyze a simple CDO 'squared' constituted of 125 different securities" we would have to know the information pertaining to 9,375 securities." www.pauljorion.com/blog/?p=174

(33) Jeremy Rifkin, *Time Wars: The Primary Conflict in Human History* (New York: Holt, 1987).

(34) Maurizio Lazzarato, *Les révolutions du capitalisme* (Paris: Les empêcheurs de penser en rond, 2004), p. 101.

(35) See, among others, David Lyon, *Surveillance Society: Monitoring Everyday Life* (Buckingham: Open University Press, 2001); *Surveillance Studies: An Overview* (Cambridge: Polity Press, 2007).

Tactical Reality Dictionary

Cultural Intelligence and Social Control (extracts 1)

by Konrad Becker

Synchronous Isopraxis

Human tendencies to imitate clothing styles and to pick up the nonverbal mannerisms of others are rooted in paleocircuits of the reptilian brain. Paleocircuits are subcortical nerve nets and pathways which link bodily arousal centers, emotion centers and motor areas of the forebrain and midbrain, with muscles for the body movements required by nonverbal signs. Imitation is a deep, reptilian principle of mimicry, i.e., of copying, emulating, or aping a behavior, gesture or accessories including impulsive tendencies to, e.g., clap as audience members nearby applaud. Researchers isolated specific "cute" features in the face, establishing the existence of an infantile cuteness schema and a set of features and proportions attractive both in male and female.

Isopraxis is behavior where people dress like their colleagues and adopt the beliefs, customs, and mannerisms of the people they admire or feel inferior too. Appearing, behaving, and acting the same way makes it easier to be accepted, looking alike suggests same views and feels safe. The highly ritualized and time-based practice of coded outfit and appearance is not only a social synchronization device but also a system of classification and identification of complex social strata and hierarchical uniformities. The element of choice appears to be mostly an illusion but as a dynamic instrument of control it is superior to passive cattle branding methods because patterns are internalized in the subjects. In contrast to its cheerful image, fashion is not only a very effective multilevel system of group cohesion but even more so an efficient tool of social disciplinary action.

Special Agents at USFBI report that they have found that getting people to breathe at the same rate, blink at the same rate, head nod, and do other gestures at the same time is very effective in establishing deep communication. This creates rapport by behavior feedback subtly matching non-verbal communication, especially voice patterns and eye contact patterns. Facial movements provide sufficient peripheral information to drive emotional experience. The facial feedback hypothesis proposes that facial expression (smiling, frowning etc.) affects emotional expression and behavior, smiling produces a weak feeling of happiness.

EEG-research proved a resonance-like rapport of brain waves upon external optical or acoustic stimulation. The brain's own frequencies tune in with the frequencies of the stimulus, an effect called "photic driving" or "frequency following response" (FFR). The frequency bands from 0.1 ? 40 Hz are associated with psychophysical states (Gamma, Beta, Alpha, Theta and Delta) although these categories cannot cover the complex spectrum of wave activities of the brain, and only offer a vague outline of psycho-physical effects.

In remote areas of south-east Asia, certain species of firefly flash rhythmically in unison. The emergent synchrony of these fireflies which can number in the thousands differs markedly from many other forms of apparent synchronization in nature where perceived synchrony in these cases highlights the tendency of human observers to impose rhythmic patterns. After all, human behaviors are often characterized by synchronization and rhythm.

Pattern Detection

Humans tend to register the unfamiliar rather than the familiar, the unusual rather than the usual. Theory of Signal Detection assumes that there are two stages of information processing in the task of detection: First sensory evidence of presence or absence of signal or noise, secondly a decision whether evidence is strong enough based also on probability and positive outcomes. Psychophysics attempts to measure the relationship of physical stimulation and the psychological sensations it produces. Absolute human sense threshold in vision is defined as a candle in a clear dark night at distance of 30 miles. In touch the threshold is the wing of a fly falling on a cheek from 1 cm. Difference thresholds are defined as just noticeable difference (JND) or the smallest change can be detected in 1 of 2 trials. JND for weight is 2%, brightness 2%, and loudness 10%. Counterintelligence Manuals on observation techniques



Portrait of Kaczynski by the FBI.

who killed three scientists and wounded 23 since 1978 using mail bombs and other handmade, untraceable explosive devices. Kaczynski is serving a life sentence without the possibility of parole in the Federal ADX Supermax prison in Florence, Colorado.

During Kaczynski's sophomore year at Harvard, in 1959, he was recruited for a psychological experiment that, unbeknownst to him, would last three years. The experiment involved psychological torment and humiliation that could have deep scars in some of its subjects. (...) The man who did the experiment was the brilliant and complex Harvard psychologist Henry A. Murray. Murray was one of my father's closest friends. Though his fame has diminished since his death, the pioneer of personality tests that are now a routine part of industrial management and psychological assessments" (Jonathan D. Moreno, *Mind wars. Brain research and National defense*, Dana press, 2006, p.70). Timothy Leary called Murray "the wizard of personality assessment who, as OSS chief psychologist, had monitored military experiments on brainwashing and sodium amylal interrogation" (cf. Alston Chase, *Harvard and the Unabomber: the education of an american terrorist*, Norton, 2003).

refer to psychological research which asserts that on average 85% of what is learned from a real life situation is through the visual sense and only 13% is learned through the sense of hearing while 2% is through the sense of touch, smell and taste. The human visual system is not able to detect movement of less than 1/10 of a second, which is the basis for a variety of illusions or tricks which involve a quick hand, the "sleight of hand". In the space domain, vision is better than audition, so typically vision dominates, but in the time domain, just as exemplified in speech perception, hearing resolution is better than vision. Hearing may be as much as 10 times better than vision in resolving events that happen very close together in time.

Scientists study how senses help the brain fill perception gaps to give meaning to events. Experiments suggest that the moment of perception, what the brain thinks is "now," may have happened as much as half a second ago. The light had to reach the eyes, and the sound had to reach the ears, then both signals get processed by the brain so that they look simultaneous. "But it's nothing but trickery of the brain, creating truth from illusions and it takes a lot of effort to make it come out right." As to how this all happens one answer is that it's an illusion and things are not actually all that coherent.

Attentive Relevance

Attention as a mental process is the concentration and focusing on a stimulus, mental event, or task. Viewed as the process of selecting some of the many available inputs, attention is a decision process in the systematic admission of information into consciousness. The capacity to selectively prepare our nervous system to process one set of stimuli, think about a topic, or make a response is an attention set. Attention is a limited mental resource. Automatic processes that operate parallel and where capacities are not coupled with intention and are not requiring awareness, do not strain attention resources. (Thinking about the task might actually introduce errors). Controlled processing, as for unfamiliar tasks, operates serially, takes attention and is therefore resource limited. Human short term memory (Working Memory) is limited in capacity with approximately thirty seconds and the capability to keep around only seven plus or minus two information items, chunks. At any given time, several active or near-active conceptual processes are competing for cognitive resources and attention. A wide range of new information is monitored any moment and there is an even wider choice of information in memory which might be activated to provide a relevant context in which to process new information. "Relevance" is a theoretical term to refer to the cognitive utility of a piece of information in a context, or for an individual at a given time. Human cognition is geared towards the maximization of relevance, the achievement of as many

contextual effects as possible for as little processing effort as possible.

Communication creates expectations of relevance in others, raises and exploits specific expectations of relevance. The human pursuit of relevance as a constant factor makes it possible to assume with a degree of success what others are paying attention to, and what they are thinking. They are paying attention to information that seems most relevant to them, combining this information with the most relevant contextual information available. Because humans follow this predictive pattern, they can act on each other's mind by manipulating expectations of relevance and importance becomes a negotiated state-of-mind.

Perceptive Expectations

Perception is an active process where stimuli observed by receptor organs are influenced by past experience, education, cultural values, and role requirements. Information obtained depends upon the observer's assumptions and preconceptions, and by the context where different circumstances evoke different sets of expectations. There is a strong tendency in human perception to model perception according to expectation, humans tend to perceive what they expect to perceive.

It takes more information and data processing, to recognize an unexpected phenomenon than an expected one. Expectations have diverse sources, including past experience, education, professional training, and cultural and organizational norms. This tendency to perceive what is expected seems much more important than any tendency to a desired perception or so called wishful thinking.

Trying to be objective does not ensure accurate perception and patterns of expectation can become so deeply embedded that they continue to influence perceptions even after a wrong preconception has been corrected. Expectations form a set of Mind Patterns, a predisposition to think in certain ways, like a menu through which one interacts with the world. Patterns of expectation are placing relevance in modes of interpretation. The idea of being influenced only by the facts rather than by preconceived notions is naive for there is no such thing as "facts". There is only a very selective subset of an overall mass of data. Being subjected to this subset allows one to classify and judge the relevance to the question at issue.

Molecules of combat toward an asymmetric psychic warfare

by Ewen Chardronnet

"There is no evolutionary limit to how much consciousness can be acquired by a species. And there is no end to the degree of adaptive advantage the acquisition of consciousness will confer on the individual or the species in which it resides."

Terence McKenna

During our adolescence, my friends and I looked at the ways our own projections and fantasies might alter our objectivity, and how psychoactive drugs could help us to develop our consciousness of the surrounding world. I remember some of us experimenting with Datura, which (until 1992) could still be bought over the counter in France in the form of "Louis Legras" herbal cigarettes, which were used as tobacco substitutes. At the same period, we discovered the theory of evolution of the psychonaut Terence McKenna who links the development of consciousness to the absorption of hallucinogenic plants by the hominids of the Neolithic period and, by extension, human development since the primates to a constant interaction with hallucinogenic plants. Although it was opposed by the guardians of scientific rigour, his theory had the merit of reinforcing the evidence that omnivorous hominids would inevitably, one day or another, come into contact with hallucinogenic mushrooms or other psychoactive plants in their environment and that these plants would play a role in "the development of all the mental functions that we associate with humanity, including memory, imaginative identification, language, naming, magic words, dance and a certain religious sense". Since R. Gordon Wasson's book *Soma: Divine Mushroom of Immortality* (1), notes McKenna, it has been widely accepted that hallucinogenic mushrooms, as causal agents in the appearance of spirituality, awakened human beings and prompted the birth of religion. Mankind and his shamans used plants to give a meaning to the world and to the phenomena around them and to elaborate rules helping them maintain the coherence of the community. Even if these plants, "this food of the gods", were also plants of death, were potential sources of anguish, of worrying temporary losses of consciousness, of fatal poisoning and murderous madness, they also stimulated the development of an imaginative world of terrifying religious control grounded in possession and bewitchment, devils, demons, chimeras and various infernal creatures. But in his thesis McKenna lays more stress on the links between psychoactive plants and the origin of consciousness in mankind than on the birth of spirituality: "a beneficial plant, once discovered by an animal or a person, can be included in the diet and thus confer an adaptive advantage. The animal or person is no longer threatened by certain factors in the environment, such as diseases that may have previously set constraints on the life span of individuals or perhaps upon the growth of the population as a whole. This type of adaptive advantage is easily understood. Less easy to understand is the way in which plant hallucinogens might have provided similar, yet different adaptive advantages. These compounds do not catalyze the immune system into higher states of activity, although this may be a secondary effect. Rather, they catalyze consciousness, that peculiar ability that has reached its greatest apparent expression in human beings. One can hardly doubt that consciousness, like the ability to resist disease, confers an immense adaptive advantage on any individual who possesses it. (...) Consciousness has been called 'awareness of awareness' and is characterized by novel connections among the various data of experience. Consciousness is like a super nonspecific immune response." (2) This positive and peaceful vision of the development of consciousness through drugs was however for me rapidly counterbalanced when I was confronted with the first Gulf War and the fact that the pilots and soldiers of the operation "Desert Storm" carried out their lightning war under the effect of amphetamines and other palliatives to a lack of sleep. This aroused my interest in the sombre relations between drugs and war.

Later on, by joining the *Association of Autonomous Astronauts* (3), my friends and I became interested in how we could develop an artistic and literary perspective on the "dream of flight." All kinds of drugs and methods for "astral travel" were the most accessible means for the beginners we were. But the AAA gave us the extraordinary chance to exchange with individuals all over the world who were in search of something similar, following the paradigm shift induced by human space travel. In 2002-2003 it led me to work with pharmacologists and on harm-reduction programs, as well as experiencing zero-gravity in a parabolic flight (4). One motivation was my surprise in reading that the most common substances used by NASA and the CNES (the French national space centre) to treat "Space Motion Sickness" were "Scopolamine against space sickness, and amphetamines to ward off sleepiness" (5). Like the soldiers in modern warfare, it is important that astronauts

remain mentally alert during their mission so that they can perform the necessary tasks and achieve the mission's goals safely. For the treatment of space sickness, the amphetamine most often used is Dexedrine, which, together with Scopolamine, lends its name to the astronaut's drug, SCOPDEX, a drug in use since the first manned space flights, including the

Apollo 11 mission to the Moon (6). Scopolamine comes from the family of plants that includes mandrake and datura, and thus prolongs an intriguing cultural history running from shamanism to "truth serums". Like amphetamines, they are widely used today in the armed forces and as narcotics ("speed") illegally.



The game "Tom Clancy's EndWar™" imagine the World War Three in 2020, bases on scenarios of Tom Clancy. The combatant uniform is inspired by the the Future Force Warrior program of US Army's Future Combat Systems, and specifically from "vision 2020 Future Warrior".

War and druggs

Throughout history, drugs and war have been closely linked. The famous legend of the Scandinavian and German "Berserkers" relates that these warriors could be plunged into a state of almost uncontrollable rage, taking away all sensation of pain or fear by a combination of mead and hallucinogenic mushrooms, martial arts, to stimulate physical vigour, and a self-induced warlike trance. It is said that their murderous madness could reach such heights that after a while they could no longer contain themselves and ended up killing each other; as they wore animal skins, they may well have given birth to the myth of werewolves. In the eleventh century, the Nizari Fedayeen, killers serving the Ismaelian Shia Hassan Ibn Al-Sabbah, were called "hashishiyin", in Arabic, from which the word "assassin" is derived, because of their alleged consumption of hashish. They

From mandrake and datura to truth serums

Many substances are capable of modifying cerebral activity. Such changes can affect the level of alertness, moods or cerebral creativity. This is why man has always used different products issued from the animal or vegetal kingdoms for their psychoactive properties (snake venom in Amazonia, cannabis in China, etc.). Such practices are traditionally used in religious, shamanic, therapeutic or military contexts, and often in a combination of them, wherever an alteration of mood, of auditory or visual perceptions, or an increase in alertness was desired.

The use of alkaloids such as Scopolamine partakes of this historical tradition. Scopolamine comes from plants from the Solanaceae family, which both produces excellent vegetables and highly dangerous poisons. Some species are part of the human diet (potatoes, tomatoes, aubergines, chilli peppers). The noxious varieties of Solanaceae (belladonna, datura, brugmansia, mandrake), but also tobacco, have been used for centuries for their psychoactive properties, which originate from their alkaloid, atropine, hyoscyamine and scopolamine content (in the noxious Solanaceae) and from nicotine (in tobacco). Associated with shamanism and popular culture in Mexico, Datura stramonium is one of the three main helpers, alongside peyote (cactus) and psilocybe (mushroom), that a shaman must choose during his initiation. Before 2000 B.C. in Mesopotamia, the Babylonian priests of Chaldea used mandrake, calling it *Yabinhin*, for its narcotic and analgesic effect during initiatory rites. In Homer's *Odyssey*, Circe uses it as an ingredient in the philtre made to transform Ulysses' companions into swine. Citing the Roman writer Varro, Saint Augustine claims that, thanks to datura powder, witches could change imprudent travellers into beasts of burden. They used them to carry their baggage and, once the journey was over, gave them back their human form. In the Middle Age, the Church of Rome, which set up the Inquisition and its pyres, told people that all phenomena involving magic or mental disorders were the work of the devil, which is why the Church suppressed all knowledge of plants such as mandrake,

were said to use a hypnotic drink during magic operations and as a stimulant to carry out suicide missions against the Seljuq Turks and the caliphs of Baghdad. Nearer to us in time, in 1880, during the siege of La Paz in Bolivia, coca leaves were given to the rebelling Indians before they went into battle, and the "sacred plant of the Incas" helped the besieged to bear their hunger. In the First World War, German pilots (among whom the future Marshal Göring) used cocaine as a stimulant. During the early years of the Lebanese war, the militias waged a 'toxic war', concluding agreements with drug-traffickers to use drugs as a weapon of destruction of the enemy's 'human factor' (7). Today, in most contemporary conflicts, the combatants, including the child-soldiers of African wars, have access to the entire range of drugs available on the market.

datura, belladonna, monkshood, because of the role that such drugs could play in nocturnal gatherings and the other activities of adepts of witchcraft. Closer to us, datura was dubbed "Jimson weed" (a contraction of "Jamestown weed") by the British in North America, due to a case of food poisoning that affected their troops in 1676 in Jamestown, Virginia. Later, Scopolamine was isolated in 1881 by Albert Ladenburg from the *Datura stramonium* (8).

During World War Two various drugs came to the notice of the military as possible "truth serums", since Sodium Pentothal did not seem effective. Scopolamine, barbiturates, mescaline and Cannabis indica were explored by the OSS "truth drug" committee with no significant results, while Nazi doctors were experimenting with mescaline at Dachau and Auschwitz. After the war, and despite the Nuremberg Code (9), Scopolamine and mescaline came to the interest of the US Navy in 1947, when they started the secret project Chatter. Responding to reports of "amazing results" achieved by the Soviets in using "truth drugs," the program focused on the identification and testing of such drugs for use in interrogations and in the recruitment of agents. The research included laboratory experiments on animal and human subjects involving Scopolamine, anabasine and mescaline, as well as MDA (designated EA 1298) and MDMA (EA 1475, known today as Ecstasy), in order to determine their speech-inducing qualities. Experimentations were conducted in the US and overseas. The Chatter project was expanded substantially during the Korean War, and ended shortly after the war, in 1953, and was succeeded by Operation Artichoke and later by the MK-ULTRA project, which focused on LSD. The door was open for brainwashing techniques and mind control. (10)

From ma huang to Dexedrine

The common ancestor of amphetamines is the alkaloid of "ma huang" (*Ephedra sinica*), a plant that has been

Continuation of the article “Molecules of combat...”

used for several millennia in China. Ephedrine was extracted from the plant in 1895; its virtues as a stimulant led to its therapeutic use as early as 1931. Ephedrine was also used as a model for the synthesis of Benzedrine, the first in a long series of amphetamines, including Dexedrine and methamphetamine. At the time, doctors prescribed such substances as a substitute for cocaine because of their similar effects, but also for the treatment of asthma, narcolepsy, obesity and other rhinologic conditions. (11)

Soon their power as stimulants was also used to overcome fatigue. In 1939, a report from the League of Nations estimated that they improved the working capacity of a tired, somnolent subject by up to 30%.

Amphetamines were without doubt a formidably crucial factor in the German “blitzkrieg”. Between April and July 1940, 35 million tablets of chlorhydrate Pervitin methamphetamines, a drug synthesised and commercialised in 1938 by the Germany pharmaceutical firm Temmler – were distributed to German soldiers. Benzedrine was widely used on US Army Air bases in England in 1940 and during the Blitz. The US distributed 200 million amphetamine tablets during World War Two and the UK 72 millions. Allied forces soldiers invading Normandy were given amphetamine-filled “pep pills” just before they landed on D-Day. It kept many of them up until D-Day + 2 or even +3.

From 1942 onwards, in Japan, soldiers, sailors, aviators, nurses and factory personnel received doses of methamphetamines, under more or less forced conditions. At the end of the war, kamikaze pilots took amphetamines before dive-bombing US ships. It was in Japan at this time that the first epidemic of methamphetamine dependency broke out, with a sharp increase in cases of psychosis. In Europe in the 1960s, their success as stimulants in the sports world was so great that the complications linked to their abuse became common coin.

In other human activities, outside any therapeutic aims, amphetamines pursued their career, particularly in the armed forces, which continued using them for their stimulating properties. During the first Gulf War, 65% of American pilots admitted to using amphetamines, and of them, almost 61% judged their consumption essential to the outcome of operations.

Future soldier, future pilot

Amphetamines are part of a trend that foresees “performance enhancements” designed to produce “iron-bodied and iron-willed personnel,” as outlined in one document of the US Special Operations Command, which oversees the elite special-operations troops that are part of all the armed forces. (12) Indeed, the ability to keep fighting for days at a time without normal periods of rest, to perform in ways that may seem almost superhuman (or at least well beyond the level of most people in today’s armed services), is seen by military officials as the key to success in future conflicts. “The capability to resist the mental and physiological effects of sleep deprivation will fundamentally change current military concepts of ‘operational tempo’ and contemporary orders of battle for the military services,” states a document from the Pentagon’s Defense Advanced Research Projects Agency (DARPA) (13). “In short, the capability to operate effectively, without sleep, is nothing less than a 21st Century revolution in military affairs that results in operational dominance across the whole range of potential US military employments”. What is called for, according to DARPA, is a “radical approach” to achieve “continuous assisted performance” for up to seven days. This would actually involve much more than the “linear, incremental and ... limited” approaches of stimulants like caffeine and amphetamines. “Futurists say that if anything’s going to happen in the way of leaps in technology, it’ll be in the field of medicine,” says retired Rear Admiral Stephen Baker, the Navy’s former chief of operational testing and evaluation. “This ‘better warrior through chemistry’ field is being looked at very closely,” says Admiral Baker, whose career includes more than 1,000 aircraft-carrier landings as a naval aviator.

In a memo outlining technology objectives, the US Special Operations Command notes that the special forces “operator” of the future can expect to rely on “ergogenic substances” (such as the drugs used by some athletes) to manage environmental and mentally induced stress and to enhance the strength and aerobic endurance of the operator. Military officials and medical experts warn that the use of amphetamines can clearly have its bad side. (14) The flight surgeon’s guide to “Performance Maintenance During Continuous Flight Operations” (15) mentions such possible side effects as euphoria, depression, hypertension, and addiction. There is also the possibility of “idiosyncratic reactions” (amphetamines can be associated with feelings of aggression and paranoia) as well as getting hooked on the “cyclic use of a stimulant/sedative combination.” “The risk of drug accumulation from repetitive dosing warrants serious consideration,” the guide notes. And candidly,

“No formal records are available from the use of the Scopolamine-Dexedrine combination for motion sickness by the Navy training command. Many years of use, however, did not generate reports of adverse reactions or abuse”. The “informed consent” form that military pilots must sign notes that “the US Food and Drug Administration has not approved the use of Dexedrine to manage fatigue. It’s not just the ‘go pills’ that can cause problems in certain individuals. ‘No-go pills’, used to induce sleep, can have dangerous side effects as well including the possibility of what’s called ‘anterograde amnesia’ ... amnesia of events during the time the medication has an effect”. “For the military aviator, this raises the possibility of taking the medication, going to a brief, taking off, and then not remembering what he was told to do,” according to the lab’s report. But researchers say such symptoms “are primarily dose related and are not expected with 5-10 mgs of dextro-amphetamine (Dexedrine)” - the amounts given to pilots in the Gulf War and in Afghanistan. The real story here is the ever-extending reach of air power, “as asymmetric threats such as ballistic missiles become more available to our adversaries, we are going to stand even farther back”; “that means that this problem [i.e., the need to combat pilot fatigue] can only grow”. (16)

Space Missions

After the parabolic flight, my comrades candidate Acosmonauts and I compared our feeling in microgravity to the use of drugs, mentioning mushrooms, Ecstasy and heroin. A lot depended on our previous experience of drug use. In a way, it is probably linked to a combination of adrenalin-, serotonin- and dopamine-liberation, as you experience weightlessness for the first time. A lot of people also got sick during the flight. In the US and Europe, parabolic flight instructors usually offer you a tablet of Scopdex, but in Russia, I was only given

chewing-gum. Many studies have been undertaken into the use of Scopdex in the early days of US space exploration. Many of the results of these studies can be found on the NASA Life Sciences Data Archive. (17) Pharmacologic treatments of SMS have focussed on anticholinergics (e.g. Scopolamine), antihistamines (e.g. meclizine, promethazine), sympathomimetics (e.g. amphetamine), sympatholytics (e.g. chlorpromazine) and drug combinations (e.g. Scopolamine and amphetamine) (18). Transdermal Scopolamine patches were used to combat SMS in early flights, but were found to delay adaptation to microgravity: once the astronaut stopped taking it, he/she would once again feel nauseous. Scopolamine, with (or without) dextroamphetamine (“Scopdex”), became the treatment-of-choice for SMS in the US manned spaceflight program. Amphetamines of course have the advantage of warding off sleepiness which is very useful for rapid reaction to emergency situations, like during the accident of Apollo XIII.

A breakthrough came in 1990 on the Space Shuttle (STS 26), when the physician-astronaut Bagian treated SMS with a 50-mg injection of promethazine (Phenergan), the first intramuscular injection in space. IM promethazine (19) has been found to treat most SMS successfully. (20) The Shuttle Orbiter Medical kit for SMS carried Phenergan (in oral, rectal and intramuscular injectable forms), Scopolamine and Dexedrine; a 1995 list of medication on the Mir space station does not include drugs specifically for SMS, but includes methyl valerate for ‘sympathicotonic disturbances’, a sedative commonly used in eastern Europe for motion sickness. In recent years, intramuscular injections and/or suppositories of promethazine appeared to be the drug of choice because they lasted longer and were more effective. But Scopdex tablets remain the most common treatment to anticipate the SMS during training and missions.



The pro-russian riots in Georgia in november 2007. The « orange » governmental troupes test an arsenal of non-lethal anti-riot arms : plastic bullets of new generation, ultra-sounds canons, etc. The soldiers wear helmets against ultra-sounds that look like the ones of the soldiers of Star Wars' Imperial Forces.

Militarized biology

Molecules can now be reengineered to target bio-regulation processes, including neurological functions and cardiovascular processes. Since now the experimental process can be computerized, the most promising bioactive agents and their properties can be identified quickly. But they also raise the threat of biomechanisms that can be used for repression, torture and terror.

We could also see troops going into action with chemically- heightened aggression, as well as resistance to fear, pain and fatigue. Nor is it science fiction to suggest that we might see military pharmacology that can remove feelings of guilt or post-traumatic stress. In recent years, the US, the UK and France - among others - have reportedly been funding investigations into a new range of military performance enhancers. The bulk of these drugs are already familiar to us from the lists of substances banned by international sporting bodies, including the stimulant ephedrine, non-stimulant “wakefulness-promoting agents” like modafinil (aka Provigil) and erythropoietin, used to improve endurance by boosting the production of red blood cells. Chief among the new horizons is the alluring notion of psychological prophylactics: drugs used to pre-empt the often nasty effects of combat stress on soldiers, particularly the famous post-traumatic stress disorder syndrome (PTSD). In the US, where roughly two-fifths of troops returning from combat deployments present serious mental health problems, PTSD has taken on a political form in the Psychological Kevlar Act (PKA), (21) which directs the Secretary of Defence to implement “preventive and early-intervention measures” to protect troops against “stress-related psychopathologies.” Ongoing psychiatric research for the PKA has intriguingly suggested that a dose of propranolol - a 50-year-old beta-blocker used on-label to treat high blood pressure, and off-label as a stress-buster for performers and exam-takers - if taken soon

after a harrowing event, can suppress the victim’s stress response and effectively block the physiological process that makes certain memories intense and intrusive. Propranolol has already been dubbed the “mourning after pill,” largely by those who argue that its military use amounts to medicating away pangs of conscience. (22) The tranquilizing effects of beta-blockers are unlikely to permit their widespread use on the battlefield we could think being able set aside our dystopian visions of zombies with guns. But pharmacology moves more swiftly with each passing year - especially when helped along by defence-research dollars - and we may need to revive those “bravery pill” or “anti-guilt pill” visions sooner than we think. What kind of results would be provoked by soldiers carrying out their mission regardless of personal risk since they have no fear? Or because they push themselves beyond what is physically sustainable because they have no fatigue? Worse, do you want them to be killing machines who follow orders without compunction? (23)

Cognitive machines

In breeding a future soldier for future wars (Iraq and Afghanistan being today’s testing grounds), we will inevitably leave behind the mere rectification of human weakness and enter the realm of the superhuman, going beyond than the World War II propaganda super-hero, Captain America. (24) Such magic will be developed under the auspices of dozens of military initiatives across the globe, creating a species known variously as the Future Force Warrior (part of the US Army modernization’s Future Combat Systems, FCS), FIST by the British Army and FELIN by the French. What the FCS and its kin have imagined for soldiers is a battlefield experience increasingly mediated by technology and insulated in a cocoon of “force multipliers”: in concrete

terms, this translates into an array of tools designed to enhance lethality and survivability: next-generation sidearms; headsets that provide live command and control, detailed geographic data and the ability to fire around corners; smart suits equipped with ultra-light nanotech armour, micro-climate conditioning, real-time health monitoring and even automated medical care and drug delivery. The DARPA "war fighter enhancement" programs will involve injecting young men and women with hormonal, neurological and genetic concoctions; implanting microchips and electrodes in their bodies to control their internal organs and brain functions; and plying them with drugs that deaden some of their normal human tendencies: the need for sleep, the fear of death,



This drug was used by American soldiers during the Gulf war.

the reluctance to kill their fellow human beings. Also on the docket are robotic exoskeletons that allow the soldiers wearing them to carry hundreds of pounds - even while running - without breaking into sweat, as well as handheld imaging equipment that lets them see targets through walls. We are here closer to Marvel's Iron Man who benefits from all the advanced technologies of the militaro-industrial complex.

In the meantime, the explicit purpose of Future Combat Systems is progressively to supplement, to the point of ultimately displacing, the human soldier with a whole array of automated, autonomous and remote technologies - such as unmanned surveillance drones, long-range and non-line-of-sight precision-guided munitions, and unmanned air and ground combat vehicles. An oft-quoted US Joint Forces Command study from 2003 (rather candidly titled *Unmanned Effects: Taking the Human Out of the Loop*) predicted that autonomous, networked robots - faster and more lethal than human combatants - could become the norm by 2025.

The rare "humans" still making up the corps of military elites on the ground will therefore be ultra-mobile and ultra-stimulated cyborgs, able to fly plasma jets developed for combined spatial and atmospheric flight, to direct troops of zombies and robots, cognitive machines of command and control, psychonaut combatants who can fight the enemy in asymmetric psychic war.

Somafera and asymmetric psychic warfare

Somafera (*soma*, the body, *fera*, wild) is a martial art invented in the 20th century as the art and science of altering the body's physiological state to enhance its functioning in certain ways. There is a long history the world over of practices developed to trigger this sort of change in physiology, and control it. And because these practices mostly developed before the scientific revolution, they are largely described from a personal, subjective (rather than impersonal, objective) point of view. They are described in terms of spirituality, and of effecting a physical change via a transformation of the state of one's spirit (And this pre-scientific viewpoint is why the practices are largely ignored in today's world). Some of these practices are mostly religious in their focus, such as the maenadism of ancient Greece and the isawiyya of the ancient Middle East. Others (the more common varieties) are combat oriented, and are a form of internal martial art, such as the berserkerang of the Norsemen, the heroic feats of the Celts, and the boxers of the Chinese Boxer Rebellion. Somafera is defined as a sort of physiological/magico-religious syndrome, a collection of characteristic symptoms appearing across various cultures and historical periods, including: unusual increases in strength and endurance, and in some cases agility; ability to resist pain; ability to resist physical injury; ability to resist poisons and intoxicants (as when someone possessed by a spirit drinks potentially lethal quantities of alcohol but has no ill-effects afterwards); in some cases, an apparent loss of conscious control over one's actions to some degree (as in running amok).

This high resistance practice can be seen as useful for total warfare guerrilla fighters since, despite the prohibitions on biological and chemical weapons, governments are "demonstrating considerable interest in the possibility of using drugs as weapons." In 1999, a European Parliament committee called for a global ban on all research and development "which seeks to apply knowledge of the chemical, electrical, sound vibration or other functioning of the human brain to the development of weapons which might enable any form of manipulation of human beings." But since 9/11, there has been less political pressure for accountability from the state security agencies. If hazardous biochemical weapons for counter-terrorist or counter-insurgency operations came to be used routinely (like in hostage story of the Moscow theatre), we could anticipate a rapid evolution of variants with immobilizing and pain-inducing effects. The report said that military researchers are already

examining the properties of Endothelin, a drug similar in molecular structure to snake venom, and a new class of bioregulators with potential effects on the circulatory system. Weapons are also being designed to carry drugs to targets: flight-stabilized syringes, mortar bombs for dispersing chemical agents, modified paint-ball guns, micro-encapsulated pellets which release an agent when stepped on and unmanned vehicles. The common view is that all chemical and biological weapons are banned by international conventions, but unfortunately the Chemical Weapons Convention allows an exemption for domestic law enforcement, including riot control. But law enforcement has not been defined, and the role of incapacitating agents as anti-terror weapons has opened a significant loophole. The issue is what types of agents might be permitted, other than standard tear gas, in peacekeeping operations. (25)

When the enemy is considered to be everyone, civilian or military, Somafera could become a kind of low-tech transhumanist martial art for the modern guerrilla fighter. As an example, the training aspects for psychic asymmetric warfare are discussed in the novel and Hollywood film *Fight Club* (26), by showing warfare enhancement techniques combining free fights, resistance to intense pain, sleep deprivation and psychological conditioning. In a dystopian future we could see so-called "terror" organisations of "sleepers" organising mayhem programs and armies of "space monkeys" like in *Fight Club*. Preparing such actions in an era of Full Spectrum Dominance would indeed mean the ideologist becoming the Tyler Durden of *Fight Club's* narrator through dissociative identity self-programming, a self-induced "Manchurian puppet" effect.

NOTES

- (1) Gordon R. Wasson, *Soma: Divine Mushroom of Immortality*, New York, Harcourt Brace Jovanovich, 1971.
- (2) Terence McKenna, *The Archaic Revival: Speculations on Psychedelic Mushrooms, the Amazon, Virtual Reality, UFOs, Evolution, Shamanism, the Rebirth of the Goddess, and the End of History*, HarperOne, 1992. Our society (much more than others, in fact) will regard these theories as hard to accept, first because of the resilience of religious creationism, but also because we have made ecstatic states obtained pharmacologically a taboo, just like sexuality. These are still powerful taboos, without doubt because drugs and sexuality are consciously or unconsciously related to the mysteries of where we come from, to our development and our primate origins. Perhaps too because drugs and sex both call on dopaminic liberation, so that it is said that the best guarantee of durable disintoxication for a former drug-addict is regular sexual activity.
- (3) Association des Astronautes Autonomes, *Quitter la gravité (Leaving Gravity)*, Editions de l'Éclat, 2001.
- (4) Parabolic flights allow one to experience sequences of 20-25 seconds of microgravity in a plane. They were made possible during the MIR (Microgravity Interdisciplinary Research) art-science campaign in Star City, Russia in 2003. See *Zero Gravity: a cultural user's guide*, Arts Catalyst, 2004.
- (5) Dr. Vaida, quoted in the French newspaper *Libération*, September 9, 2002.
- (6) *Clinical Aspects of Crew Health*, Nasa Life Science Data Archive, Life Sciences Data Archive, Johnson Space Center, Houston, Texas, USA.
- (7) Antoine Boustany, *Drogues de paix, drogues de guerre (Drugs of Peace, Drugs of War)*, Hachette Pluriel, 1998. The sudden irruption of war into people's daily lives led many to consume narcotics. An unspoken agreement held sway, giving total freedom of action to drug-traffickers in the armed forces. It is highly likely that in the first year of war (and even in the second), the authorities did not really measure the repercussions of a lax attitude to the drug-trafficking and drug-consumption of their subordinates or the long-term dangers of burying their heads in the sand. But becoming gradually aware of the consequences of the upsurge of drug-taking on morale, they opted for a pro-active strategy. This was to intoxicate enemy troops little by little, slowly but surely, and, with this in mind, the drug-traffickers were asked to "spike" the cocaine they sold with heroin. In this way, a "hooked" enemy became an addict. Not only did her carry drugs around with him, but he actively contributed to others' taking drugs, and became a potential informer for his supplier too. Killing several birds with one stone, in short!
- (8) Indeed, all the plants of the Solanaceae family present the same so-called "anticholinergic" properties. The clinical effects are: dilation of the pupils, redness, flushes, increased body temperature, reduced secretions (both of the skin and the mucous membranes), constipation, urinary retention, delirium, hallucinations, myoclonic jerks, coma, respiratory arrest and, more rarely, convulsions. Their effect on the central nervous system can also lead to the appearance of psychosis or delirium. Hallucinations are reported in 83% of cases, most often in the form of simple visual images. The symptoms generally last 24 to 48 hours, but cases lasting as long as two weeks have been reported. Intoxication can provoke the paralysis of organs innervated by the parasympathetic system.
- (9) The Nuremberg Code was written as an international protocol for tests on humans after the revelation of the treatment of prisoners in concentration camps. The Code states that researchers must obtain full voluntary consent from all subjects.
- (10) The term "brainwashing" first came into use in the United States in the 1950s during the Korean War (1950-1953) to describe those same methods as applied by Chinese Communists to bring about deep and permanent behavioural changes in foreign prisoners. LSD was first synthesized in 1938 by Albert Hofmann for Sandoz Laboratories and discovered to be psychoactive in 1943. The CIA negotiated a deal with Sandoz in 1953 not to sell LSD to the Soviet Union.
- (11) Ephedrine can be used in the synthesis of methamphetamine by chemical reduction; this has made ephedrine a highly sought-after chemical precursor in the illicit manufacture of methamphetamine. The production of ephedrine in China has become a multi-million-dollar



Drug against sleeping, 1950'.

export industry. Companies producing for export extract 13 million dollars' worth of ephedrine from 30,000 tons of ephedra annually, ten times the amount that is used in traditional Chinese medicine.

- (12) Chris Floyd, *Dead Souls: The Pentagon Plan to Create Remorseless "Warfighters"*, *Empire Burlesque*, January 12, 2008
- (13) Continuous Assisted Performance (CAP), <http://www.darpa.mil>
- (14) Chris Floyd, *Dead Souls: The Pentagon Plan to Create Remorseless "Warfighters"*, *Empire Burlesque*, January 12, 2008
- (15) NAVMED P-6410 (01 Jan 2000), *Performance Maintenance During Continuous Flight Operations, A Guide for Flight Surgeons*; written by the Naval Aerospace Medical Research Laboratory in Pensacola
- (16) The "Extended Performance Warfighter" program at DARPA suggests also that the soldier's helmet might, for example pack "transcranial magnetic stimulation." Sensors would track whenever the soldier is getting tired, such as by monitoring their eye blinking. Then, a magnetic wave would directly stimulate their brainwaves. The sensation is described as akin to drinking down a shot of espresso, but without any of the chemical side effects.
- (17) Scopolamine (0.4 mg) and Dexedrine (2.5 mg),
- (18) Another medication used against Space Motion Sickness is a combination of promethazine (25 mg) and ephedrine.
- (19) Promethazine is sometimes used as a recreational drug in conjunction with codeine in prescription cough syrup. The syrup by itself contains 7% alcohol. The traditional mixture of Sprite and cough syrup with codeine, which is known as "purple drank" or "Sizzurp", has been popularized in the rap world and its addiction was joked about in one episode of "The Simpsons".
- (20) Dextroamphetamine is only available in tablet form (making it hard to administer if an astronaut is vomiting) and has the potential for abuse. Promethazine does not alleviate SMS in all astronauts, and the identification of additional medication is being studied. With regards to non-medicinal treatments, biofeedback control has been examined as a means of preventing and controlling SMS, but has been unsuccessful. Pre-flight adaptation training devices, which are intended to acclimatise astronauts to a weightless environment, may offer promise in enhancing treatment of SMS. Nevertheless, research into understanding the physiology of SMS and brain and sensory adaptation to weightlessness and transition from differing gravitational environments will continue.
- (21) Psychological Kevlar Act of 2007
- (22) MDMA (Ecstasy) is an amphetamine also studied by the independent US organisation, the Multidisciplinary Association for Psychedelic Studies (MAPS) with the aim of organising MDMA-assisted psychotherapy in the treatment of posttraumatic stress disorder (PTSD). It is also part of an active and ongoing effort to establish a protocol by the Ministry of Health in Israel, in the context of post-terrorist trauma. MDMA was synthesized in 1912 and patented in Germany by Merck in 1914 but was not the subject of human research at that time. In the 1950s it was briefly studied by the US Government as part of the CIA's and the Army's chemical warfare and truth serum investigations. Largely forgotten until the middle of the 1970s, it was then rediscovered by the psychedelic therapy community and used as an adjunct to psychotherapy by psychiatrists and therapists who were familiar with the field of psychedelic psychotherapy. <http://www.maps.org>
- (23) Clayton Dach, *America's Chemically Modified 21st Century Soldiers*, *Adbusters*, 3/05/08
- (24) Steve Rogers was a scrawny fine arts student specializing in industrialization in the 1940's before America entered World War II. He attempted to enlist in the army only to be turned away due to his poor constitution. A U.S. officer offered Rogers an alternative way to serve his country by being a test subject in project, Operation: Rebirth, a top secret defense research project designed to create physically superior soldiers. Rogers accepted and after a rigorous physical and combat training he was given injections and oral ingestion of the formula dubbed the "Super Soldier Serum". Rogers was then exposed to a controlled burst of "Vita-Rays" that activated and stabilized the chemicals in his system. The process successfully altered his physiology from its frail state to the "maximum of human efficiency". Rogers was given a costume modeled after the American flag, a bulletproof shield, a personal sidearm made from a chance mixture of iron, and the codename Captain America.
- (25) *The use of drugs as weapons*, British Medical Association, 2007
- (26) Chuck Palahniuk, *Fight Club*, W. W. Norton & Company, August 1996; David Fincher, *Fight Club*, 1999

Tactical Reality Dictionary

Cultural Intelligence and Social Control (extracts 2)

by Konrad Becker

Cognitive Framing

A frame is a psychological device that offers a perspective and manipulates salience to influence subsequent judgment. By inviting to view the topic from a certain perspective it not only offers a perspective but manages the observer's alignment in relation to the subject. In a visual field some objects are perceived as prominent while others recede in the background. Directing the viewer to consider certain features and to ignore others, perception is organized around the frame and may be resized to fit within the constraints of the framework. By implying a certain organization for the information it co-creates the picture and influences judgment and information received. Influencing the way a problem is perceived can lead to radically different solutions. According to Prospect Theory, humans give priority to not losing. Gains are secondary to "no loss". Framing a decision in terms of possible loss should motivate more than framing the same decision in terms of possible gain, a person is more likely to fall

Induction Codes

Linguistic tools allow matching the subject's ongoing experience while moving smoothly to altered states. Words such as "and", "as", "because", "while" and "when" are linguistic bridges used to take a person into trance. Even when there is no logical connection if you join them with "and" it appears that there is. Truisms linked to an indirect suggestion that presupposes the subjects will go into an altered state, linked to a physiological inevitability make the hypnotic response seem impersonalized and hence automatic. Senso-Linguistic infiltration is advanced by disassociating and de-personalizing processes normally thought to be validations of our consciousness, and overloading the conscious mind through self-referentiality makes it easier to stop trying to do anything consciously. As the map is not the territory, internal representations carry some reality but do not reflect what actually happened. Internal representations and physiology are linked in a cybernetic loop. As the subjects are told what to think, behavior is a result of the state they are in.

Senso - Linguistic Infiltration Programs (SLIP)

A belief commonly accepted is that if you are reasonably well informed and educated it is easy to fend off propaganda-attacks. On the contrary, it seems that if you cannot read you are less vulnerable to propaganda and intellectuals are the best targets of Perception Management, not only for their predictable worldviews but due to their implanted feeling of being immune. To read means to decode, to be infected by a virus. Classic terminology distinguishes two fronts for the battle for human minds: the First Front of mass indoctrination through censorship and propaganda and a Second Front of individual mind control. Huge interest is placed on creating an in-formed opinion, to form public opinion as a whole by a hypnotic web of "facts" with no apparent correspondence to reality. A routine practiced by illusionists and Perception Management cognitive engineers. Psychological Consolidation Activities by Committees on Public Information target the population in order to achieve a desired behavior which supports their objectives.

In covert or Subversive Propaganda and Black Operations the message is made believable by the fact that it appears to be coming from within the target population itself. Deep Propaganda and Subpropaganda are aimed at habits, customs, the definition of good and bad and the standards and norms of life.

Normative-Empathetic Warfare involves parsing value schemata of the target and creating situations where the value schemata are biased in favor of an action leading to the control of the victim or placing it in a restricted position. Similarly a trap is a device that by design hides its function. The non-lethal weapon industry focuses on low intensity conflict/war on nations and population segments in PSYCOP (Military Psychological Operation Unit) experiments of behavior modification.

The transcendence of the human condition in stylized relations creates a desire to happily make sacrifices for work, war and enforced leisure in exchange for a Weltanschauung, luring the bedazzled into the graceful existence of slavery, the self-centered freedom of marionettes, and the eloquence of automatons.

Explanation Driving

There is a strong need to understand what is going on in our world and the type of explanations endorsed will shape future behavior. Attribution Theory demonstrates how people create attitudes or beliefs or behaviors depending upon the explanations they make. Influencing how people understand and explain what is going on around them, controlling the attributions people make, maps out their future behavior. An external attribution assigns causality to an outside agent or force, internal attribution assigns causality to factors within the person. While attributions to external sources are less likely to change attitudes, through internal attribution it is highly probable that targets will come to view themselves differently. People making an internal attribution for their actions also tend to change their attitudes and beliefs about themselves, they turn into "that type" of person and the desired behavior follows consequently. Capture their minds and their hearts and souls will follow.

People need consistency in their lives and in explaining their world and Consistency Theory illustrates that there is also a tendency to expect consistency. Facing inconsistencies creates a state of dissonance and this experience of dissonance drives an urge to restore consistency. A way to get rid of this dissonance is to change the way one thinks. Reevaluation or denial are just two possibilities but both involve some mental work that changes the way of thinking about things. Avoidance of dissonance also explains opinion based on selective exposure where largely, information that might be contrary to existing views is not pursued. Dissonance is experienced as a result of subjective inconsistency while the reaction to a perceived external inconsistency or unfair restriction is referred to as reactance. Both reactance and dissonance are powerful motivating agents and cause highly agitated states and emotional stress.

Coercive Continuum

Coercive persuasion or "thought reform" is understood as a coordinated system of coercive influence and behavior control designed to deceptively manipulate individuals, in the interest of the originators of the program. Thought reform is regarded as situational adaptive belief change and thought reform programs have been distinguished

from other efforts in an overlapping continuum of social influence based on the descriptions of the social structure of thought reforming environments. Elements that distinguish from other socialization schemes to promote compliance are the interpersonal and psychological attack to destabilize an individual's sense of self, the use of an organized peer group and interpersonal pressure to promote conformity as well as the manipulation of the totality of the subject's social environment to stabilize behavior once modified.

Some of the social control characteristics of reform programs are typically control of communication, emotional and behavioral manipulation; conformity to behavior derived from doctrine; demands for confession; unconditional agreement to ideology, manipulation of language into clichés; reinterpretation of human experience and emotion in terms of doctrine and inferiority of those not sharing the ideology.

The essential strategy used by such programs is to systematically select sequence and coordinate numerous coercive persuasion tactics continuously over extended periods of time. Thought reform programs are sophisticated and subtle, creating a psychological attachment that is far more powerful than methods of influence that use only threat. Successful psychological destabilization induces a negative shift in global self evaluations and increases uncertainty about one's values and position. It thereby reduces resistance to demands for compliance while increasing suggestibility. Coercive persuasion is applied in sequential phases of Solve et Coagula. In a three phase model this destabilization period is followed by a phase of "change" leading to a stage of "re-form" consolidation and reinforcement of thought.

Influence procedures commonly used during modern police interrogation can inadvertently manipulate innocent persons' beliefs about their own innocence and, thereby, cause them falsely to confess. Confessions resulting from successfully applying sequential patterns and phases of thought reform are classified as coerced internalized false confessions. The use of certain commonly employed interrogation procedures and a "suspect" with a minimum of psychological vulnerability is all it needs to elicit a temporarily believed false confession.



Edward L. Bernays, used his Uncle Sigmund Freud's complex ideas on people's unconscious, psychological motivations and applied them to the new field of public relations. He helped sell the American public on the First World War, claiming that it would "make the world safe for democracy." During the the Persian Gulf War, this "public relations triumph", Iraqi soldiers were cast snatching infants from hospital incubators and leaving them on the floor to die while Iraqi helicopters hovered over Kuwait city and Iraqi tanks rolled down the streets.

This version of the war, crafted by Hill and Knoulton, one of America's biggest public relations firms, was reminiscent of Bernays' demonization of German Kaiser Wilhelm II more than 80 years ago. Bernays' work during World War I for the U.S. Committee on Public Information became the mold for marketing strategies in subsequent wars. Here, the father of Public Relation Industry, appears, pictured center, on WNYC Radio's "Ideas Are Weapons" program.

P.R. armies (an industry that now employs about 100,000 and continues to grow) have forged a new world of pseudo-events, video press releases, infomercials, letter-writing campaigns, manufactured celebrities and covert actions.

The Fate of the Western Psychonaut

from biochemical ecstasy to the transfiguration of the body

by Michel Tibon-Cornillot,
EHES

1. The great crossing: drugs between the gods and the Titans

Of drugs and gods

The history of toxic substances (or rather their prehistory) has developed over an immense time-scale that is closely related to the history of technical practices, which themselves go hand in hand with the processes of human evolution: hundreds of thousands and even millions of years. The man of the Tyrol who was discovered in the ice a short time ago, armed with his bow and arrows, wearing leather clothes in perfect condition, had a bag containing carefully arranged and protected seeds with stimulating properties, which he gathered 40,000 years ago. The time-scale of industrial societies is far smaller: hardly 200 years for industry and about 450 years for the development of the fundamental principles of modern science. The history of the use of psychoactive drugs in industrial societies is thus several thousand times shorter than that of all previous human societies. Such are the first observations brought by human palaeontology and ethnobotany.

So nothing allows us to generalise from the present to primitive or traditional societies; on the contrary, very many human groups that have used psychoactive substances made them part of their collective behaviour, religious rituals, medical cures, games and festivities, wars, etc. All anthropologists, ethnobotanists or neurophysiologists see not only a deep coherence in this powerful ritualisation of the consumption of psychoactive substances but also link it to the most fundamental and most ancient means for hominids in non-industrial societies to help give meaning to human life, namely to shamanism. Among these specialists in psychoactive religions, cultures or plants, we might cite Peter T. Furst, one of the greatest experts in contemporary Mexican Indian anthropology:

« [...] For thousands of years psychedelic plants have been an important part of humanity's cultural stock; even more, they have played a major role in the ideology and the religious practice of peoples all over the planet, and still do so today in some traditional cultures... The discovery by man that certain plant species might widen his field of consciousness and help him discover "out of the ordinary states of reality", and the institutionalisation of such ecstatic personal experiences in an ideological and ritual framework accepted by the whole group (i.e. a religion, if not an organised form of worship), date from the dawning of human culture. A source religion, shamanism, which gave rise to several forms of worship, among which are the great world religions, originated in the heart of the Palaeolithic age. The practice of shamanism goes back at least 100,000 years (the first known sepulchre is 100,000 years old) and probably several hundred thousand years.»⁽¹⁾

The multiple human groups that preceded the appearance of advanced industrial societies and have proven their resilience by maintaining and developing the presence of hominids in extremely harsh environments for so many thousands of years, discovered and used highly diverse products that could modify conscious states, to diminish pain and anxiety, and give rise to various "new realities". Their language and rites manifest a great rigour in naming these substances and in describing how and when they must be taken. These few remarks cannot be applied to the confused semantic situation we can observe in the context of industrial societies issued from the evolution of European culture since the Renaissance.

A brief re-examination of long-term historical developments shows the great age of hominid use of psychotropic substances and the important place held by their effects in sacred rites. For tens of thousands of years men have tried to uncover the secret of their collective and individual fate but the key to understanding lay beyond their "natural" powers. Access to these superhuman worlds was not impossible, however; it occurred thanks to the efficacy of appropriate rites, within which the absorption or inhalation of many drugs regularly played a central role. The intoxication, the ecstasy caused by so many different substances identified over thousands of years, mushrooms, plants, extracts of parts of the bodies of insects, of animals, were part of an endless search to communicate with the infernal or celestial powers ever present in the world and among men. Prophetic Intoxication that allowed the doors of sacred territories to be opened, ecstatic words that at the moment they were spoken revealed the secrets of the past and the future (2).



Life plant. From an assyrian sculpture of the Nimroud palace (formerly Kala'h). British Museum.

The great crossing: the withdrawal of the gods, the arrival of the Titans

This age-old history of drugs is well known; is it still relevant? This was an Earth inhabited by gods, but Western science and its demiurgic techniques have banished them from the world; they are gone, evaporated no doubt into the air of the new times. The disappearance of the divine was so obvious that Pascal expressed it at the very moment that modern sciences were being established: "Nature is such that it leaves traces of a lost God everywhere, both in man and outside man" (3). The departure of the gods, as can be seen in the great myths, leads to the return of the Titans, the earthly beings reigning alone over the energies of the Earth, and who are able to free and reproduce the original chaos. The Titans who tried to take over Olympus and whom Zeus was able to defeat and put in chains.

Gods, prophets, mystics and seers of all kinds have gradually entered the field of studious scientific objectivity: they are matter for the critique of religions, psychiatry and history. Branded with the new signs of paranoia, hallucinations and charlatanism, these great actors of the traditional and classical worlds have become social or medical cases, and are quite harmless, unless they take drugs.

It seems that the traditional couple formed by the divine and drugs has divorced. The gods and their servants have disappeared, but drugs and the search for intoxication have never been so popular. The men of modern times have not only kept up links with the practice of narcotics but have renewed them. There is a strange divorce between sacred intoxication and prophetic ecstasy, which have turned into objects of curiosity, and 'drug-addicts', who still inspire fear! Is it not clear that the modern representatives of the brotherhood of narcotic consumers still inspire holy fear long after the gods have departed?

Far from disappearing with the gods who accompanied them, 'drugs' have closely followed the developments that made it possible to constitute industrial societies, as well as the establishment of modern sciences and techniques. Developing in pace with the institutions and the new economic order, they have become been democratised: according to the effects sought by participants in their production, they are mass-distributed among the 'people' by the numbing effects of mass-produced alcohol, among the 'elites' through the ecstasy of mescaline, the well-being of opium or the excitement of 'snow', and among everyone by the medical use of analgesics and anaesthetics.

2. The new alliance between drugs and modernity: power revealed

A chemically pure body: purification, qualitative synthesis and power

The experience of psychotropic substances is closely linked to developments in the modern sciences, particularly chemistry. The rise of modern chemistry was problematic since its objects, the many entities that make up living and inanimate nature, were clearly of a surprising complexity. The great physico-mathematic model that could successfully analyse the movement of the stars in the sky and projectiles on Earth could not be applied in the same way to the composition of minerals, plants and living beings. And this difficulty was reinforced by the insistent presence of the remarkable approaches of alchemy, whose undoubted technical successes were nonetheless developed in a very different context to modern science. How could the basic principles of the method – the analytic reductionism that

breaks each entity down into its fundamental constitutive elements – how could they be applied without using the matrix, the mother tongue of all the sciences, mathematics? These inextricable difficulties were nonetheless overcome during the eighteenth century. It is well known that Lavoisier played a vital role by creating a specific new language for the new science, chemical nomenclature, as did the Englishmen, Cavendish, Black and Priestley by identifying the basic chemical elements, metals, elementary gases and metalloids. Do we need to recall the deep changes in outlook that had to arise before the old way of seeing, which located the simple bodies in the air, fire, water and earth, could be given up? How much imagination and technical creativity was needed to prove that water was made up of two gases, that air was not a pure gas, that respiration was combustion without flames! In chemistry, observes Bachelard (4), what is simple is not given, but is acquired, and it was acquired through the use of technical apparatus.

The search for chemically pure elements was one of the central aims of the nineteenth century, as was the description of the laws of combination that used them to explain composed bodies. There is no need to recall the immense labour involved in purifying bodies, little by little distinguishing what was part of mineral chemistry, organic chemistry and then biochemistry. In this whirlwind of a science in full development, psychotropic substances played a central role, since chemists very quickly understood the intellectual interest of studying them chemically or neurophysiologically, as well as the potential importance of their therapeutic (analgesic, psychiatric and anaesthetic) and social (the industrial distillation of alcohol) consequences. This helps explain the early work carried out on the purification of alkaloids from plants, whether opium, cocaine or alcohol, work as important as that done on plant poisons. Morphine and poppy alkaloids were discovered in 1816, strychnine in 1818, caffeine in 1820, cocaine in 1855, ephedrine in 1885.

Purification is only the chemical expression of the first moment of the general method of science, the reducing work of excavation that breaks down the entity studied in order to identify its fundamental constituent parts. The aim is then to study these elements, as well as the laws governing their combination or separation. From this study it becomes possible to reconstitute the original entity or else to form new ones; an even more powerful chemistry could then begin, that of synthesis, the chemistry of our century. In this new context psychotropic substances have appeared that had no structural analogy with the constituents of Galenic formulations of the classical pharmacopoeia, but which had special effects: analgesics, barbiturates, amphetamines, LSD, etc (5).

Contemporary psychotropic substances have only a distant connection with traditional drugs. Their power is incomparable with their ancestors and their effects quite different. How could we compare the flash of a line of cocaine with the infusion of coca leaves? The alliance between chemistry and psychotropic substances must be examined together with the totality of Western cultural practices, with the urge to dominate the environment and other peoples. The expression of this will to power was well expressed by Ernst Jünger in his work *Annäherungen: Drogen und Rausch*:

Cocaine was identified in about 1860 in the well-known Wöhler Institute in Göttingen, one of the Pandora's boxes of our world. The precipitation and concentration of highly effective matter, using organic substances, runs through all the nineteenth century; they began by the extraction of morphine by a young man of twenty, Sertürner (1806), who thus developed, or rather 'unwrapped' the first

Continuation of the article
 "The Fate of the Western
 Psychonaut..."

alkaloid. As ever, when we approach the world of the Titans, concentration and radiation here increase in strength. In this sphere appear the virtues and matter that do indeed derive from nature, but which are too violent, too vehement for our natural faculties of understanding, so

that man, if he does not wish to destroy himself, must seek his salvation in an increasing distance, and more and more precautions. Fermentation, distillation, precipitation and finally extraction of irradiating matter, derived from an organic substance. This is how the twentieth century begins. In 1903, the discovery of radium and polonium, in 1911, the Noble prize for Pierre and Marie Curie, for having taken pure radium from enormous amounts of pitchblende from Johannsthal." (6)

evolved at the same rate as "cold societies" (10), that is, very slowly.

The birth of modern science represents a key moment in the very long time-scale of technical skills. Western rationality was never merely theoretical, speculative, an observing reason, in short, but always, at the same time, a practical, active reason, a militant reason, the other side of modern reason. It is not enough to understand the world; it needs to be changed at the same time. This demiurgic hope was ever present in the work of the founders of modern science. We need only cite Descartes: "But as soon as I had acquired some general notions respecting physics... I perceived it to be possible to arrive at knowledge highly useful in life; and in place of the speculative philosophy usually taught in the schools, to discover a practical philosophy, by means of which, knowing the force and action of fire, water, air the stars, the heavens, and all the other bodies that surround us, as distinctly as we know the various crafts of our artisans, we might also apply them in the same way to all the uses to which they are adapted, and thus render ourselves the lords and possessors of nature... and that we could free ourselves from an infinity of maladies of body as well as of mind, and perhaps also even from the debility of age." (11)

The connection between the modern scientific approach and technical creativity has produced much deeper modifications in the immense time-scale of techniques than the discovery of fire, iron or the wheel. The synergy established between modern science and techniques is behind the exponential development of the latter, which are part of the general project to modify the body and the world characterising Western rationality. Technical innovation has certainly allowed the human beings to expand outside the regions where they first appeared, by supporting and increasing their physical, and then mental, performances, but the new relations they have established with the activism of modern rationality have strikingly freed them from their former practical task of 'organic projection', of technico-bodily reinforcement. Thus we can see a true 'break' in the appearance of the frenzied rhythms presiding over present-day technical developments.

Let us restate these observations. The first affirms that there is a deep continuity between traditional and modern techniques since they form between men and their world an intermediary layer whose reciprocal action on these two idealised poles, the body in its 'integrity' and raw nature, is much greater than is usually thought. For many thousands of years, the body and nature have been submitted to the influence of techniques and cannot be understood apart from their action. Our second observation is that we have been submitted for over a century to such powerful and rapid technical developments that they have radically transformed our bodies and the world. Our last point concerns the renewal of technical activity in the general project of modern science. Techniques express in thousands of ways the deepest representations made by the members of a given society to the relations they establish with their bodies and the world. When these relations were interpreted through the presence of one or several gods, then human skills took their origin and their boundaries from them; when modern societies were set up and focused the new approach on the capacities of an infinitely perfectible man, then technical efficiency was part of this vast demiurgic project. They were expressed using the kernel made by 'imaginary structures' (12) and marked by the clear urge to expel the divine and take its place. Change the world, change the body! Knowledge of the fundamental structures of matter that compose the living and the inert opens the way to these skills; and it does so at the same pace as its progression. The progress of chemistry is thus part of a movement, and especially of the mass production of synthesised psychotropic substances.

Understanding 'drugs' scientifically means both discovering the biochemical structure of the active ingredients and understanding the mechanisms of their neurophysiologic effects. This programme, which assumes knowledge of the biochemistry of the brain, is only at its beginnings, even if since the discovery of endorphins a fruitful path has been developed which makes it possible to show the existence of surprising chemical analogies between hormonal proteins and alkaloids of plant origin. Modern use of narcotics does not assume so much knowledge; it is part of an empirical approach that is based on the transformative effects of moods and intellectual activity, in short, of the psychic activity of subjects in their relations to themselves and the world. Whether in a medical, sporting or recreational context, the modern use of narcotics unveils its deep aim, which shows it is part of the practical aspect of Western rationality: the intentional transformation of the human psyche, which is at the same time the transformation of his perception, his body and the entire world.

Intoxicated peoples: industrialisation and psychotropic drugs

The above remarks are strange and paradoxical. They sometimes seem to attribute a sort of prophetic, marginal, worrying role to 'untamed' drug-addicts, those who, despite their great similarity to consumers of psychotropic substances (fifteen million users of legal psychotropic drugs: stimulants, sleeping pills), remain 'marginal' (only 100,000 registered 'drug-addicts'). But a deeper analysis reveals how very commonplace paroxysmic



Advertisement for the German chemical products firm Bayer, in 1900. Bayer, creator of the aspirin, the mustard gas (chemical weapon) and the heroin will join IG Farben, firm accused of war crime in 1945.

The industrial production of psychotropic substances : towards quantitative power

The history of aspirin is well known. It was developed by Felix Hoffmann, a chemist at the Bayer laboratory in Elberfeld, patented in Germany on February 1, 1899, and then mass-produced, making it available worldwide, long before World War One. The story is revealing since Bayer had set up the industrialisation of the medicine production; this is also the context in which it became possible to produce massively purified or synthesised psychotropic substances. Narcotics would not only continue their journey in the heart of modern science and techniques, but would enter industrial production and share the fate of modern bodies, labouring bodies, alcohol-charged bodies, anabolised and amphetamine-sporting bodies, anaesthetised patients' bodies, energised warrior bodies; the role of amphetamines was without doubt decisive in the offensive of 1940, during which all the Wehrmacht's soldiers slept very little for six days at a time, and took over three million prisoners in a few weeks of day- and night-time operations.

Contemporary societies are characterised by the expansion of industrial production linked to the development of techniques and sciences, by the shattering of the traditional roles given to men and women, by the division and the specialisation of tasks. Between the illegality and omnipresence of the use of psychotropic substances, industrial societies oscillate between hatred, terror and fascination. Whether via their institutions, their economic agents or individuals, such ambivalence creates a permanent fluctuation in the border separating licit and illicit substances (7). Never, without doubt in all human history (which is identical to a large extent with the history of the production and consumption of psychotropic substances) have so many active substances of all kinds, obtained by the purification of plants or chemical synthesis, been grown, produced, synthesised and sold on such a large scale. In this context of abundance, however, the social or individual use of such substances and their effect have never been so problematic, either on a collective or an individual level. It is from these few remarks that the idea of addiction can start to take on its true dimension.

"The new world style also groups together drugs and intoxication. The great river of stimulants and sleeping pills continues to flow and even to expand and speed up. The borderline is blurred as to whether they are used for health, on the one hand, or pleasure, on the other, until they become completely indispensable. In the world of work with its tensions, many find in them nourishment for their nerves. We can get an idea of the massive consumption of drugs by visiting a pharmaceutical product factory, where centrifuges throw out pills in quick succession. They join up to form multicoloured rivers which, in turn, fan out, and end up in the most faraway villages and homes. Their ambivalence also shows itself in the fact that chemistry is always gropingly trying to find the frontier between a remedy and the production of euphoric effects. This is where consumption really takes off. The taboos imposed by laws are left far

behind." (8)

We can already sense that a deep link connects scientifico-technical and industrial modernity with the psychotropic pharmacopoeia. Drug-taking is part of a "pharmacophilic" impulse that is much more profound and general, and whose meaning must be understood. Let us anticipate our argument a little: biochemical techniques used to modify the mind are part of the project to transform the body, and belongs to a wider movement transforming the world and social life. Our modern, anxious bodies, incapable of controlling the violence of professional and affective contradictions in which they are immersed, must be adapted: the biochemical techniques of anxiolytics thus strive to normalise them by changing their moods; as happens for sick or dying bodies, whose relation to suffering is modified by the effect of analgesics. One must also bring about the exalting changes (using amphetamines, for instance) that allow superhuman exploits in the sporting, intellectual or military fields, to summon up rapidly considerable energy. In each of these cases traditional body is asked to take part in the vast project of modification and 'improvement' of human beings in industrial societies.

3. On industrial drug-addiction: guinea-pig people

Technical creativity and the combining power of the modern sciences

The urge to improve physical performance via technical means is an ancient practice; the contemporary situation, which we have just described, in this sense, is not new. The history of hominids is marked by their use of tools and the mastery tools give them: harnessing the speed of a horse by taming it, the clawed grip of a tiger by creating an extension to our arms with a sharpened stone at the end of a stick, the muscle mass of a gorilla using a club...! Each detachable, permutable tool makes it possible to acquire instantly the performances that a whole animal species develops only after millions of years of genetic drift. Leroi-Gourhan (9) has convincingly shown that the evolution of hominids is incomprehensible without examining their relations with their technical developments. The earliest tools are three million years old, at a crucial moment in the process of human evolution; we cannot underestimate their importance in the very formation of the human body and in its development; that is why Leroi-Gourhan considered an analysis of the evolution of human anatomy should study both his skeleton and his tools. Moreover, the evolution of techniques, gestures, instruments and objects in traditional societies shows clearly that it cannot be separated from their whole system of representation and that these techniques have

drug-addictions are, since it is becoming harder and harder to distinguish licit and illicit psychotropic drugs and to stigmatise 'drugged' people, when the whole population is concerned by the regular absorption of psychotropic substances.

This increasingly commonplace use of psychotropic drugs is all the more surprising since it began at the dawn of industrialisation. As early as the seventeenth century, the question was asked whether people could become ill or sterile, numbed or weakened, through intoxication, to the point of putting their lives at risk. Were there cultural practices, drinks, food, inhalations or injections that could lead to situations as dangerous as those created during major epidemics? Even more seriously, was it possible for the 'elites' of a nation to help destroy the population, either by supplying it with harmful poisons or by creating the spiritual and material conditions for its dependence (or, quite certainly, both at the same time)? Some of these questions were raised more and more clearly from the seventeenth century in Europe and in Great Britain in particular.

The earliest 'epidemic addictions': Gin Lane and Beer Street in the seventeenth, eighteenth and nineteenth centuries

The work of Lewis Mumford has shown that British society (13) in the second half of the sixteenth century had already begun the deep transformations at the social, agricultural and industrial levels that would deeply mark the following centuries. It is precisely in this context too that occurred in seventeenth century England the first measures and the first debates concerning the massive use of alcohol and the consequent collective dangers. Two dates stand out if we examine the appearance of the new questions posed to British, and then European, rulers and intellectuals: in 1690 a law was voted 'encouraging the distilling of spirits and alcohols from cereals' (14) and in 1736 the Gin Act was passed, with the declared intention of making alcohol so expensive that 'the poor could not drink it to excess' (15). Some socio-economic landmarks concerning the 'pre-industrial' period in Great Britain can help explain the background to the first major collective intoxications and the new debates they gave rise to:

- the enclosure system, which united the struggle against unproductive fallow land and in favour of all-conquering individualism, was established from the second half of the sixteenth century to the benefit of the great landlords, eliminating the peasantry;
- the latter, condemned to vagabondage, poverty (with little enough help from the poor tax) or to migration to the cities, would swell the available labour force or volunteer for the navy. The workers, in the same period, became closely dependent on their masters (Statute of Artificers and Apprentices, 1563);
- the English victory over the Spanish Armada (1588) paved the way for international maritime expansion. Richard Chancellor discovered Archangelsk and the trade routes with Moscow; Walter Raleigh won Virginia for the Crown;
- the influx of precious metals from the New World, the monetary reform of Elizabeth I, the foundation of an early stock exchange, the Royal Exchange, by Thomas Gresham (1570), all gave an impetus to the concentration of capital and thus to new industries (metallurgy, coal-mining) and large scale trade; it was in this context that the East India Company, of which we will speak further in connection with China, was founded in 1600.

An outline of some of the major changes underlying the tumultuous course of the seventeenth century in England makes it possible, without doubt, to grasp the series of crises, wars and political revolutions that marked it and which are best illustrated by the English Revolution, the power taken by Cromwell, and the sentencing to death and execution of Charles I on January 30, 1649. It was at any event in this troubled context that several wars with the Netherlands took place, one of the consequences of which had a direct impact on our theme. Faced with Dutch competition, Cromwell had asked Parliament to adopt the Navigation Act in 1651, forbidding foreign ships from importing anything other than their own national products, which excluded, to the benefit of English shipping, the Dutch freight trade and its vital role as a carrier and importer of foreign goods into England (16). The act led to war between England and Holland, which was ended by the Treaty of Westminster (1655) to the benefit of England; in 1665, a second war broke out, which was settled by the Treaty of Breda (1667).

During the campaign in Holland, the English soldiers discovered a beverage developed from the distillation of barley and flavoured with juniper (17), a drink that was easy to prepare and which used up the surplus of cereals, a considerable practical advantage when an embargo on French wine was in place. Gin had been developed for medicinal uses; it was said to promote digestion, to combat gout and gallstone pains. Borrowing a term used in alchemy, Professor Sylvius of the University of Leyden, its inventor, had called it *aqua vitae*. The enamoured soldiers who brought the drink back to England called it *genever* or *geneva*, terms that were soon replaced by the contraction and deformation, 'gin'. At first, gin was not used as an alcoholic drink, but kept its medical reputation (which it shared with many other alcoholic



Gin Lane by William Hogarth. *Beer Street and Gin Lane* are two prints issued in 1751 by English artist William Hogarth in support of what would become the Gin Act. Designed to be viewed alongside each other, they depict the evils of the consumption of gin as a contrast to the merits of drinking beer.

drinks), as Samuel Pepys attested in his diary on October 10, 1663 (18). Beer was still the most popular alcoholic drink in England. But little by little, gin became an alcoholic drink consumed by ever wider sections of society. Gin consumption then underwent a strange fate, since not only did the number of drinkers greatly expand, but the quantities drunk by each drinker of this beverage with an alcoholic content of 30 to 50% soared too. The origins of this curious phenomenon of mass intoxication are many, but one of their roots lies in the measures taken in 1690, the well-known law 'promoting the distillation of spirits and alcohols made from cereals', which gave all citizens the right to distill and sell alcohol provided it was made from English cereals; this law was followed, in 1694, by an increase in beer taxes in order to promote the new alcohol. The economic sources of the law and the deregulation that went with it precisely reflect the social changes we have alluded to already. The great landowners, who were very often distillers themselves, promoted the laws in Parliament, whose most active members they were; their main interest was to find a market for the large surpluses of cereals, which would otherwise have caused prices to collapse (it must also be remembered that gin could be distilled using poor quality wheat). The state gained in several ways from the new situation since it received the financial benefit of indirect taxes and duties linked to the manufacture and sale of alcoholic drinks and collected revenues from the licences that were needed by all those wishing to sell alcohol (19). From 1701, 'it was enough for two justices of the peace to grant the licence required to open a drinking establishment... Scarcely restrictive in the first place, the licence was purely and simply suppressed in 1702. All shopkeepers had the right to serve gin to their customers: tobacco merchants, grocers and barbers all took profited; peddlers walked the streets, pushing wheelbarrows laden with barrels of gin.' (20)

In a few years, the picture of daily life in London, and in the remotest towns and villages, would be completely transformed. Many documents from the first half of the eighteenth century signal with a certain alarm and anxiety the situation created by the mass consumption of alcohol. But before reading some of these documents, we need to stress some of the specific characteristics of this mass consumption:

- for the first time, very strong alcohol ceased to have a purely medicinal role and was produced and then consumed explicitly for its psychotropic effects. The vast majority of the English population drank beer, of which the alcoholic content rarely went over four or five degrees; for British drinkers, such strong alcohol was therefore as violent a collective experience as the consumption of strong alcohol by the members of Indian or Amazonian tribes who were deliberately intoxicated by the white man over the next two centuries;
- consumption took place in the highly fraught social context of the first 'preindustrial revolution', against the background of the terrible treatment inflicted by Great Britain on the people of Ireland and by the earliest political and literary opposition to the barbaric features of the new forms of domination that were being put in place.

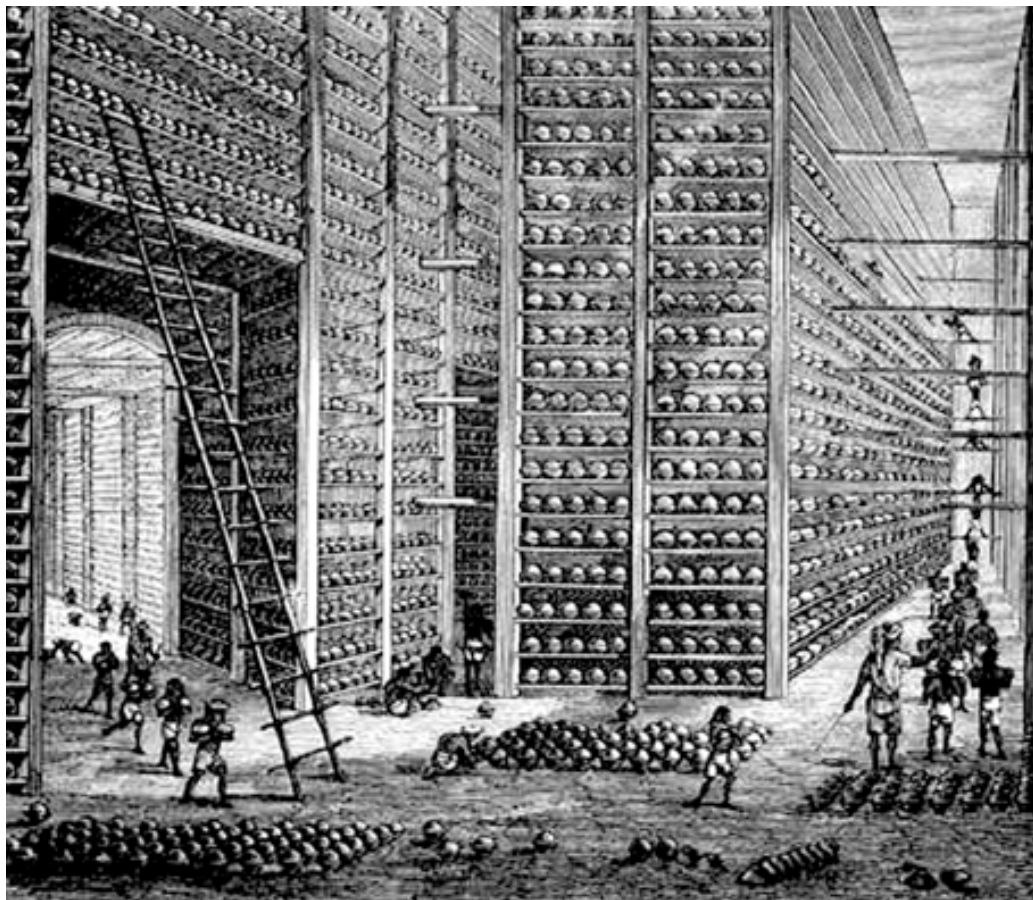
– a final point seems to me to characterise the appearance of mass symptoms of collective English intoxication: the rapid spread of pamphlets and political texts criticizing the harm caused by policies relating to the manufacture and the sale of gin.

One can read, among others, the influence of the incendiary works of Jonathan Swift which would durably influence all those who wrote or campaigned against the policy on alcohol and who wished to improve the social conditions of the 'labouring classes': the most popular model is still his famous work, *A Modest Proposal*, published in 1729 (21), where Swift proposes in a

ferociously humorous and coldly 'scientific' style to resolve the problems of 'overpopulation' in Ireland by fattening up the children of the poor to feed the rich: "I have been assured by a very knowing American of my acquaintance in London, that a young healthy child well nursed is at a year old a most delicious, nourishing, and wholesome food." Henry Fielding, the author of *Tom Jones*, made a direct reference to Swift and his *Modest Proposal* when he pointed out that if the children of Ireland could be excellent dishes thanks to food consisting of potatoes and milk, the same was not true in England, where the children of the poor were soaked in gin: "forcing their parents to eat them would amount to poisoning them" (23). It should be noted in passing that, for observers of the time, the picture of the growing poverty of the labouring classes in preindustrial England could not be separated from the still more terrible poverty caused by the famine organised in Ireland. Any normally constituted reader knew that the British authorities had set up a 'genocidal' system, in the strict sense of the term, and that the logic of this system implied, in its cold violence, the possibility of regulating the population thanks to cannibalism. The effect produced by this ferocious work was enormous and to the most lucid gave a glimpse of the great massacres to come.

In the nineteenth century, sanitary and social conditions hardly improved, but for economic reasons, including the stabilisation of the labour force, measures were taken to control the sale and distribution of alcohol. Nonetheless, many witnesses and literary works relate the overwhelming poverty of English workers and the important place held by mass addictive behaviour. Echoes of this situation can be found in the works of Dickens, in Engels' *The Condition of the Working Class in England* (24), but also in Dostoyevsky, who gives his impressions of his visit to London in 1862:

"Every Saturday evening, half a million working men and women, with their children, flow like a sea across the city, gathering in particular in a certain number of districts and all night long, until five o'clock, to celebrate a real sabbath, I mean that they stuff themselves and get drunk like animals, enough for the rest of the week. All these people bring their week's savings, all the money earned by exhausting work and malediction. Gas burns in large jets in the butchers' and all the other food shops, lighting up the streets. It is like a ball organised for all these white negroes. The crowd floods into the open taverns and onto the streets. Here they eat and drink. The taverns are decorated like palaces. All these people get drunk, but not with joy, no, but lugubriously and heavily, in a strangely silent way. From time to time insults and bloody fights arise from nowhere, breaking the ominous silence and making you feel sad. All these people try to drink and get drunk as fast as they can, until they lose consciousness... The wives go with their husbands, they get drunk at the same time as they do; the children run and clamber about among them. One night, at about two o'clock in the morning, I got lost, and for a long time I wandered from street to street in the middle of this numberless crowd of lugubrious people, asking my way almost by gestures, because I do not speak a word of English. I ended up finding my way, but the impression left by what I had seen tormented me for two or three days. The People is the same everywhere, but here everything was so enormous, so blinding that it was as if you could touch what, until then, you had only imagined. What you do see is no longer a people but the systematic, submissive and organised loss of consciousness." (25)



The stacking room in the great government opium factory at Patna, India. There is enough opium on the shelves shown in this drawing to put to death every man, woman and child in Great Britain.

Continuation of the article “The Fate of the Western Psychonaut...”

From ambivalence to cynicism: the opium wars or modern states as producers and distributors of drugs

A brief reflection on the addiction to alcohol in England shows the ambivalence characterising the relation of modern states to psychotropic substances: they have the power to ban them, yet they encourage their distribution. In this case, this curious phenomenon is still masked by security or humanitarians concerns, but a brief historical examination sets aside this fragile veil and underlines the very direct character of manipulations of modern states regarding psychotropic substances. They were at the origin of the industrial manufacture of alcohol, opium and tobacco; they have also set up production all over the world at the cost of wars and astonishing massacres. Such is the reality I would like to recall now using events linked to the Opium Wars. A brief enquiry shows indeed that the vast majority of our contemporaries are completely unaware of their existence, that is, of the history of the demolition of the Chinese empire by the modern Western states, England, France, then Germany and the United States, during the nineteenth century, so as to introduce freely opium chests and missionaries, and then to pillage the country without mercy.

At the beginning of the nineteenth century, the Chinese empire, ruled by the Manchurian dynasty of the Qing, underwent an unprecedented demographic and economic development; from the same period date the earliest symptoms of a major economic and social crisis. To try to grasp such diverse trends, historians have referred to the growth in the power of corruption, to the excesses of centralisation, but above all to the economic disequilibrium between the Chinese economy, based on silver, and a world economy, based on gold, and controlled by the West (26). The constant depreciation of silver compared to gold was indeed one of the major phenomena dominating the history of the economy in eastern Asia in the eighteenth and nineteenth centuries. Around 1815, at the end of the Napoleonic Wars, a major upsurge of European commercial activities took place in the Far East, particularly by the British (Singapore was founded in 1819). One of the issues at stake in these exchanges was the opium the British had produced and sold for a century but which had been grown using industrial methods in Bengal since the end of the eighteenth century at the cost of the ruin of the Bengali peasantry. In 1792, the governor of Bengal, Warren Hasting, saw in opium ‘a product of luxury and corruption that should only be authorised outside England’ (27); he had obtained the monopoly on its production for the East India Company, which depended directly on the Crown. The English Protestants needed to go beyond the make-shift relations they had with China concerning opium and to do so had to shatter the regulations put in place by the Chinese administration. In 1729, the emperor, Yung-chen, had proclaimed an edict outlawing imports of the drug, and from 1729 to 1836, the imperial authorities had made nearly forty decrees against opium. Canton alone remained open to foreign merchants, ‘and even they had to pass by the intermediary of a Chinese commercial company, the Cohong, which fixed prices and contingents as it pleased.’

The opium smuggling organised by the British

Protestants since the imperial ban of 1729 had increased over the eighteenth century, passing from 200 chests of opium (16 tonnes) put ashore in 1729 to 4,000 (320 tonnes) in 1792, and 6,000 (480 tonnes) in 1817. ‘From 1821, the invasion became brutal... By various means, in 1837, nearly 40,000 chests (3,200 tonnes) arrived in China.’ (29) For the imperial authorities, the situation created by this massive influx of opium was a challenge and a provocation from the West. After debates at the highest level, with the participation of the emperor, between the prohibitionists and the realists, a commissioner was appointed, Lin Zexu, who wrote to Queen Victoria to ask her firmly to stop the opium trade, which had taken on major proportions. ‘The very pure and very Christian Queen Victoria’ let it be known that such a large source of revenues could not be given up. Supposedly serious ethical discussions took place in British Christian circles, discussions that led to nothing since these same elites had taken an active part, for several decades, in everyday industrial violence and had helped make the excessive consumption of alcohol a major problem. The situation rapidly worsened (30): on February 26, 1839, a Chinese smuggler was hung before the Cantonese representatives of British merchants; despite the hostility of a corrupt section of the Chinese elite, Lin organised the struggle in the city and the province of Canton. Under a good deal of pressure, the governor Elliot, the representative of the British Crown in China, ordered the Christian drug-traffickers to hand over 20,290 chests of opium to the Chinese authorities. They were opened with the help of the population, the opium was reduced to paste, diluted in large vats on the beaches and thrown into the sea on June 7, 1839.

In the context of the fight against smuggling, the English had to leave not only Canton but also Macao. Many took refuge in ships anchored off Hong Kong. They received naval reinforcements, allowing the trade to begin again on Namoa, Nei-Chu, with the protection of the artillery of the frigates *Volage* and *Hyacinth*. On September 4, 1839 the first naval battle of the Opium Wars took place in the port of Hong Kong. The Chinese ships were completely overwhelmed by the technical superiority of the British navy. Another battle, at Chuenpeh, showed the weakness of the Chinese war junks and the bloody determination of the English Protestants that the principles of liberalism based on the opium trade should prevail.

During 1839, the respective positions of the British and the Chinese drew further apart. Under pressure from the drug-traffickers, and particularly from the already famous Scottish Methodist tradesman, William Jardine (31), the following year was a year of war. A major debate was planned in the House of Commons for April 1840 to discuss the opium policy and the requests for compensation claimed by the English smugglers who had had to give up their toxic goods at the bequest of Elliot. The latter point was particularly problematic since the 20,000 chests were worth two million pounds: the political difficulty came from the fact that no majority could be formed around a project that called on taxpayers to compensate opium smugglers. William Jardine was received on several occasions by the Prime Minister,

Palmerston, including a final meeting on February 6 1840. He was supported by the manufacturers and textile magnates who had sent petitions to Palmerston to ask for compensation of £500,000. With such ‘honest’ support, the opium traders could proceed undercover and fifteen days after the February 6 meeting, Palmerston sent a letter to the Indian government ‘to prepare the fleet for an expeditionary force: sixteen warships equipped with 540 cannons, four armed steamers and 28 transport ships to carry 4000 soldiers. The aims were laid down: to obtain compensation for the confiscated opium, to settle certain debts of Cohong tradesmen and to cover the expenses of the expedition. Palmerston also wanted to open up the coastal ports, Canton, Amoy, Fuzhou, Ningbo and Shanghai to British trade outside the Cohong system. The strategy was to blockade Canton, take control of the mouths of the Yangtze and the Yellow Rivers so as to paralyse Chinese foreign trade and put ashore troops at Pei-Ho, at the gates of the capital’ (32). After a riotous debate, the parliament voted the necessary credits for the intervention against China in April 1840 (a motion of censure was defeated by a mere nine votes). Despite all the hesitations and double talk, Palmerston and his Christian friends knew perfectly well that the war would take place and that it would be carried out to protect the interests of the opium traffickers: they had already been prepared for a year.

The preparation of the war was followed closely by the European political and intellectual ‘elites’; they had to take sides in this explosive cocktail of Puritan ambivalence and vulgar cynicism that had brought the greatest modern state to present itself openly as a producer and supplier of drugs. At the economic level, the stakes were at least twofold. First, the British liberals, partisans of free trade, were fighting with all their might against isolationism and summon the Chinese empire to join the global trade network. The foundations of liberalism were at stake. Yet the real issue, the freedom to sell and buy opium, raised moral questions that were to say the least awkward (33). Second, one must not forget the place occupied by drugs in the British economy. There is no doubt it was not anodyne for a country and its elites to accept to appear openly for what they were, that is, vulgar drug-dealers. We can indeed see all the ingredients characterising the cocktail resulting from the prohibition of drugs: the immediate rise in the prices of the banned substances and the resulting establishment of an illegal production and distribution network based on the search for huge profits. This is precisely what happened to the opium trade: the English merchants considered that the exchange of opium was more advantageous than the cash payment for Chinese tea and silk. ‘From that point a fruitful triangular and illicit trade was established: opium left India; it was imported into China; the profits from the exchange went to England. Thanks to the ban and the black market, the prices climbed all the time, as did the profits made on the sale.’ (34) The sums at stake were enormous, both to finance and administer British India, which the directors of the East India Company reminded Palmerston in November 1839 in a memorandum that ended as follows: ‘[...] when we observe that the committees of the House of Lords and the House of Commons have made minute enquiries into the opium culture, the sums it supplies to the revenues from India, and with knowledge of its final destination, we have arrived at the firm conclusion that it would unwise to give up such an important source of revenue.’ (35) A few figures are particularly revealing: in 1839, the commercial revenues from opium accounted for 34% of the sums the Crown took from British India. ‘In 1875, this figure rose to 41%, and these sums, by a complex financial mechanism, helped to balance the British budget. India deserved its name as the jewel in the imperial crown.’ (36)

Two months after obtaining the green light from the House of Commons, the military campaign began, and very quickly, in mid-June 1840, the expedition of 20 ships and 4000 soldiers, commanded by Sir James Gordon Bremer, reached the mouth of the Pearl River. At the beginning of July, the British landed on the island of Chusan, at the entrance to Hangzhou Bay, and bombarded the town of Tinhaï, causing hundreds of deaths. They then gave themselves up to pillaging and acts of barbarism (37). Completely unaware of the overwhelming military superiority of the British, the emperor rejected the British demands presented at the convention of Chuenpeh in January 1841. Hostilities broke out again and the English occupied Canton, which had to pay six million dollars to reimburse the 20,000 chests destroyed by Lin; this occupation, which brought with it new pillaging and acts of barbarity, proved however to be more dangerous than the British had thought, since, in May 1841, thousands of Chinese peasants armed with pikes and scythes surrounded the troops of the British expeditionary force and would have been cut to pieces if they had not been rescued by the intervention of mandarin compradors. Shanghai was taken and looted in mid-June 1841; the fighting lasted until the Chinese defeat at Ningbo. The Treaty of Nanjing of August 29, 1842, put an end to the first Opium War. It proved to be catastrophic for China, which had to compensate Britain to the tune of twenty-one million dollars to cover the expenses of the expedition and for the chests, of which the value, meanwhile, had been doubled. China also had to open five ports up to British ships. The Cohong monopoly was abolished and, last, the island of Hong-Kong became a British territory. The British ‘negotiator’, Pottinger, rejected the idea of Chinese

control of opium imports and the possibility, for the Chinese police, to prosecute smugglers. The trade began again stronger than ever, freed of its last fetters. "In fact, the treaty only stated the principles on which the 'unequal treaty system' was founded; new 'negotiations' and another war were needed to see the opium trade develop even more freely." (38) It was then that the Christian West (with Catholics and Protestants for once united) brought hell to the Chinese people.

What follows is the arrival of the Western pack and the tearing apart of China. In 1856, the Chinese police in Canton seized the *Arrow*, a British vessel; the Chinese authorities having refused to apologise, a Franco-British campaign began. France, in fact, which had ambitions in Indochina, took as a pretext the execution of a Catholic missionary to intervene: the pretext was to request that Catholic priests should have freedom of action. The allies operated around Canton and then headed for the capital. In 1858, a new treaty was signed in Tianjin; eleven new ports were opened up and the Protestant and Catholic missionaries had permission to preach their 'message of love' without hindrance. The allies, and particularly the French, imposed the quantities of opium and the number of missionaries to be admitted on each region and each town. After sporadic revolts, Peking was looted in 1860 and all the measures of the Treaty of Tianjin were finally accepted. The various skirmishes that later took place ended each time in the defeat of the Chinese empire and the growth in Western control of the

country. China was then infested with foreign concessions that imposed their rules. The best known was in Shanghai. The loss of sovereignty thus marked the history of the country: there is no need to recall, for instance, that the customs duties limited to 5% were collected on behalf of Peking by a special administration, the Imperial Chinese customs, whose directors were all foreigners, and the head of which enjoyed, in practice, considerable authority. The situation worsened despite the attempts made by the Chinese elites to modernise China and establish friendly relations with the West. France began its conquest of Tonkin and went to war with China in 1884; the French occupied Formosa (Taiwan) and the southern provinces. The scramble continued after the failure of the Boxer Rebellion: each nation obtained exclusive rights over entire provinces to build factories, raise taxes, lay down railways and set up permanent military bases. To Russia went the north-east with Manchuria, to Germany, the Shandong peninsula, Weihaiwei for England, and to France, Guangzhouwan in the south of the country. We should recall that from 1842 to 1948, a hundred million Chinese were victims of the Western and Japanese occupation (famines, wars, forced labour), as well as of the warlords kept in power by the occupiers.

The subjugation and looting of China, and the enslavement of its people were accompanied by a strange phenomenon, the almost suicidal intoxication of the Chinese, a mass intoxication caused and controlled by

Western states and companies. If before the first opium war 3,200 tonnes of opium were introduced into the country (about 40,000 chests), during the 1850s, the average rose to 68,000 chests or around 5,440 tonnes, and reached 6,500 tonnes in 1880. But these figures do not take into account domestic Chinese production set up with the help of Western advisors, production that was long hard to estimate. But basing ourselves on the first serious analyses carried out after 1901 by the French consul in Shanghai (39) we can say it was over 15,000 tonnes, to which we must add 7,000 tonnes of imported opium. The London and China Telegraph, a Shanghai newspaper, highly favourable, it is true, to Indian importers, in comparing Indian and Chinese opium, reckoned that 'native cultures yield eight to ten times more than the imported kind.' (40) According to the same newspaper, the figures for 1905 varied between 27,605 and 34,506 tonnes, corresponding to average imports of 3,450 tonnes. Total opium consumption, during 1905, must therefore have been 37,956 tonnes, that is, for a population of 432 million inhabitants, an average consumption of 87 grams of opium per person. Again according to the Telegraph, if we subtract from this figure women and children, who do not smoke opium, we can take as a first estimate that a third of the population was intoxicated, i.e. 144 million people. The average annual consumption of opium per inhabitant must have been about 263 grams. The newspaper's commentator observed however that some smoke much more than others –

Injecting Drugs : the Birth of a Tool

Nicolas Bonnet, public health pharmacist, ECIMUD addiction unit, Pitié Salpêtrière Hospital, Paris; Yves Edel, psychiatric doctor, coordinator of the ECIMUD addiction unit, Pitié Salpêtrière Hospital, Paris; Lionel Sayag, project manager, CILDT, Villejuif

to commemorate the publication of the adaptation of *L'injection à moindre risque*, Apothicom et CILDT, France, 2008 / Jon Derricott, *The Safer Injecting Briefing*, Exchange Supplies Ltd., UK

It is impossible to be precise about when injecting as we know it began. Clearly weapons such as blowpipes and poison-tipped darts were in use thousands of years ago to introduce substances into the body. Intravenous injection was recorded as early as the 17th century. Christopher Wren and Robert Boyle "infused" opium into a dog's veins using a pig's bladder attached to a feather (1). The absence of needles meant the skin had to be incised beforehand. The lack of encouraging results led to the rapid – but provisional – decline of the intravenous method in favour of the subcutaneous method. The revival of the intravenous injection followed the invention of the first sharp and hollow needle syringes by Alexander Wood (1817-1884) and Charles Gabriel Pravaz (1791-1853). Subcutaneous injection was also developed in the second half of the nineteenth century, probably as an offshoot of the new practice of vaccination.

On the difficulty of getting active substances into the vein: the invention of the syringe

Christopher Wren is the first person recorded to have employed intravenous injecting in Britain. In 1656 he experimented by injecting dogs with opium and other substances. Wren's 'syringe' was a crude device, consisting of a quill attached to a small bladder and was known as a clyster. An incision in the skin had to be made in order to gain access to the vein. (2) It was at least 100 years before a syringe with an attached needle intended for puncturing the skin was first produced. In 1807 *The Edinburgh Medical and Surgical Dictionary* defined a syringe as follows: "A well known instrument, serving to imbibe or suck in a quantity of fluid and afterwards expel the same with violence. A syringe is used for transmitting injections into cavities and canals." (3) However, the same source describes injection as being employed almost solely for injecting substances into the blood vessels of corpses for the purpose of enhancing anatomical study. Various developments towards the modern syringe were made as a result of the study and teaching of anatomy in 17th and 18th centuries. (4)

Intravenous injecting continued and was further developed in the 17th century. Numerous drugs were used to attempt to treat various conditions, particularly epilepsy and syphilis. One of the first drugs injected in this way was opium. (5) The use of this administration route declined however, probably as a result of the unsuitable substances injected (such as cinnamon, oil of sulphur and arsenic) and an unsurprising lack of encouraging results. Experiments with intravenous injection were revived at the end of the 18th century with important discoveries of the dangers of large quantities of air being introduced into veins and the similar dangers of oil-based intravenous injections. Intravenous injection continued throughout the 19th century but was overshadowed towards the end of the century by the introduction of techniques of subcutaneous injecting, which at the time was seen as more versatile and useful.

At the beginning of the 19th century attempts were made to introduce drugs into the body via the skin itself.

This initially took the form of variations on a general theme of blistering an area, removing the outer layer of skin and placing a poultice or plaster containing the active agent on to it. Lafargue developed this idea in 1836 by introducing morphine under the epidermis with a vaccination lancet, i.e. a solid needle dipped in morphine and then pushed under the skin. (6) By the middle of the century Lafargue had developed a technique of placing solid morphine-based pellets under the skin. Initially this was achieved by simply making a hole with a large needle and pushing the pellet into the hole. Over time an instrument was devised to aid this procedure which Lafargue called the 'seringue seche' or dry syringe. Other variations of this method included work by Crombie who, in 1873, used a technique of coating silk thread with morphia, puncturing the skin with a needle and then drawing the impregnated thread under the skin. Crombie developed this technique because he felt that the hypodermic syringe was expensive and easily damaged.

Obscurity regarding the precise origin of the modern syringe is due to the parallel research that was carried out by several independent inventors. Charles Gabriel Pravaz (1791-1853), a French orthopaedic surgeon, was the inventor of the hypodermic valve syringe. Pravaz wanted to inject the coagulant iron chloride into an aneurism and, in 1841, designed and commissioned the *Établissements Charrière* company to make a silver syringe 3cm long and 5mm in diameter. The valve piston screwed downwards, making it possible to control the amount of the substance injected. The cannula and the trocar were made of gold or platinum. Pravaz used his syringe very little or not at all on human beings. In the process, even so, he founded the sclerotherapy of varicose veins. The surgeon, Louis Jules Félix Béhier, gave it the name "Pravaz's apparatus or syringe" and popularised its use in Europe around 1850. However, the Fergusson syringe of 1853 became a forerunner of the modern syringe when

Alexander Wood used it for subcutaneous injection of opiates to relieve pain. (7)

In 1872, in Bordeaux, the surgeon P.C. Oré undertook the first intravenous surgical anaesthesia on a human being using chloral hydrate. Due to frequent deaths, he advised colleagues that the "the method must absolutely be excluded from the practice of any surgeon mindful of the life of his patients". The practice was thus provisionally given up, but was later gradually reintroduced when barbiturates came into use (Penthotal 1934). Kane, in 1880, described intravenous injection mainly as an unwanted consequence of subcutaneous injection and outlined ways to avoid it. (8) Macht, writing as late as 1916, said: "However useful intravenous medication may be in special cases, its scope for application is certainly more limited than hypodermic (subcutaneous) injection..." (9)

The development of understanding of systemic action and the growth of the medical use of opiates

Early understandings of the pain relieving effects of opiates centred on the belief that most of the drug stayed at the site at which it was injected. In fact, drugs administered by any route of injection will permeate throughout the body. Intravenous injection is the fastest route for drugs to reach the brain in concentrated form, subcutaneous injection is the slowest injected route.

Alexander Wood, although recognising some systemic action, believed that the action of opiates administered by subcutaneous injection was mainly localised. The use of the syringe over previous methods was thought to allow greater accuracy in administering the drug in close proximity to a nerve, hence it was thought, facilitating better pain relief. The belief in localised

action influenced many doctors at the time. Dr Francis Anstie, editor of *The Practitioner*, wrote in 1868 that there was no danger associated with the hypodermic injection of remedies, and later: "... it is certainly the case that there is far less tendency with hypodermic than with gastric medication to rapid and large increase of the dose when morphia is used for a long time together." (10) Charles Hunter, a house surgeon at St George's Hospital, made the connection that opiates administered by injection exert a systemic action when he was forced to move away from the original site of injection as a result of abscess formation and found that the patient still experienced similar relief from pain. Subcutaneous injecting with a syringe was initially described and popularised by



**TO SAFEGUARD THE PATIENT
TO SAVE TIME AND MONEY
PLASTIPAK**

Advertisement for "Plastipak", the sterile disposable plastic syringe introduced by Becton, Dickinson and Company in 1961. The introduction of the cheap plastic syringe matched the sterility requests and had the advantage of avoiding the dangerous re-use of glass syringes and times of sterilization. What was allowing the hospitals to save time and money would also induce a democratization of drugs self-injection that will come to light at the end of the 70s with the punk and the AIDS epidemic.

Continuation of the article, "Injecting Drugs..."

Wood. It has been suggested that his fundamental misunderstanding that the effect was primarily local (and by implication that dependence could not occur), paved the way for the creation of a large number of patients dependent on morphine, described in the 19th century as 'morphinists'.⁽¹¹⁾

A powerful influence in the development of widespread and repeated use of opiates by injection would have been the obvious and immediately beneficial effects of injected morphine, particularly to those experiencing chronic pain. Doctors at the time, with few truly effective treatments available, would have had difficulty in resisting the impulse to treat pain with something as powerful, fast and effective as injected morphine. Courtwright, when discussing 19th-century opiate addiction in America, has said: "The administration of opium and morphine by physicians was the leading cause of opiate addiction in the nineteenth century... case histories, clinical notes and remarks in the medical literature support the view that although opium and morphine were ultimately given for such unlikely disorders as masturbation, photophobia, nymphomania and 'violent hiccup' it was principally in those suffering from chronic ailments that the use of these drugs led to chronic addiction."⁽¹²⁾

The combination of the development and spread of injecting with the widespread availability of opiates and the easy legal availability of opiate-based patent medicines contributed to the increase in injectors of opiates in this period.

From anti-sepsis to disposable syringe

Non-medical injecting of drugs grew through the 20th century. Initially the preferred route of injection by non-medical users was subcutaneous injection. In USA, between the first and second world wars, the preferred route gradually became intravenous injection. With a change of route of administration came a change in the medical problems commonly experienced by injectors. In Europe, there were comparatively few injectors until the 1970s. In the 19th century there was only a slow dawning of the realisation of the implications for the spread of infection by injecting. The concept of anti-sepsis was introduced by Lister in 1867. One of the earliest recorded cases of infection following injection was the report, in *The Lancet* in 1876, of a drug injector becoming infected with tetanus.⁽¹³⁾ The risk of tetanus and similar

infections remains current for some subcutaneous injectors. Needle sharing was described as being associated with infection spread in the 1920s. Malaria was first reported as a result of intravenous drug use in Egypt in 1929.⁽¹⁴⁾ Crane summarises the recognition of various infections transmitted by injecting in the USA in the 1930s. At this time injectors of street drugs would probably have used a medicine dropper attached to a hypodermic needle with the aid of a cigarette paper in order to make a tight seal.⁽¹⁵⁾

The role of needle sharing in the transmission of hepatitis A and B among injecting drug users was probably first described well, in an important American paper by Howard and Borges published in 1971⁽¹⁶⁾. Many of the infective complications of injecting drug use were recognised over the intervening years. In the early 1980s, the discovery of the HIV virus and its routes of transmission, lent greater urgency to the study of injecting practice and infection spread. Almost a decade later, hepatitis C was identified as a risk for injectors.

Through the 20th century the production of precision-made glass syringes was gradually refined. The first major advance came with the manufacture of interchangeable parts, made to exact specifications, rather than as 'one-off' items. Until the 1960s the majority of syringes and needles were re-useable and were supplied unsterilised. They had to be sterilised before each use. Glass syringes could be re-sterilised approximately 20 times before they were in danger of breaking. Needles had to be re-sterilised and re-sharpened. The 1950s was a period of transition, with 'hybrid' combinations of plastic and glass disposables.⁽¹⁷⁾ By the 1960s, glass syringes which were re-useable after sterilisation were being replaced with disposable plastic syringes and single-use needles. However, at that time the concept of disposability was still new and manufacturers were concerned that attempts would be made to re-sterilise single-use equipment. To discourage re-use, the manufacturers experimented with materials for syringes that could not withstand the temperatures involved in heat sterilisation. The first type of plastic chosen for this use was polystyrene, but this was found to be vulnerable to chemical attack from the contents of the syringe. Polypropylene disposable syringes began to revolutionise the syringe market from 1961 onwards. Latex has been used in syringe manufacture, but there are now latex-free syringes available because some people are allergic to it. Today almost all syringes and needles are disposable and intended for 'once-only use'.

Conclusion

The act of using a needle and syringe to introduce drugs into the body holds a great deal of cultural symbolism both inside and outside injecting networks.

Intravenous drug use is popularly seen as an end result of a career of drug use. Injecting drug users are often characterised as being out of control or controlled by their drug use. The subjective phenomena that differentiates injecting from other routes of taking drugs is the immediacy and strength of the onset of action and the experience of a 'rush'. A significant factor in the numbers of people using heroin by injection in Europe, was the increase in availability of cheap smokeable heroin in the 1980s.⁽¹⁸⁾ In fact, despite the marks left by injections, many users, once addicted, go from inhaling to injecting, or alternate between the two. Yet it seems that the majority of injectors are mindful of their health and are ready, if they have the means and the information at their disposal, to take the precautions needed to preserve it.

NOTES

- (1) Macht D I (1916) The history of intravenous and subcutaneous injecting of drugs. *The Journal of the American Medical Association*. LXVI.
- (2) Crude injecting devices still persist today; many self injectors do not have access to modern sterile equipment and manufacture their own from what is available. This is most likely to occur in prisons, using plastic pens for instance.
- (3) Morris R and Kendrick J (1807) *The Edinburgh Medical and Surgical Dictionary*. Bell and Bradfute; and Mundell, Doyle and Stevenson, Edinburgh.
- (4) In the 17th century, De Graaf made a device that closely resembled the modern syringe. Its purpose was to trace the blood vessels of corpses. His syringe had a metal barrel to which the needle was attached directly.
- (5) D. I. Macht, *op.cit.*
- (6) D. K. Boraker, *The Syringe* (vol. 2), Medical Heritage, 1986, pp. 340-348.
- (7) D. K. Boraker, *op.cit.*
- (8) H. H. Kane, *The Hypodermic Injection of Morphia. Its History Advantages and Dangers*, Chas L. Bermingham & Co., New York, 1880.
- (9) D. I. Macht, *op.cit.*
- (10) Anstie F E (1871) On the effects of the prolonged use of morphia by subcutaneous injection. *Practitioner* 6: 14857.
- (11) V. Berridge et G. Edwards, *Opium and the People: Opiate Use in Nineteenth-Century England*, Yale University Press, EU, 1987, pp. 139-140.
- (12) D. Courtwright, *Dark Paradise, Opiate Addiction in America before 1940*, Harvard University Press, EU, 1982, p. 42.
- (13) Editor. Tetanus after hypodermic injection of morphia. *Lancet* 2:8736.
- (14) Biggam A G (1929) Malignant malaria associated with the administration of heroin intravenously. *Transactions of Society of Tropical Medical Hygiene*, 23:14753.
- (15) Crane L R (1991) Epidemiology of infections in intravenous drug abusers. In: Levine DP and Sobel JD (eds) *Infections in Intravenous Drug Abusers*, p. 4. Oxford University Press, Oxford.
- (16) Howard J and Borges P (1971) *Needle sharing in the Haight: some social and psychological functions*. *Journal of Psychedelic Drugs*, 4 (1).
- (17) Becton Dickinson, *Celebrating the First 100 Years*, Becton Dickinson Ltd., 1997.
- (18) Hunter G M, Donoghoe M C and Stimson G V (1995) Changes in the injecting risk behaviour of injecting drug users in London: 1990-1993. *AIDS*, 9: 493501.

fifteen to twenty grams a day for the heaviest consumers. Bearing in mind that the inland peasant populations did not smoke, the figure advanced for 1905 by the London and China Telegraph was about twenty million heavy consumers. Most historians of the period accept that the estimated number of opium-addicts ranges from 50 to 80 million people.

The problem was so serious that Christian missionaries who had arrived in China with the protection of guns and accompanied by opium chests began to be seriously concerned. Their 'message of love' came up against the masses of coolies and poor wretches stupefied by opium; some grasped the extent of the despair that their hated presence gave rise to and wanted to publicise the catastrophe. The army doctor, H. Libermann, who took part in all the oriental campaigns, outlines the extent of the tragedy with the following overwhelming figures. In Tianjin, a small town of 3,000 inhabitants, he counted 164 opium dens. In Chunking, there were, for 130,000 habitants, 1,200 opium dens. Other British sources counted 3,000 opium-shops in Fuzhou. In some provinces, the British consuls reckoned that none of the male inhabitants escaped intoxication. The situation in Hong Kong was simply horrifying, where, side by side with the huge fortunes of Anglo-American, Parsi, Jewish, Armenian and Chinese traffickers, led by Sir David Sassoon, who was himself at the head of the biggest importer of Hong Kong, which controlled the steam liner *Apcar* that transported the drug from Calcutta and Bombay to Hong Kong (41), were the thousands of coolies and peasants dying on boats in the port or in the streets. But for the needs of our demonstration, these few remarks are enough; it is pointless to develop further this sad history on which Western nations have thrown a modest veil.

The first train can hide a second: from drug-addiction to the biochemical management of the population

The public display of "drug-addiction", of the 150,000 injectors of illegal drugs, is a recent development: it began in the 1970s. The study of the wide-scale publicity around paroxysmic drug-taking (which is statistically marginal in terms of public health) must not, however, make us forget that over the same period, French general practitioners, as well as many specialists, began to prescribe massive amounts of sedatives, sleeping-pills,

high or low concentration neuroleptic drugs as well as a large quantity of stimulants. The resulting situation is now better known: the figures best reflecting reality show a French population of around 15 million consumers of prescribed molecules by doctors (including 8,7 million occasional consumers of legal psychotropic drugs, which makes France second in the world, behind the US). The disproportion between the number of users concerned by illegal drug-taking and those who use legal molecules is sufficiently eloquent for us to pass to a much deeper question concerning drug-taking (42). The French population concerned by the use of legal drugs represents in percentage terms such a large (and constantly increasing) mass of the population that it is worth asking

are not witnessing a socialised induction into legal psychotropic substances, a sort of setting up of a biochemical management of the entire nation.

Could the French medical profession be a willing partner in the process to change – or aggravate – citizens' health? The question has been unnecessary since the work of Semmelweis (43) on puerperal fever, work that showed the responsibility of the medical professionals in charge of child-bearing and the monitoring of pregnancies in the mortality of parturients. Who can forget that 150,000 people die in hospital each year due to secondary, nosocomial infections contracted in hospital? It is also hard to evaluate the number of people who have

contracted HIV through that major vector for the spread of illness that is the hospital. We can only state that this atypical seropositive population does correspond to a category with 'at risk' behaviour and is, above all, totally unaware of what has happened to them: they can hardly be helped by a preventive approach, which makes it even more delicate to handle the damage caused by the medical vector for spreading disease. The first issue raised is that the deep structures of the contemporary medical profession play a background role helping us to understand the role of the epidemic vector played by the hospital and the medical profession. Everyone knows that since its establishment in the nineteenth century the modern medical authorities have not only been committed to attempts to restore the health of patients, but must also respond more and more to public demands, and carry out social tasks. To cleanse, isolate or destroy infectious factors: these are its key words. Public hygiene and preventive medicine develop within a logic of control and are permanently backed by technical progress that orients the whole project towards embryo selection, neo-eugenics (the spread of caryotypes) and, soon, euthanasia for the incurably ill or bed-ridden, the storage and distribution of body parts, etc.



¹French Tobacco for exportation

The hospital and the medical profession is also characterised by mass admittances and faster and faster biophysical methods and tests in the final bastions of the medical act, and the ever stronger implication of the medical profession in collective economic needs (the Social Security deficit); members of the medical profession are also confronted with political pressures that respond to changes in public opinion, to the requirements of the state and to the search for profits by laboratories. These are some of the elements of the backdrop to two major events originating with the medical profession that have taken place:

- the catastrophe of contamination through the blood and its secondary products
 - the rapid and massive initiation of a large part of the French population into regular absorption of psychotropic substances.
- These are the events that give legitimacy to the hypothesis about the establishment of biochemical management of the French population.

4. Transfiguration of the world and of bodies

The psychonaut as the negative hero of modernity

Through the neuropsychic effects of narcotics, the drug-taker changes his body, his mind and, of course, his perception of things: he seeks and believes he finds the transfiguration we evoked earlier and which is the deepest aim of scientific action and modern technique. In this sense, he presents an archetypal image of the fate awaiting modern man, but he does so too quickly, in an immediate way. He is not on the margins but is, on the contrary, a pathfinder who is much too far ahead, whose daring terrifies us. Such hatred, in short, is what is produced in all of us by the future destiny of ourselves and our descendants: the transformation of the traditional biological fate that is still our own and which science and technique ask us to give up. The drug-taker interiorises, in a paradigmatic way, the abandonment of the anchors that link us to our biological and cultural past, which has been inaugurated in our times by genetics and molecular biology; and this prophetic figure is unbearable for us all since we know very well that both ourselves and our descendants will be forced to sail for these worrying horizons without having any choice in the matter.

The drug-taker is biochemically 'plugged into' modernity; yet he represents a parody of it, since he does not transform himself substantially: he only modifies the subjective conditions of his apprehension of the world and of himself and for limited periods. His experiences are in this sense closer to modern decoy techniques, such as television, virtual objects and virtual "worlds" – everything that is being set up before our eyes at the intersection of the new digital treatment of the image, sound and touch. The consumer of psychotropic drugs only retains from biochemistry the effect on the conditions of neuropsychic apprehension of the world and of himself, and if he does indeed prophesise the demiurgic vocation of science and technique, then he only presents, like John the Baptist, what is to come; Christ will come later. The messiah announced by drug-taking and the biochemical aspect that feeds it, is a substantially transfigured mankind, a mankind one is striving to change and to improve using the other aspect of biochemistry in its relations with molecular genetics and genetic engineering. Each responsible citizen who tries to keep informed knows that this future is now possible; how could we hesitate when faced with such a radiant future on which we have less influence than ever? Who would not feel suspicion, contempt or fear for those who give themselves up too quickly and even run towards such a project?

The chemically pure body of the "drug-addict" is frightening because he announces the transfigured body. From chemistry he only retains its neuropsychic effects but wishes for those that are active in molecular biology. A first train may hide a second: the worrying strangeness that the illicit drug-taker produces is a reference to an everyday threat, the call to mutate, to be purified, to be 'eugenised' that is manifested ever more strongly in industrial societies. Thus our path towards the remnants of drugged intoxication becomes clearer: from chemically pure bodies we will pass to transfigured bodies.

Imaginary bodies

What a surprising convergence there is between the well-publicised and institutional display of the "paroxysmic" drug-addict and the underground work carried out by the members of the medical profession and the pharmaceutical industry in order to initiate entire sections of the population into the molecules of legal psychotropic drugs! The real problem of public health was not among drug-addicts; and those taking part in the spread of this belief in the name of health and order, journalists, doctors, managerial staff and psychologists contributed despite themselves to the establishment of the strange optical illusion thanks to which attention was focused on the gesticulations of 100,000 'untamed' drug-addicts, and turned away from the army of twelve million legal drug-takers. Everyone can see very well in this case how much illness, deviancy and, more generally, the fringes of society are cordoned off in the imagination by the media, the state and, increasingly, by the public.

The imaginary burdens weighing down approaches to drug-taking deform its scope and results in the collapse of common sense. Evaluation becomes irrational, even according to the criteria of modern medicine; still worse, paradoxical behaviour appears and leads those who are in charge of treatment to spread disease. But these traps are not without doubt the most worrying. We have noted the convergence between the rise of the social role given to drug-taking, accused of all the world's ills, and the unpublished regular consumption by (highly numerous) sections of the French population of legal psychotropic drugs. Is there nothing more than a coincidence at work here? Is it a complex form of the spread of new addictive behaviours to psychotropic substances that find in the designation of scapegoats the cause for their use in ever wider sections of society?

The loss of the most basic common sense on the part of professionals, particularly in medicine, whose duty is to prevent addictive conduct, would thus be manifested in two ways: their active participation, involuntarily, of course, in the transmission of epidemics, their blindness concerning the disproportion between highly publicised and yet controllable health issues, and the widespread, but silent growth of highly toxic behaviour or infections. But is it just a question of the loss of common sense? How can we answer this question without falling into an all-consuming interpretational tendency?

There are no conspiracies, such is the permanent lesson that sociology teaches us; the appearance of convergences, of a certain logic bringing together social phenomena that are seemingly quite different, is much more significant when it is not attributed to explicit intentions. There was no explicit intention aiming to intoxicate the French population (which had already long been intoxicated by alcohol) but there is an unswerving internal logic that brings together under one heading the movement by which 'untamed' drug-addicts are stigmatised, locked up and treated, and millions of French people are initiated, introduced and encouraged to consume psychotropic substances. This convergence is full of meaning and must be studied for itself: the organisation of contemporary industrial societies, state institutions and health systems, no longer correspond to the descriptions and analyses carried out by Michel Foucault, but to a very different logic dominated by a

global project that has often been pointed out while these few developments have taken place – a laboratory-State whose sole essential task is not to organise new systems to designate the world and mankind, but 'objectively' to transform the world, the body and minds in a kind of collective desire for transfiguration.

NOTES

- (1) P. T. FURST *et al*, *La Chair des dieux. L'usage rituel des psychédéliques*, Paris, Seuil, collection 'science ouverte', in Introduction, 1974, p. 8 et 9.
- (2) See E. JÜNGER, *Approches, drogues, ivresse*, Paris, Gallimard, collection 'Idées', 1973.
- (3) PASCAL, *Pensées*, Brunschvicg, Hachette, n°441, p. 536.
- (4) G. BACHELARD, *Le nouvel esprit scientifique*, Paris, PUF, 1965.
- (5) We might recall that bromides were first synthesised in 1826, chlorals in 1832, and the first barbiturates in 1903 (Veronal followed by Gardenal), prior to the first rapid-elimination modern compounds in 1935. (See the *Encyclopaedia Universalis* article, 'Psychopharmacologie', Paris, 1980.
- (6) E. JÜNGER, *Approches, drogues et ivresse, op. cit.*, p. 51.
- (7) To be more precise, we must recognise that such fluctuations find a point of stability around the organisation of financial flows linked to drugs and psychotropic substances. Both the production and distribution of 'licit' psychotropic substances and the trafficking of 'illicit' psychotropic drugs grow continually.
- (8) E. JÜNGER, *Approches, drogues et ivresse, op. cit.*, p. 60.
- (9) LEROI-GOURHAN - *Le geste et la parole* - Paris, Albin Michel, 1965.
- (10) C. LEVI-STRAUSS - *Race et histoire* - Paris, 1961, Gonthier.
- (11) R. DESCARTES - *Discourse on Method* - Project Gutenberg translation. Our italics.
- (12) The word "structure" refers to the works of Claude Levi-Strauss: he shows the coherence connecting the systems of kinship and the linguistic organisation of myths in a single culture. The French term "imaginaire" points to this origin, of which the effects can be seen both in a social organisation and in religion, and in technical practices. It does not include the meanings (which are actually quite different) given to it by Lacanian and Jungian psychoanalysts. On this subject, see our work "Les corps transfigurés - Mécanisation du vivant et imaginaire de la biologie", Seuil, 1992, 322p.
- (13) L. MUMFORD, *Technics and Civilization* (1934) and *The Culture of Cities* (1938).
- (14) B. ROUECHE, *The Neutrak Spirit: A Portrait of Alcohol*, Boston, Little Brown, 1960, p. 27.
- (15) G. E. G. CATLIN, *Liquor Control*, London, Thornton Butterworth, 1931, p. 15.
- (16) J. BOUSSARD, 'Histoire de la Grande-Bretagne', *Encyclopaedia Universalis*, Paris, vol. 12, 1980, p. 896.
- (17) We might recall that distillation consists in separating a volatile matter from a fixed matter by turning the former into steam and condensing it, a technique long applied to different products.
- (18) S. PEPYS (1633-1703), son of a London tailor, famous for his diary which begins on January 1, 1660.
- (19) D. DEFOE, *The Complete English Tradesman*, London, C. Rivington, 1738, 4 volumes. See, in particular, volume two, p. 309: "Distilling, a new Trade in England, is increas'd to a prodigious degree, by an accident in our Commerce, which was the prohibition of Brandy from France".
- (20) S. HALIMI, 'La bataille du gin en Angleterre dans la première moitié du XVIIIème siècle', *Histoire Economie et Société*, n°4, 1988, p. 461.
- (21) The complete title is "A Modest Proposal for Preventing the Children of Poor People in Ireland, from being a Burden to their Parents or Country; and for making them beneficial to the Public".
- (22) H. FIELDING, *An Enquiry into the Causes of the late Increase of Robbers*, London, A. Millar, 1751.
- (23) H. FIELDING, *The Covent-Garden Journal*, by Sir Alexander Drawansir, Knt, Censor of Great Britain (1752), Ed. Gerard E. Jensen (New Haven, Yale U.P., 1915), II, 201; text cited by S. HALIMI, 'La bataille du gin en Angleterre dans la première moitié du XVIIIème siècle', *op. cit.*, p. 465.
- (24) F. ENGELS, *La situation de la classe laborieuse en Angleterre - d'après les observations de l'auteur et des sources authentiques*, Paris, Ed. Sociales, 1960.
- (25) F. DOSTOIEVSKI, *Winter Notes on Summer Impressions*.
- (26) 'Histoire de la Chine', *Encyclopaedia Universalis*, Paris, vol. 4, 1980, p. 290-294.
- (27) D. E. OWEN, *British Opium Policy in India and China*, New Haven, Conn. Yale University Press, 1934, reedited by Archon books, London, 1968; in C. BACHMANN et A. COPPEL, *Le dragon domestique*, Paris, Albin Michel, 1989, p. 55.
- (28) 'Histoire de la Chine', *Encyclopaedia Universalis*, Paris, vol. 4, 1980, p. 292.
- (29) C. BACHMANN et A. COPPEL, *Le dragon domestique*, *op. cit.*, p. 55.
- (30) Many works have been devoted to the period before and after the two Opium Wars. Among them are E. D. OWEN (cf. *ut supra*, note 37); WAKMAN, *Canton Trade and the Opium War*, in J. K. FAIRBANK, *The Cambridge History of China*, vol. 10, Cambridge University Press, 1978; WALEY, Arthur, *The Opium War through Chinese Eyes*, New York, The Macmillan Company, 1958; A. Mc COY, *The*

Shadow people (also known as shadow men, shadow folk, or shadow beings) are shadow-like creatures of modern folklore. They appear as dark forms in the peripheries of people's vision and disintegrate, or move between walls, when noticed.



Politics of Heroin in Southeast Asia, New York, Harpers and Row Publishers Inc., 1972; J. CHESNEAUX et J. BASTIDE, *Des guerres de l'opium à la guerre franco-chinoise, 1840-1885*, Paris, Hatier, 1969; H. LIBERMANN, *Les fumeurs d'opium en Chine*, Boulogne-sur-Mer, 1886.

(31) W. Jardine was one of the founders of the famous company Matheson and Jardine, which is well known in Asia.

(32) P. BUTEL, *L'opium, Histoire d'une fascination*, Paris, Perrin, 1995, p. 114.

(33) C. BACHMANN et A. COPPEL, *Le dragon domestique, op. cit.*, p. 55.

(34) *Ibid.*

(35) D. E. OWEN, *British Opium Policy in India and China*, New Haven, Conn. Yale University Press, 1934; reedited by Archon books, Londres, 1968.

(36) C. BACHMANN et A. COPPEL, *Le dragon domestique, op.cit.*, p. 55. For more detail, see the work by A. McCOY, *The Politics of Heroin in Southeast Asia*, New York, Harpers and Row Publishers Inc., 1972.

(37) On these events, see the work by A. WALEY, *The Opium War through Chinese Eyes*, New York, The Macmillan Company, 1958, p. 109-110.

(38) P. BUTEL, *L'opium, Histoire d'une fascination*, Paris, *op. cit.*, p. 128.

(39) National archives, section of the Ministry of Foreign Affairs, Quai d'Orsay, 594, folio 201, report of the French consul in Shanghai, September 1916.

(40) *Ibid.*

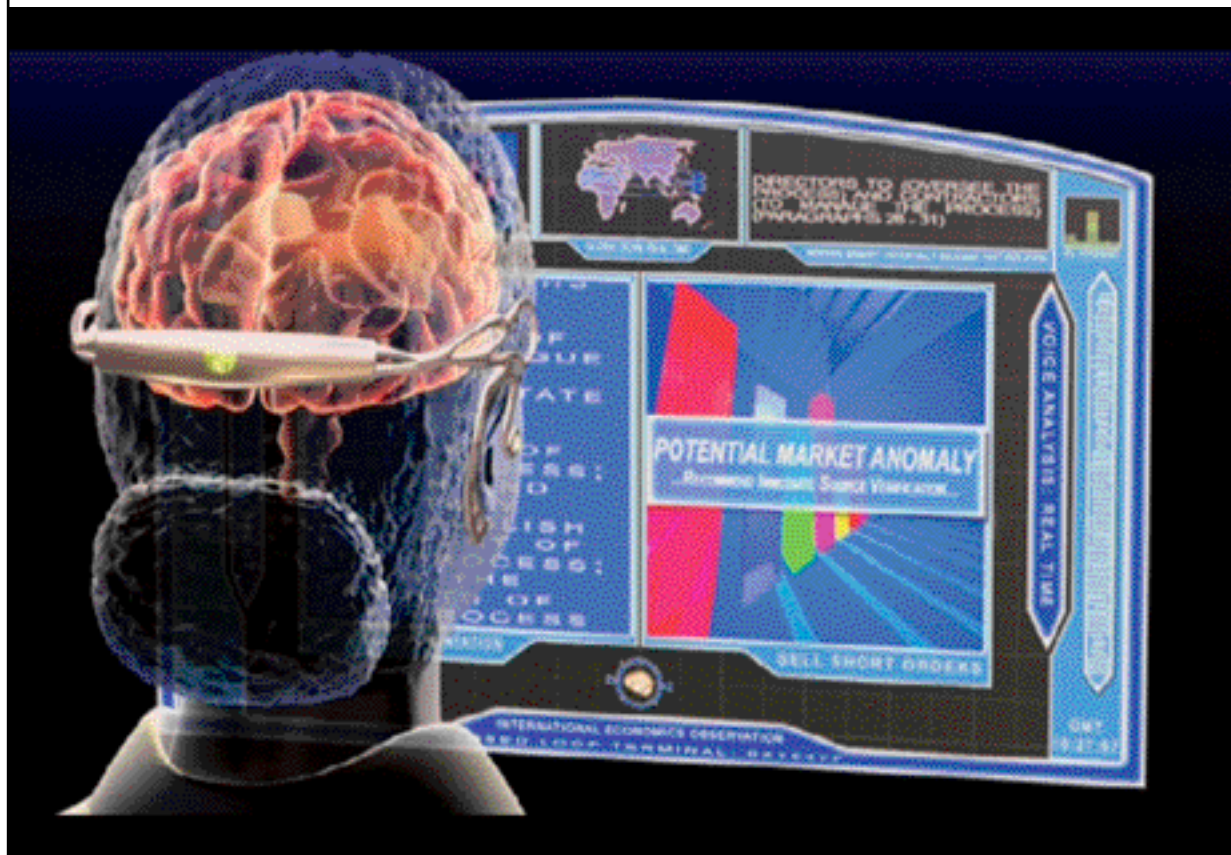
(41) P. BUTEL, *L'opium, Histoire d'une fascination, op. cit.*, p. 255-256.

(42) The number of French people using illicit drugs is 2.2 million (at least once a year, including 0.5 million daily consumers of cannabis); for legal drugs: psychotropic drugs (3.8 million regular consumers, including 2.5 million daily consumers), alcohol (6.4 daily consumers, including 3.3 million 'problem' users), tobacco (11.8 million daily consumers). Legal psychotropic substances include antidepressors, anxiolytics and hypnotic drugs. Sources: ESCAPAD 2003, OFDT; ESPAD 2003, INSERM/OFDT/MJENR; Baromètre santé 2005, INPES, exploit. OFDT; 'Drogues et usage: chiffres clés', MILDT, 1999.

(43) Ignaz Semmelweis (1818-1865) established present-day hygienic rules even before Pasteur. His life is revelatory of the extraordinary arrogance of the medical profession, which not only refused to recognise his work, but continued imperturbably to spread deadly infections in parturients.

Waterworn pebble resembling a human face, from Makapansgat, South Africa, ca. 3,000,000 B.C. A reddish-brown jasperite pebble, approx. 2 3/8" wide

Screenshot of the "Future of Augmented Cognition", a short film by Alexander Singer for the DARPA. The film takes place in 2030 in a command center that is tasked with monitoring cyberspace activities for anomalies that could threaten the global economy.



Summary

Page 2 and 3 - Matrices of subjectivation. Anthropogenesis, technogenesis, exogenesis by the *Bureau d'études*

Pages 4 to 7 - Future map or *How Cyborgs learned to stop worrying and to love surveillance* by Brian Holmes

INSERT Page 8 - Tactical Reality Dictionary (extracts) (1) by Konrad Becker

Page 9 to 12 - Fighting molecules. *Towards an Asymmetric Psychic Warfare* by Ewen Chardronnet

INSERT Page 12 - Tactical Reality Dictionary (extracts) (2) by Konrad Becker

INSERT Page 17 to 18 - Injecting drugs : genesis of a tool by Nicolas Bonnet, Yves Edel and Lionel Sayag

Page 13 to 19 - The Fate of the Western Psychonaut by Michel Tibon-Cornillot (EHESS)

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