

A Biological Mapping to Culture: The Concepts of Culturome, Social Disease and Aesthetic Contagion

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Published in *Journal of Contemporary Thought* # 17. The Maharaja Sayajirao University of Baroda, India. Louisiana State University & Central Washington University USA. Pp. 153-172. ISSN 0971-4731.

KEY WORDS: cultural contagion, , aesthetics, autopoietic, biosemiotics, systemic, metaphorical mapping, cultural disease, culturome, epidemiology.

ABSTRACT

Metaphorical projections are heuristic tools that have accompanied the development of philosophical and scientific knowledge. A biological mapping to culture will allow us a perspective of the continuity encompassing cellular, pluricellular and social organisms and explore the applicability of the concepts of “contagion” and “cultural disease” to cultural studies. From this approach I will argue that cultural organisms are susceptible to contagious processes that not only are necessary for maintaining their stability but also may carry negative effects related to what can be defined as *cultural disease*. In these processes of contagion, aesthetics plays a crucial role due to its seduction and adhesive potential.

*I Introduction

In the first scene of Costa Gavras' political thriller "Z" (based upon Grigorios Lambrakis assassination in 1963), a military official uses an epidemiological metaphor to condemn and attack what he calls "ideological contagion" (referring to pacifism). Rosario Green, former Mexican Minister of Foreign Affairs, also spoke about the "risks of contagion" that could be induced among Arizona ranchers who hunt and shoot Mexican migrants around the US-Mexico border. Examples of this metaphorical use are common, (Hitler used it to refer to Jews as "infecting" German society with evils such as internationalism, pacifism, democracy, Christianity, and Marxism) but the question is whether these metaphors can have any value beyond this sometimes dangerous rhetorical utilisation or not. I will contend that this is, indeed, the case, and that applying the concepts of contagion and social disease to cultural studies with the necessary caution may offer promising analytical and heuristic results. Metaphorical projections are not only literary or rhetorical devices but, as Lakoff and Johnson (1980, 1999) have amply argued, they are basic components of understanding that have accompanied our everyday communication as well as philosophical and scientific development. Thus a careful metaphorical mapping from biological to cultural theory may shed light upon phenomena previously overlooked.

*II Culturomes

Diverging from dichotomic conceptions of Culture as opposed to Nature, we will explore the former as emerging directly from the latter by human mediation. In other words, we will understand culture not in the usual elitistic sense denoting familiarity with the Fine Arts but as a natural development in every human community throughout all regions and during all epochs.

Humans are basically culture-engendering creatures. We will encompass this broad sense of culture under the concept of “culturome” as coming forth from a biome and conditioned by it. A biome, as an ecological term, is defined in my Webster (1983) as a “complex of communities characterised by a distinctive type of vegetation and maintained under the climatic conditions of the region, as a desert.” Thus in cultural studies it may be useful to define the concept of “culturome” as a community or complex of communities characterised by distinctive types of habits and activities and maintained under particular conditions of semiotic and material production. A culturome, as a collective umwelt (in Jakob von Uexküll’s sense cf. 1982, 1992), ranges across various scales, from the dominant Western middle class bourgeoisie or Islamic patriarchalist societies to smaller scale Chicano groups, punk urban gangs, Amish villages and so forth. A culturome is a collective entity with a certain stability to reproduce itself through a significant range of time and enough adhesion and uniformity among its members to generate a sense of a common identity. The definition of those common identities is, also, a matter of discussion and negotiation, not established positive facts.

What is common to both biomes and culturomes is that we dwell in, feed from, depend on and act through them. If there is a relative continuity between Nature and Culture as many authors have argued from diverse perspectives (among them Jakob and Thure von Uexküll, Gregory Bateson, Ludwig von Bertalanffy, F.T. Cloak, Jesper Hoffmeyer and Claus Emmeche etc.) this continuity would allow us to project pertinent knowledge we have on biomes into culturomes. Disasters are possible not only in the former but in the latter as well, as has been bitterly illustrated by wars and other forms of violent and destructive collective episodes.

Humberto Maturana and Francisco Varela (201) propose the following definition: “By cultural behaviour we mean the transgenerational stability of behavioural patterns

ontogenetically acquired in the communicative dynamics of a social environment.” The key element defining culture for these authors is *stability*. Communication is a natural process of exchange with the environment among animal as well as human species.

For Hannah Arendt cultural habitats are a result of human artifice that is inherited from one generation to the next:

The work of our hands, as distinguished from the labour of our bodies --homo faber who makes and literally “works upon” as distinguished from the animal laborans which labours and “mixes with”-- fabricates the sheer unending variety of things whose sum total constitutes the human artifice [...] Their proper use does not cause them to disappear and they give the human artifice the stability and solidity without which it could not be relied to house the unstable and mortal creature which is man. (Arendt 136)

Here again is the idea of stability. Culture stabilises human life, endows intersubjectivity to our understanding of the world and literally houses human beings as a concrete mental-corporeal habitat. Arendt's three basic categories of “work”, “labour”, and “action” are consequently all inscribed within each *culturome* as it defines how, where, when, and who labours, works, acts, speaks, and lives. We produce and exchange verbal and non verbal actions as we produce and exchange commodities, work, and labour in the market by being continuously immersed in a process of metabolism and interaction with the material and cultural habitat. We thus depend on *culturomes* and *biomes* alike for the production and reproduction of our life.

Bourdieu's concept of *habitus* or disposition can be applied beyond his original restriction of the term to social class and taste to project it as a result emerging from these

cultural communities. In other words, we may have various culturomes characterised by distinctive types of habits and traditions maintained in certain social contexts all of which depend upon historical, geographical, economic and political conditions. These are transmitted through language, rituals, artefacts, and everyday basic exchanges and conventions in the manner of eating, sleeping, housing, working, acting, and interacting.

Gregory Bateson insisted on the importance of habit in learning processes by releasing part of our limited capacity of conscious attention to enable it for focussing upon more variable phenomena, and thus making the organism more capable to respond to sudden environmental change. He credits Samuel Butler for the insightful “hunch that something like 'habit' might be crucial in evolution” (*Steps* 258). Also Charles Sanders Peirce's recurrent idea that Nature has the tendency to take habits indicates that, as habitats engender habits, habits also engender habitats.

Culturomes, as habitats engendering habits, basically grow from biomes to house humans, but continue to be generated from and interact with one another through an ever increasing degree of complexity. Regardless of their relative size and amount of members, culturomes can be tracked across varying scales, epochs and sites, from Palaeolithic hordes and Babylonian, Chinese and Roman empires to more contemporary Tarahumaras in the Candameña Canyon, Harlem urban hip hop Rican gangs, Solidarnosc Union led by Lech Wales and Vaclav Havel in Gdansk, or Woodstock's baby boomer hippies. What characterises a culturome is that it is a conventionalised unit of survival and cohesion for its members.

No community lacks a culturome since it is basic for establishing a sense of order, for material and psychological subsistence, a locus for identity production and for dealing with the inevitable unpredictabilities of life. Culturomes must optimally convey collective and individual

health, which in Arendt's words involves the “stability and solidity” necessary for our balance, development, reproduction and interaction by providing common references for the intelligibility of the world, of ourselves, and of our near and distant neighbours. Above all, *culturomes* must supply flexible pathways linking individuals with their communities for the sake of the survival of both, individual and social bodies.

Stability, however, is not always a reliable symptom of health, particularly when it becomes inflexible and loses plasticity. There are stable pathological states in which we may clearly diagnose a case of endemic cultural disease due, precisely, to rigidity. While culture always depends on stability, there are instances in which established *culturomes* reproduce social diseases. These are priority cases that concern cultural pathology.

*III Cultural Contagion

European explorers and conquistadors of the fifteenth and sixteenth century could not foresee the epidemiological consequences of their expansion to the “new world”, affecting tenths of millions of natives who lacked immunity against European diseases reducing the indigenous population even in 95%, as in the case of Mexico between 1532 to 1605 (From a population of 16 800 000 to 1 075 000).¹

Contagion within the Inca and Aztec empires was, as we well know, not only viral but cultural, taking specifically two forms: catechisation and castilianization (from *castellano*, language of Castilla) . Amerindians were compelled to speak a new language and massively injected with Catholicism for generating antibodies against their original pagan beliefs. This cultural contagion was enforced throughout a great part of the continent radically changing

values and perceptions for all coming generations. If such extensive transformation was possible half a millennium ago, we can hardly imagine the potential of mass persuasion and cultural contagion enabled by contemporary media technology and the ongoing process of globalisation.

To understand the complexity of such far-reaching cultural contagion we must first define it as the process of transmission, reproduction and propagation of cultural practices such as habits, attitudes, values, emotion triggering devices, beliefs or modes of exchange and perception between a source and a target or host. Contagion occurs between *culturomes* as distinct cultural systems in which some elements of the source *culturome* are discharged upon, imitated by or reproduced within the host. Examples of cultural contagion are multiple, most remarkably the Anglophone rock & pop revolution from the sixties on (which was not only musical but implied ideological, ethical, economic and political aspects) hosted by the youth in the most diverse, distant and resisting *culturomes*, from West European to communist USSR and China even up to some sectors of Islamic fundamentalist countries.

The idea of cultural contagion is not new. It was explored at least since the early seventies by F.T. Cloak, developed by Richard Dawkins' "meme theory" and two decades later by Dan Sperber's epidemiology of mental representations.² Dawkins' meme hypothesis has been defended by Daniel Dennett as well as more recently by Aaron Lynch's "thought contagion" theory, Blackmore's meme imitation hypothesis and Aunger's state in a neural node hypothesis of an electric meme. The serious conceptual problems involved in the "meme" concept generated an aggressive immunity response in its field preventing it from developing into a more mature theory. I must consequently make explicit that my proposal of a biological mapping does not endorse the "meme" hypothesis for various reasons I cannot explain in detail without deviating from my purpose in this paper. Suffice it to say that: 1) while memetics

implies mind/body, meme/gene, mental/material dichotomies, what I here assume is the continuity of the culturome as a collective and natural development from the biome, and 2) while the memetics model takes the existence of entities such as “memes” literally, the one here presented is explicitly metaphorical, which does not mean that it is merely imaginary, since it obeys to the necessary systematicity and consistency required for any metaphorical mapping (Lakoff and Johnson 7-13). Moreover, 3) the “meme” concept is too simplistic, begs the question as to quite problematic “minimal units”, and reifies semiotic processes that are much better dealt with by theoretical instruments carefully elaborated by biosemiotics. A last observation is that significative differences may derive from whether we apply the genetic reproduction model or the immunological model, and the reasons for the use of one or the other should be sufficiently founded and explicitly discussed. Nevertheless, an unprejudiced attention to the idea of “social contagion” spreading within populations requires a model that could benefit from bio-replication theories

We can distinguish epidemic from endemic contagion, the former when this process is rapid, sudden and widespread involving a significant change of the previous state of the organism and the latter when it is relatively stable and keeps reproducing similar noxious patterns on the long term. The necessary condition for contagion from source to target is the latter’s receptors matching the source’s structure. To explore cultural contagion, virology seems as an adequate mapping for this process of transmission and matching. The HIV virus, for example, targets T4 lymphocyte cells but penetrates only on the surface of these cells through a molecule called CD4. These CD4 molecules are thus the matching receptors or gates through which this virus can penetrate and implant its message transforming the host cell’s genetic information. Other cells having CD4 molecules can also serve as recipients to this virus. In this

sense, the necessary condition for contagion is the matching between the infective agent and its receptor.

On the cultural level, to understand how a pretty dumb political candidate can manage to mobilize millions of potential voters to favour him with their vote, how a commodity such as a dark carbonated sweet drink has been achieving world-wide massive consumption during a century or how quite mediocre pop singers can sell millions of copies of musical recordings, this viral analogy is enlightening. The clue is the matching process that Aristotle understood so well in his Rhetoric when he wrote that “the theory of rhetoric is concerned not with what seems probable to a given individual like Socrates or Hippias, but with what seems probable to men of a given type” (Aristotle 1356b). Evidently, receptors like Socrates and Hippias are too rare to be useful when a quantitative consensus is required. The speaker must target instead the common denominator or “men of a given type”, namely the common majority type, to get desired results. The agent must consequently pattern its message to match and penetrate the most common available receptors and take advantage of their quantity. In this sense, a promise of perspicuity will never be as successful as a promise of happiness, since there are more receptors craving the latter than the former. Political and commercial marketing are always focussed upon the most common available dispositions or receptors’ configuration to ensure penetration and contagion. So cultural contagion first inquires about the most widespread “penetrable molecules” for its target, and then designs matching transmitters for these receptors. This strategy, erstwhile intuitively deployed, is rapidly acquiring greater sophistication by the use of market research and polls to detect receptors’ dispositions and to fashion corresponding transmitters.

Fabrication of messages with the calculated pattern to match receptors is a common practice in the media, politics and various areas of social exchange. This process is bi-

directional, as Marx acutely realised in the case of production which does not only create an object for the subject, but a subject for the object. The contagious agent not only fits its potential receptor, but the receptor is in turn changed and conformed to adapt to the product or agent, often with considerable efforts to match them. The most eloquent illustration of this process is the present cyber-epidemic, an adaptation that has been particularly difficult for the elderly but which has nonetheless prevailed as a professional requirement. This cyber epidemic would not, however, have spread so rapidly without the transformation of Windows software that made PC functions perceptible rather than purely intelligible, more visual than conceptual. Those of us who have worked on computers before the Microsoft revolution remember the inhospitable pitch black background with green letters and the complicated DOS protocols that contrast the present designers' "user friendly" aestheticised visual variety. This cyber-epidemic transformed lifestyles, language, social relations, modes of exchange and consumption, of leisure and work expenditure of time, of political, familial, economic, professional, didactic and even sexual practices, in short, all areas of *culturomes* that have been in contact with the Western *mega-culturome*.

*IV Aesthetic foci of contagion

Persuasion, which is another way of denoting "cultural contagion", can operate through both coercion and seduction. The difference between them is partly a matter of aesthetics, of how contagion is effected. Simply stated, coercion imposes contagion by sheer physical or mental force, while seduction does so by physical-mental aesthetic form. It is physical because it involves sensory stimuli and brain functioning, and it is mental because it involves ideas and

images,. In the Critique of Judgement §14, Kant emphasised the importance of form for aesthetics stating: “Here it is not what gratifies in sensation but merely what pleases by its form, that is the fundamental prerequisite for taste.” Roman Jakobson (218) also understood the aesthetic function of language as an emphasis on the message itself, namely on how it is transmitted stating “La visée (*Einstellung*) du message en tant que tel, l’accent mis sur le message pour son propre compte, est ce qui caractérise la fonction poétique du langage”. Formal properties (to which aestheticians like Roger Fry and Clive Bell attributed the distinctive character of aesthetics) are a determining factor or a necessary condition for cultural contagion, albeit not sufficient. I am far from arguing for a purely formalist approach to aesthetics by mentioning these authors. My point is instead that form constitutes a significant (not the only) part of aesthetic communication, as it pertains to the configuration of this transmitter-receptor relation enabling them to match one another. As mentioned above, patterns in transmitters and available fitting receptors are both indispensable, so the process of calculated contagion often starts by detecting dispositions and fabricating a matching form for efficient dissemination.

In the cultural epidemic of castilianization and Christianisation throughout Mesoamerica mentioned above, contagion was implemented by these two mechanisms: coercion and seduction. The former was simply deployed by sheer force, whereas aesthetics played a salient role in the latter. Considering the degree of sophistication the Aztec culture had achieved, Christianisation would not have been as contagious without the particular patterns by which the religious message was spread, namely aesthetic and mythological configurations, as well as the corresponding set of matching receptors within the indigenous population. According to the Aztec mythology, the god Quetzalcóatl offered his blood in sacrifice by piercing his penis with a cactus' thorn to help create the Fifth Sun for the present humankind. Consequently, the Christian

idea of a thorn-crowned Jesus who sacrificed himself for the redemption of humankind from Original Sin, seemed remarkably familiar and deeply poignant to the Aztecs. The Náhuatl or Aztec word macehualli denoting the common man or field labourer, means “worthy” or “deserving” by having received life by their god's sacrifice, so important was this moving aesthetic-mythological image in the Aztec culture. The symbolism of bread and wine, as Jesus' flesh and blood during Mass, was a constant reminder of their own former indigenous corn and blood idols. Moreover, the image of Jesus in a society of dark beardless men, closely resembled their own blond bearded god Quetzalcóatl. We may add to this list the belief on Quetzalcóatl's return from the East that perfectly matched the Spanish conquistador Hernán Cortés' appearance at the Gulf of Mexico, an equally messianic image linked to the idea of Jesus/Quetzalcóatl resurrection. All these elements from the then defeated Aztec imperial culture, plus the evidence of the Spaniards' military and technical dominance and the unequivocally powerful visual effect of Catholic aesthetics, disposed the Aztecs towards religious contagion.

This case dramatically illustrates how intimate and determinant is the coupling between the source's structure and the target's receptors or between aesthetic patterns (architectural, literary, in painting and sculpture as well as in music and ritual, no less than technological and, in this particular case, also mythological) and recipients' dispositions in every case of contagion. In Mesoamerican cultural epidemics, what ignited and disseminated contagion was aesthetic allure through formal patterns that accurately matched the target's dispositions.

Aesthetic foci trigger contagion among susceptible individuals as the sweetness detected by the membrane of bacterium provoke in chemotaxis a dynamical correlation between sensory and motor surfaces of the cell activating the pseudopodia to surround and digest these sweet

substances. In a similar manner, aesthetic foci capture and direct the hosts' attention to particular messages and activate them to take certain decisions and attach value to specific aspects of reality rather than others.³ Patterns with more appealing aesthetic configurations for the host are more likely to generate contagion by activating attention and sympathetic identification. The sexy, the flashy, the youthful, the lavish, and the successful have been the favourite aesthetic foci used and reused by the media to spread commodities' promotion and their contagion because they seem to match the most widespread dispositions, namely Aristotle's "what seems probable to men of a given type" and Ortega y Gasset's "*hombre-masa*", the mass specimen lacking singularity.

Aesthetic foci of contagion disseminate by subjectivation within a social unit by direct transmission or unconscious mimesis. Obvious illustrations of aesthetic epidemics are fashion, advertisement and entertainment industries. We can understand these epidemic processes as triggered by a variety of patterns which can be both benign nourishing the host as in what is known as 'aesthetic experience', or malign when it is deleterious. (Cf. Mandoki "Aesthetic Contagion")

As viruses cannot multiply outside living host cells, aesthetic foci cannot exist without a subject or host who sensitively appraises and responds to them *qua* aesthetic. In other words, the aesthetic depends on the receptive disposition of a subject as a virus depends on the host cell for its reproduction. An artwork requires the mental, corporeal and nervous build-up of the subject to produce an aesthetic effect in the same sense a virus utilises the cell's components for its metabolism and reproduction. As there are innocuous viruses such as the common cold or chicken pox, others like rabies and AIDS may be lethal. Aesthetics foci also can be nourishing or deleterious, innocuous or malignant, but even if they cannot kill a social organism by

themselves, they can impel it to attack itself. The paradigmatic illustration of lethal aesthetic contagion was Nazi propaganda leading Germany as a social body to deploy fanaticism, blind self-sacrifice, massive deportation, war and genocide, all of which would not have taken grip of that culturome without aesthetic transmitters. (Cf. Mandoki “Terror”)

*V Cultural disease

Medical pathology deals with first and second-order autopoietic unities or systems (respectively the live cell and metacellular or pluricellular organisms) according to Maturana & Varela's (78, 87) distinction. Third order unities (181) for these authors are social phenomena, from social insects like termites, wasps, ants, and bees to primates. What we will attempt here is a cultural pathology involving third order unities in human primates deriving into cultural systems. Our long term purpose is to inquire whether immunology could be extended beyond first and second order unities -proper to pathobiology- to these third order unities or culturomes. We will consequently examine malignant cultural epidemics and endemics in terms of the foci that ignite them and the susceptibilities that breed them. The problem we must ultimately face is whether malignant epidemics in a social body can be adequately defined, diagnosed, relieved, and prevented. The challenge: to attain results in third order unities by cultural studies akin to those spectacularly achieved by medicine in second order unities. A challenge, if not a dream.

Medical sciences refer to epidemiology strictly as a distribution index of a disease among a given population to detect risk factors and not only in person to person contagion (also used in cases of non transmissible diseases such as osteoporosis or cancer). The fact that epidemiology deals with disease, rather than health, is presupposed, as the latter is simply the corresponding

opposite to the distribution of a particular disease. “Cultural epidemiology”, on the other hand, seems a tautological term without a concept of “cultural pathology”, since culture is always already epidemiological; namely, widely distributed in a given population regardless of its relative size. In other words, what we can understand as cultural must invariably be epidemiological and the problem shifts from tracing the epidemic in culture to elucidating the processes of cultural contagion and detecting its pathoformic manifestations in a given *culturome*.

While ailments in second order units or pluricellular individual organisms are evident by pain and distress, their manifestation in collective organisms or third order units is generally interpreted not as a collective disease but as individual malfunctioning under a mechanistic paradigm. Thus Foucault (Surveiller) has identified the processes by which conflictive parts are simply set aside in penitentiary or medical institutions. Others, like the poor and unemployed, are personally blamed for their situation and made to feel socially inept. That these are symptoms of a wider scope situation involving not individual but collective disease in cases of delinquency, marginality, widespread depression and socially induced mental derangement is generally overlooked.

Not every social contact is contagious, as not every case of contagion is malignant, nor every infection epidemic. Contagion is a value-free term, whether it's someone's laughter or yawning, a musical melody or an ideology. In general terms, we could say that DNA transfer in first order unities, genetic transmission in second order individuals, and cultural transmission by the educational system in third order unities are instances of this value-free sense of contagion. Non-pathogenic contagion maintains proper developmental processes of a given society and

enriches it. Cultural disease and pathogenic contagion, on the other hand, hinder such process and may paralyse and deteriorate a given culturome.

As in second order units where disease can be diagnosed by particular symptoms, at the level of third order unities cultural disease is also manifest ex post facto through various symptoms. In both cases, pain is usually involved. Among social pathogenic symptoms in contemporary urban and industrialised culturomes we can consider the exponential rise of drug addiction and crime, global migration of economic refugees (plus escalation of residents' hostility and racism), recurring violence in domestic and educational institutions, prevailing social and professional apathy among large sectors of society, and above all, resultant penury conditions of the majority of the world's population. These are not solely moral problems in the same sense that AIDS is not a punishment for moral depravation. They are also not purely economic problems; to believe so is to conflate the effect with the cause, since economy is only one component among others in a culturome which involves a manifold of social activities. Drug trafficking and crime are not merely a matter of disobedience to the judicial law as cancer is not only disobedience to the law of cell reproduction: they are specific symptoms of cultural disease whose pathogenic sources require elucidation.

Georges Canguilhem (174, 177) denies that any such thing as an objective pathology can exist as it is incorrect to medically speak of diseased organs. For him, pathology is basically of a subjective origin if understood as the reduction of vital possibilities tolerated by each live being in particular. By this approach, cultural pathology should no longer be seen as an ontological representation of evil that penetrates the social body, but instead as the inner perturbation of balance within the body itself- (Canguilhem 18). For this reason, illegal migration, delinquency,

and violence in culturomes are not foreign or alien elements that penetrate the social body from the outside but pathomorphic processes generated within the same third order organism.

Terrorism, civil war, and genocide are comparable in the third order unities to advanced cancer and AIDS in second order where the organism fatally attacks itself at the stage of metastasis. In auto immune diseases of both second and third order unities, the process of differentiation between self and non-self is defective by detecting its own substances (or members of its own community) as “non-self” or “aliens” and causing tissue destruction and malfunction, or violence and social hostility. Remarkably, the term 'tolerance' applies to both medical and social domains as the key cause of this deficiency.

In medical pathobiology, data are analysed in terms of source of the causative agent, mode of transmission, risk factors and so forth in order to explain why do certain people acquire a disease while others do not. It also utilises the indispensable distinction between malignant and benign infections (such as vaccines to create antibodies) or between degrees of malignancy (as in tumours). In cultural pathology, we must also deal with cases of malignancy, even if it entails a much greater complexity than in medical sciences because its 'facts' or its causal links are not always clearly empirical, even if the symptoms are. How can we nonetheless trace symptoms of cultural malignant epidemics without the risk of censorship, witch hunts and infringements upon civil and individual rights?

As in the case of tumours, cultural malignancy can be a matter of life and death. Cultural factors that inhibit the organism's development, well being and integration are malignant. The question here, as in medical sciences, is clear. The problem begins with the definition and diagnosis of social illnesses, some of which remain endemic as the social unity gets habituated to them and ends up conceiving them as natural. An unfortunate illustration of this case is people

that have become accustomed to the fact and take it as a natural that African populations periodically die of famine or that in any city there must be a number of homeless and indigent people. This situation is equivalent to social leprosy as one part of the social body loses sensibility of other members of the same organism to the degree that it can injure itself without noticing.

Individuals can be relatively healthy, even in precarious material conditions, whereas social bodies, even in opulent conditions, are often, if not always, impaired: It is thus more difficult to find a healthy unit of the third order than a healthy second order unit. The reason for this radical difference between both units is that sick and aged second order individuals perish and are renewed in each generation, whereas in culturomes, diseased organs which may be crippling and degenerative can remain throughout various generations by open or covert duress and by mere rigidisation of habit. Thus sickness conditions such as inflexible social institutions, recurrent processes that sever individuals from their community, hypermetabolism of certain units at the expense of the hypometabolism of others, obstruction of communication channels, overstress and exploitation of particular members or social groups by others can linger for very long periods of time within culturomes.

Social problems arise as specific symptoms indicating the presence of cultural disease. Institutionalised death penalty, civil 'weaponization' (as the alarming number of 80 million gun owners in the USA) and penury conditions for whole populations are symptoms of endemic cultural diseases. As I mentioned before, by endemic cultural disease we designate a syndrome that is persistent, conventionalised and collective, not random and individual.

Excessive prioritisation of work at the expense of family life by the glamorisation of success, as well as what Bateson (Steps, A Sacred) called "schismogenesis" processes of the

unit's severance from and conflict with its context developing into bursts of violence, or more specifically what Bateson defined as the "double bind" survival dilemma within schizophrenics' families linger as undetected endemic diseases in this smaller scale familial third order units.

Automobiles have become an endemic cultural disease during the 20th century depleting the quality of life not only in urban centres but in global proportions. These artefacts have dominated urban planning, architecture, economy, time expenditure, and working hours; they have demanded from billions of people the inversion of months or years of labour for their sake, and millions have died as a result of these artefacts' mechanics and speed imposition. Such automobile-addiction syndrome has been escalating to the degree that car buyers have no longer been satisfied with a compact unit per family but now crave one unit per member, in addition to preferring massive polluting suburban semi-trucks to usually transport a single person. The failure of the Kyoto Protocol given the reluctance of industrialised countries to reduce emissions of carbon dioxide, methane and nitrous oxide in the most opulent and polluting countries of the world and to develop alternative technologies poignantly illustrates a case of endemic cultural disease.

Societies have created a variety of mechanisms for dealing with what in each period was believed to be a social disease, from the Inquisition and the penitentiary system to the Gulag, concentration and extermination camps. These institutions should alert us about the dangers implicit in the interpretation of cultural disease so crudely taught by totalitarian secret police apparati (Gestapo, SS, Stasi, KGB) and their social, military, and bureaucratic complicity. For this reason alone, if not for its multiple other consequences, a serious theoretical effort is necessary for establishing a scientific basis to examine and understand well the concept of cultural disease.

Regardless of these potential interpretative dangers, it is possible to clearly identify and diagnose endemic and epidemic cultural disease in every case where social conventions repeatedly generate symptoms of pain, paralysis, dullness, social severance, affliction, deterioration, abuse and premature death in any given part of the community that inhabits it. This is the basis for grounding all and every cultural diagnosis and for establishing an objective differentiation between social sickness and health. By this criterion we can limit the degree by which we may legitimately project second order units' medical paradigms to third order units in any scale: familiar, educational, professional, communal, national and global .

Hopefully we may sometime shift from the present quasi-magical paradigm that sees politicians as a kind of third order shamans (who are supposed to cure the social body from its ailments by rhetorical incantations and populist moves), to more scientific approaches for social problems if we may ever overcome the prevalent voluntaristic superficial measures. Although not in these precise terms but along similar lines, Marx and Engels discerned that deeper structural pathogenic interconnections generated social conflict and disease in the capitalist system, from the psychology of alienation and commodities' fetishism to the ideological disguise of plus value as legitimate profit, up to more complex political and economic schismogenic mechanisms in endemic class struggle. Through Foucault's eyes (Microphysics, Surveiller), we also came to understand that power is not merely a downward vector invested exclusively upon and descending from political leaders, but is wrought out from below through multiple 'microphysical' processes. This paradigmatic shift is all the more urgent in the ongoing process of globalisation where the complexity of the third order units increases exponentially.

*VI Towards cultural immunology

Can a biological mapping help trace which exactly are the pathological elements that breed cultural disease, as bacteria and virus for medical disease? And if this would indeed be the case, would aesthetic patterns that enable pathological contagion be detected and used as warning, identifying devices? Consider neutral spectators contemplating Albert Speer's aesthetics of Nazism as a monumental mise en scène of light and sound (similar to the World Cup or the Olympics' inauguration ceremonies) or Leni Riefenstahl's films Victory of Faith (1934), Triumph of the Will (1935), and Olympia (1938). Would they be alerted of malignancy? Wagner's music is magnificent, sturmabteilung's black outfits are fashionable today, Hitler's pompous histrionic talent would have made him a wonderful telenovela antagonist or a circus white clown, and Speer's projects for an imperial architecture were as imposing as Roman, Pharaonic, Toltec or Chinese monumental constructions. Yet these signifiers become malignant when aimed at and incrustated precisely upon its sore, most feeble cultural susceptibilities among which Germans' resentment after their defeat in WWI, the country's economical and laboral situation due to the Versailles Treaty, plus endemic anti-Semitism, racial hatred and the xenophobic/chauvinist patterns during several generations made perfect matching receptors.

Get Hitler out of the circus and be taken seriously as Chancellor or Führer, detach the swastika from its original Gnostic symbolism and convert it into a deadly mechanic hatchet, take Wagner's music out of the concert hall and use it for German self-aggrandisement and accompanying the army's goose-step or the NSDAP assemblies; add it all up and we have a case of lethal infection. The perniciousness of nazi aesthetics was systemic, not purely formal, but there is something about its pattern that can warn recipients about its danger. Their malignancy, as in the HIV virus, depended not on their syntactic dimension but on its semantics of racial

hatred and delirious greed for power and on its violent pragmatics. Nonetheless, thanks to its aesthetic syntax it became so rapidly infectious among the masses.⁴

Aesthetic foci are necessary but not sufficient conditions for infection, as not every German citizen converted to nazi ideology despite having been exposed to these same foci of contagion. Susceptibilities also played a determinant role in this process. As in the example of chemotaxis where sweetness activates a bacterium's pseudopodia, a dose of sugar may immediately invigorate a debilitated or hungry person as it may instantly kill another with a diabetic condition. What determines toxicity of a disturbing agent is the disturbed agent's condition, its susceptibilities, dispositions and immunities. As Varela and Maturana claim, "the changes that result from the interaction between the living being and its environment are brought about by the disturbing agent but determined by the structure of the disturbed system." (96 emphasis in the original text). For cultural dissemination, it is essential that an organic or structural coupling between the agents' patterns and the hosts' dispositions be accomplished. Contagion is therefore the result of an organic coupling between disturbing agents' transmitters and receptors' dispositions.

For third order units history is, or must be, like the record of antigens kept by the antibodies' memory within the immunological system in second order organisms. Unfortunately, this cultural memory has been very far from resembling its biological effectiveness, as the most vicious bursts of Neo-nazism today still occur in Germany which hosts more than 200 groups of this type. As the mind and the immunological system are both memory based recognition devices directed to adaptation and survival of the individual (Edelman, Ch. 8), so political and educational institutions are supposed to be for third order or the culturome's larger scale.

Teen sociopaths who attacked their school-mates in American high schools during the nineties were not simply cases of personal evil. These cases were a symptom of endemic cultural pathologies in third order units by institutional tolerance of systematic harassing or bullying fellow students and their stigmatisation for not fitting a prevalent frame of values that glamorises sports' success, extroverted personalities or specific anatomic traits. Ivan Illich once said that the educational institution is the reproductive system of society; so these threatening but relatively untreated tumours have been lingering in this apparatus for a very long time, and are situated precisely on a very menacing spot..

Whereas cultural susceptibilities may pass unnoticed and be taken as weak empirical evidence, symptoms of disease are salient in all cases of clotting, agglomeration, stiffness, intolerance, and undue stress upon certain parts of the social body. Monstrosity, which is both an aesthetic and a medical category, can be reliably trusted as a standard to judge cultural malignancy. Any inordinate amassing be it economic, political, societal or mental (as in pecuniary hoarding, political totalitarianism, social urban crowding, and brain-washing), the generation of pain at any level or abuse of some sectors of the population, all attest disease at third order units in various degrees of malignancy (as tumoration in second order).

Without aesthetic foci (which can be imaginary as a promised paradise to islamist bombers and their aesthetisation of death, or real as a promised coverage on CNN, BBC, Al Jazeera and global media) open sores in susceptibilities enfeebled by resentment, isolation, humiliation and deprivation can remain dormant, be treated in favour of life and perhaps even heal by strengthening meaningful social ties and an improvement of life conditions. As oncologists do not treat metastasic malignant melanoma by burning its surface but instead deploy a systemic approach over the whole body strengthening its immunological response, so

similarly malignant third order unit diseases require more than ad hoc mechanisms like penitentiaries or mental asylums: an equally systemic and immunological approach is required.

*VII Conclusions

Contagion in any given culturome is transmitted in patterns among which those that appear to have greater aesthetic appeal to their recipients have a greater potential of contagion due to their capacity to trigger emotional responses. If and when these patterns are coupled by a corresponding disposition, we have a case of contagion. Cultural contagion can be both wholesome and impairing. Good quality arts, for example, take care of the former. Of the latter, however and very unfortunately, our knowledge is too precarious, but sore and resentful dispositions, like raw flesh, open themselves particularly to aesthetic patterns that induce destructive activity. Yet banning these foci to prevent contagion in a culturome (as Hitler banned what he called “degenerate art”) equals to exterminating all micro organisms such as bacteria, viruses or fungi all of which are necessary for the biome. We can, however, explore cases of immunity, particularly two contrasting instances: on one hand the exemplar case of German citizens who not only resisted contagion of the nazi epidemic but even risked their lives protecting others. On the other hand, a kind of malignant “immunity” more akin to leprosy which blocks sensibility towards others, as those who were totally unresponsive to extreme human pain.

Returning to the case of the conquest of Tenochtitlan, capital of the Aztec empire, its epidemiological consequences would not have been so devastating had the culturome exported

and transplanted by the Spanish into Mesoamerica been less aggressive, or had the receptors been less susceptible.⁵ Apart from deficient immunity for lack of previous contact with European population, we may add distressed life conditions and malnutrition plus biomatic or ecological conditions in the introduction of bovine herds that destroyed the cornfields, basic source of nourishment for the Amerindians. Half a millennium later and despite numerous reforms that functioned as weak temporary analgesics, injuries caused by these biomatic and culturomatic displacements and transplantations have not been fully relieved.

Strategies for coping with cultural diseases are varied and complex but in all cases must deal with both, the disturbed organisms in the prevention of enfeebling susceptibilities and with disturbing agents aesthetically patterned to replicate themselves and manipulate recipients. Visuality has today become the main and most powerful means of persuasion given the global omnipresence of both televised and cyberised media. Thus the role of these mediatic visual transmitters cannot be overemphasised in their capacity for contagion, if only for the fact that something of the sort of a “scopic pulsion” exists, as Roman Gubern (10) named this “irresistible appetite of seeing that is so characteristic of human intelligence, and that, as every biological force, would be contemplated with suspicion by all religious rigorisms, as illustrated in the biblical punishment upon Lot’s wife.”. If a melody can be contagious, so can a taste or a smell, and particularly a visual image. During the 20th century we witnessed the proliferation of visual images as never before in the whole history of humankind, from da Vinci’s infinitely quoted and replicated Mona Lisa or Marilyn Monroe’s pouting lips and flying skirt, to Che Guevara’s face iconised by Alberto Korda’s lens and Pope John Paul’s massively televised image. What remains to be understood, however, are the mechanisms and qualities by which certain cultural

artefacts adhere and disseminate while others do not, namely their different contagion potential and their respective cultural effects

I hope to have sufficiently pointed at the fecund heuristic possibilities for cultural theory of metaphorical projections from natural sciences. These projections are a valuable conceptual tool for constructing explanatory models in this field as long as we do not confuse the literal with the metaphorical (i.e. the conflation of words with things).

Chemistry made a giant leap when it was able to tend a solid bridge towards the more developed science of physics and understand the more detailed atomic and molecular composition of chemical elements, as Avogadro's physical chemistry. So did biology when bridging with chemistry through biochemistry and molecular biology, particularly with James Watson and Francis Crick's model of the double helix DNA configuration in 1953. I am convinced that cultural studies will profit no less by bridging to biological inquiries in medical and ecological theory. This paper may hopefully be a step in this direction.

*Notes

1. See Bora & Cook (5) cited in Semo (29).

2 I discussed Sperber's attempt to develop an epidemiological approach to culture focused upon the concept of "mental representations"; which radically differs from the one here

elaborated since we are not dealing with purely mental nor representational phenomena. (Cf. Mandoki A Host)

3 This mechanism reminds how HIV incorporates its genes into the genetic material of its host cell and orders the synthesis of specific types of structural or enzymatic proteins that necessary for its reproduction.

4 An intimidating process for which Lynch (Thought Contagion) uses the term of “adversative”.

5 Juan de Torquemada, the Inquisitor, calculated that a mysterious disease which the Mesoamerican Indians called "matlazáhuatl" killed 800 000 in 1545 and more than 2 000 000 in 1576. For Fray Toribio de Benavente and Fray Motolinía there were 10 "plagues" that reduced indigenous population: 1) diseases, 2) deaths in the process of conquest, 3) famines after the destruction of Tenochtitlan, 4) abuse and exploitation 5) excessive payment under duress, 6) unhealthy and intensive work in the mines, 7) forced labour for building Mexico City, 8) slavery, 9) mistreatment in agriculture and mining, 10) the utilisation of Indians in Spaniards' conflicts. (Semo 33).