

Social Systems Programming:

Behavioral and Emotional Mechanisms Co-opted for Social Control

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Abstract: Social systems can be defined as autopoietic networks of distinctions and rules that specify which actions should be performed under which conditions. Social systems have an enormous power over human individuals, as they can “program” them to sacrifice resources, happiness, loved ones and even themselves to the perpetuation of the system—as exemplified by religious celibacy, honor killings and suicide bombings. Such overriding of the biological instincts of survival and procreation demands powerful control mechanisms. The present paper surveys the most important neural, behavioral and emotional mechanisms that have been co-opted for social control. Basic conditioning happens through rewarding or reinforcement of socially sanctioned actions. Its power is extended by the conformist transmission of narratives that promise as yet virtual rewards. Deviation from the norms is suppressed through negative emotions: fear of punishment and ostracism, guilt about wrongful thoughts or actions, shame about personal deficiencies, and disgust for pollutions of the “pure” social order. Insecurity, cognitive dissonance and jostling for status in social hierarchies make individuals particularly susceptible to avoid such negative reinforcements. Through these suppressive mechanisms, social systems commonly impede individual emancipation, self-actualization and societal progress.

Introduction

Social systems, such as nations, organizations and religions, exert an immense power on the behavior of the individuals that participate in them. Most of the actions we perform on any given day are either directly prescribed by social systems, or largely constrained, inspired or sanctioned by them. Our beliefs, thoughts and emotions are to an important extent determined by the norms, culture and morals that we acquired via processes of education, socialization and communication. These norms, once assimilated by the individual (Luhmann 1995), powerfully control the behavior of the people that participate in the social system, up to the point that they are willing to kill others or themselves in order to uphold these norms—as illustrated most poignantly by the phenomenon of suicide terrorism (Kruglanski, Chen, Dechesne, Fishman, & Orehek, 2009).

Few people dare to question such socially imposed rules. Even fewer people are aware that these rules are the product of a to some degree arbitrary process of social construction (Berger & Luckmann, 1966), which reduces reality to a limited system of selective categories and associated behaviors. In order to increase that awareness, and thus empower people to ignore or change the rules when necessary, we need to investigate how social systems function at the most fundamental level. In particular, we must examine their power to “program” individuals into blindly obeying their rules.

Social systems can be understood as autopoietic networks of distinctions and rules that govern the interactions between individuals—as investigated further in a companion paper (Heylighen, Lenartowicz, Kingsbury, Harmsen, & Beigi, 2017) inspired by the social systems theories of Luhmann (1986, 1995), and Parsons (1991). The distinctions structure reality into a number of socially sanctioned categories or conditions, while ignoring phenomena that fall outside these categories. The rules specify how individuals should act under the thus specified conditions. Thus, a social system can be modelled as a network of condition-action rules that directs the behavior of individual agents. These rules have developed through the differential reinforcement of certain types of social actions, and the suppression of others. The process that stabilizes certain rules but not others is a form of distributed self-organization in which the distinctions and actions made by different individuals adapt the one to the other, until they form a closed system of coordinated, mutually aligned symbols, concepts and rules (Fay, Garrod, Roberts, & Swoboda, 2010; Garrod & Doherty, 1994; Heylighen, 2013).

This means that the actions or communications observing these rules engender actions that themselves observe these same rules. In other words, the system of social actions or communications perpetually reinforces and reproduces itself. It is closed in the sense that it does not generate actions following rules that are not part of the system; it is self-maintaining in the sense that all actions obeying rules that are defining parts of the system are eventually produced again (Dittrich & Winter, 2008). This property of recursive self-production is known as *autopoiesis* (Maturana & Varela, 1980; Luhmann, 1986; Mingers, 1994). It turns the social system into an autonomous, organism-like agent, with its own identity that separates it from its environment through some symbolic boundary. This identity or “self” is preserved by the processes taking place inside the system. Through interactions, the system is structurally coupled with its outside or “non-self”. The “non-self” influences that endanger the system’s autopoiesis are interpreted as perturbations that must be compensated or counteracted, so as to ensure the continuing survival of the system (Maturana & Varela, 1980,).

Such self-perpetuating identity is an *emergent* property of the system, i.e. a property that cannot be reduced to the properties of the system’s components (interactions between individuals), but that arises from the way these components are organized into a whole. This emergent constraint now to some degree prescribes the behavior of the components, through a mechanism known as *downward causation* (Campbell, 1974). A simple example of such an emergent (but not necessarily social) system is a language: a collection of distinctions, words and grammatical rules that tells individuals how they should formulate their communications. This system has self-organized out of

distributed interactions (Heylighen, 2013; Steels, 1998), with the result that no individual human has the power to change its rules or to ignore its prescriptions.

From this perspective, the human beings who participate in autopoietic social systems are merely a resource exploited by the system for its own perpetuation (Lenartowicz, 2017; Luhmann, 1986). While the system needs these individuals to continue performing the social actions that constitute its identity, it does not a priori care for their well-being. Therefore, a social system in some sense behaves like a parasite (Cullen, 1999), extracting resources (social activities) from these individuals without necessarily returning the favor. Of course, social systems also bring benefits to the people whose actions they direct. In general, the relation between the two types of autopoietic agents, human individuals and social systems, is one of co-evolution, mutual adaptation or *symbiosis*, where the one to some degree benefits from the other (Heylighen et al., 2017). For example, individuals profit from social systems because the latter typically help them to coordinate their actions and to prevent free riding and within-group conflicts (Campbell, 1991).

These benefits of social systems have been the main focus of systems research up till now, producing a huge literature on e.g. the evolution of cooperation or the emergence of institutions. As these benefits are well known, we are not going to revisit them here, but rather focus on the darker side of social systems, which has been much more neglected in the literature. We wish to examine the cases where the demands of the social system are truly parasitic, sacrificing human life and happiness for the mere perpetuation of the system. Examples of such individually detrimental actions mobilized by social systems are:

- offerings of human life, animals or other precious resources to the divinities that symbolize the social order,
- suicide missions in war (e.g. kamikazes) and suicide terrorism,
- socially induced individual suicides (e.g. seppuku or hara-kiri),
- honor killings in which a member of the group is murdered for transgressing social norms,
- killing of people who have abandoned their religion or other ideology,
- harmful ways of treating one's body (e.g. self-flagellation, genital mutilation, unnatural beauty standards like artificially induced long necks or small feet),
- puritanical suppression of sexual enjoyment,
- imposed celibacy,
- immense projects (e.g. pyramids, standing stones, temples) that consume scarce human resources just to reinforce the symbolic social order (Campbell, 1991),
- exhaustion of scarce natural resources for the mere perpetuation of the economic system.

The crucial question here is how a living organism, the human being, can be made to act so blatantly against its own interests and desires—and even against its most fundamental biological instincts of survival and procreation, as in the cases of suicide missions, honor killings of one's own children, or religious celibacy. The analogy with parasitism is enlightening here. Biological evolution presents plenty of cases where parasites have learned to co-opt pre-existing behavioral

mechanisms in their host so that it would put its resources into serving the parasite rather than itself (Poulin, 2010). For example, viruses have learned to use the copying mechanisms of the cells they invade to have them multiply their own DNA rather than the cells' DNA, potentially killing the host in the process. The lancet liver fluke, *Dicrocoelium dendriticum*, manipulates an ant's brain to make it climb to the top of a blade of grass, where it is eventually eaten by cattle, thus killing the ant, but providing the parasite with another host in which it can grow. The rabies virus incites its host to become overly aggressive and bite other animals, thus putting the host's life in danger while transmitting the virus.

As humans in the social system must adopt behaviours, rules and regulations that often run counter to their basic instincts, social systems need powerful mechanisms to ensure that individuals are not tempted to deviate from their norms, and thus breach the symbolic boundary erected by the system to keep non-conforming behaviors, thoughts, and individuals out. In the present paper, we investigate a range of neural, emotional and structural mechanisms that social systems have co-opted to make people act in the interest of social systems' perpetuation, while overriding their individual interests. Reinforcement is a very simple and general mechanism to condition behavior and shape neural connections. Emotions are more complex mental mechanisms evolved to help the organism cope with specific types of threats and opportunities. Both reinforcement and emotions have an immediate and powerful effect on attitudes and behavior that is difficult to override through rational reflection. Therefore, social systems have learned to harness such instinctive reactions for controlling human behavior.

The explanation of how autopoietic networks of distinctions and rules could have “learned” to exploit such feelings is evolutionary: from the endless variations of distinctions, rules and networks that appeared during human socio-cultural evolution, the ones most successful at persisting and spreading were those that made the best use of the instinctual mechanisms already present in the human brain. This is similar to how parasites evolved to better exploit their host's behavioral mechanisms (Poulin, 2010), or how languages evolved to be more easily understood and produced by human brains, ears and vocal chords.

For example, the instinctive reaction of disgust tends to be triggered by signs of disease, such as physical deformities (Kelly, 2011). This makes it easy to evolve a social rule according to which people should recoil from certain outsiders, such as people from another race, by attracting the attention to their physically distinct characteristics—such as a different skin color. In this way, the emotion of disgust is co-opted by the social system to exclude “non-self”, i.e. people or behaviors that fall outside its boundary. However, note that disgust and other emotions are by nature plastic and can be associated (or not associated) with a wide variety of phenomena. Therefore, attitudes like racism, xenophobia or puritanism are not inborn as such. Yet, they can easily be evoked by social systems that categorize particular “abnormal” conditions as targets for disgust, fear or shame.

Before we examine how social systems have co-opted instinctive reactions, we need to go into further detail about the peculiar powers they have over human individuals, affecting their beliefs, actions, and even their deaths.

The power of social systems

Social systems—in our conception as autopoietic networks of rule-governed social actions (Heylighen et al., 2017)—presumably developed along with the first agricultural civilizations. These societies were characterized by permanent settlements, the exploitation of land, and the division of labor. That made individuals strongly dependent on the social system at large for the provision of food, housing and other resources, thus requiring a system of rules to coordinate activities.

In some of the earlier hunter-gatherer bands, humans were nomadic and relatively self-sufficient. Thus, dissenting individuals or small groups could easily leave the band, and more or less easily join or form another band. That produced a loose, flexible and egalitarian social organization, in which coordination happened informally through discussion, mutual help and collaborative action. Without well-defined authority, formal rules could not be imposed, and spontaneous, playful, uninhibited behavior was the norm (Gray, 2009; Woodburn, 1998). The only constraint was that individuals who bully, hurt, or take advantage of others would be punished through a collective intervention by the group—thus ensuring that no power relations arise (Boehm, 2001). Such flexible, informal relationships and individual freedom seem to have been the default condition for most of human existence. These first human groupings were “social” in the sense of forming a cooperative community. But even though there was some communicative closure, the social apparently was not yet consolidated into an autopoietic system governed by formal rules, and defined by strict boundaries. As Narvaez (2014) puts it:

“Despite physical hardship, on average [small-band hunter-gatherer] societies live peacefully and happily in a companionship culture of shared activities with a premium on autonomy (i.e., no one is coerced to do anything, not even children, except not hurt others). The individual exists in a cooperative web of nurturing and egalitarian relationships within the natural world; all lifeforms fall into the moral universe of these communities.”

Given a continuous evolution from smaller, simpler groupings to more complex ones, the line demarcating hunter-gatherer bands from autopoietic social systems is of course not clear-cut. For example, as Apicella et al. have noted (2012), some hunter-gatherers such as the Hadza, have been already reliant upon social networks with structural regularities and properties reminiscent of more modern societies. Although “age and sex similarity do not predict cooperative groupings” (Apicella et al. 2012, 500), other factors such as social distance, genetic relatedness and physical proximity correlated with the propensity for collaboration.

In contrast to small-band hunter-gatherers, agricultural civilizations typically set themselves apart from nature and from other social systems, declaring everything outside their boundary fair game for exploitation. They exhibit a rigid hierarchical organization with well-defined roles, rights and obligations for the different social classes, age groups and genders. This is upheld by a complex symbolic order with various authorities and divinities that need to be paid homage to via offerings and rituals, and a variety of prescriptions and taboos (Campbell, 1991).

In this context, being a dissident who flouts the rules is dangerous: if you are not immediately punished or killed by the guardians of the social order, you are likely to be ostracized, i.e. expelled

from the community. Thus, social systems had acquired a physical power over life and death. As they evolved and refined their network of rules, this physical power engendered a more indirect moral or symbolic power that could make people obey the norms with increasingly less need for physical coercion.

Social psychologists have demonstrated via clever experiments how great that power is. One classic experiment shows that people are ready to administer lethal electric shocks to a person on the mere authority of an experimenter representing the social order (Milgram, 1963; Milgram & Gudehus, 1978). While these observations are recounted as focused on *obedience*, this is obedience to social norms (e.g. the rules of a scientific experiment), and not to an independently acting individual. Another classic experiment shows how people change their own perception of how long a line is just because the others in the group supposedly perceive it differently (Asch, 1956; Bond & Smith, 1996). This illustrates how conformity pressure can lead a person to reject an accurate individual observation for an erroneous social norm. A more extreme case of individual autonomy subverted by social programming is found in kamikazes and suicide bombers, who are willing to sacrifice both their own life and the life of a crowd of innocent bystanders to serve the symbolic authority of their emperor, religion or nation (Hafez, 2006; Kruglanski, Chen, Dechesne, Fishman, & Orehek, 2009).

While such examples illustrate the *magnitude* of the power exerted by social systems, a perhaps more important variable is the *range* of beliefs, emotions and behaviors that this power affects. In the experiment where an individual's perception is influenced by the group's (Asch, 1956), some individuals do not just conform to what the others are saying, they come to truly believe the observably inaccurate judgment of the group. More generally, the phenomena we perceive, conceive and distinguish are to a large extent dependent on the categorizations and judgments sanctioned by the social system. In linguistics, this has been formulated as the Sapir-Whorf hypothesis (O'Neill, 2015): what we perceive is to some degree dependent on the words our culture provides to describe what we perceive. More fundamentally, what we think and understand is largely dependent on the concepts and categories provided by the social systems, and by the rules that say which category is associated with which other category of expectations or actions.

For example, a fundamental distinction made by most social systems is the one between male and female genders, although some social systems also distinguish a third, indeterminate category. These socially distinguished categories are characterized by different expectations about how a member of each category is supposed to behave. For example, in many countries, being female is associated with being unsuited for mathematics, science and engineering, with the result that these disciplines attract virtually no female students. Yet, in other countries, such as Lithuania or Bulgaria, these same disciplines have a majority of female practitioners. The unwritten rule that women are bad at maths becomes a self-fulfilling prophecy, as it lets girls expect to fail in math exams, thus making them spend less energy preparing for it and being more fearful during the exam, resulting in a worse score (Storek, 2011). Without this rule, the girls prepare and score as well or better than the boys, and thus go on to further academic achievements in the science and technology domains.

This restrictive social norm has been well studied because of the obvious loss of potential achievements such a prejudice brings, and the fact that relatively simple measures can help remedy

it—such as showcasing successful female role models. But social systems are built on millions of such implicit distinctions, associations and rules, most of which are tacitly accepted without the kind of scrutiny that the more salient discriminations on the basis of gender, race or religion elicit. For example, it is a rule in most developed countries that people in public places should wear shoes. Yet, for most of its existence, humanity lived barefoot, implying that we are perfectly adapted to walking without shoes. There is even evidence that quite a number of modern diseases, including bunions, athlete's foot, arthritis and backache would disappear or diminish if people would walk barefoot most of the time (Sandler & Lee, 2013). Yet, someone walking barefoot in an office, shop or street is likely to receive so many negative reactions that s/he is unlikely to continue the experiment, even while not having broken any law or harmed any person. Coming barefoot to a job interview is a direct path to staying unemployed, regardless of what you say during the interview; a barefoot salesperson is not likely to manage to sell you a car, and a barefoot candidate would not be elected president. The rules for covering other parts of the body can be much stricter even, depending on the local culture. For example, the public clothing rules for women in certain Islamic countries, such as Afghanistan or Saudi Arabia, are so strict that unhindered movement becomes nearly impossible.

How social systems impede self-actualization

Social rules extend much farther than matters of gender, body or etiquette: they govern not just public behavior, but the whole of our worldview, i.e. our picture of reality and our role within it. They tell us which are the major categories of existence (e.g. mind vs. body, duty vs. desire), what properties these categories have (e.g. mind is insubstantial, the body is inert and solid, duty is real and desire is phantasmagoric), and what our attitudes and behaviors towards each of these categories should be (e.g. the body is to be ignored and despised, desire is to be suppressed). While many of these rules are useful (e.g. that you should be polite towards strangers) or neutral (e.g. that you should eat lunch at noon rather than at 3 pm), others are heavily limiting (e.g. that girls should not study math).

However, the fundamental problem is that since social rules are typically tacit and supposed to be universally valid, there is no way of ascertaining whether they are beneficial or harmful to human well-being. These rules have self-organized out of distributed social interactions. Therefore, there is no individual or authority that has a direct power to change them or announce them obsolete. That means that we, as individuals, have become subjected to systems that expect us to maintain their own organization, without us recognizing our participation in this autopoiesis. Thus, these systems have programmed us to blindly follow their rules, without questioning or conscious consent.

Of course, in practice social systems can be more or less liberal in allowing deviations from the rules—with conservative, fundamentalist and totalitarian cultures typically being least flexible. Moreover, some rules (like covering the feet) tend to be enforced much less strictly than others (like covering the genitals). Thus, in most societies there is enough leeway to allow some variation and evolution of rules. However, this may create a false sense of individual autonomy, as people feel free to question those rules that have lost most of their power, or that were never firmly established in the

first place, while ignoring the rules that appear so self-evident that they are not even aware that they are obeying them (e.g. that you should not come barefoot to a job interview).

Therefore, people wishing to solve social ills by designing a better society are often thwarted by their own implicit prejudices: they tend to focus on specific rules they see as detrimental without noting that these are part of an invisible and much more complex network of mutually reinforcing rules. Such a system is much more difficult to change, partly because of its self-protecting, autopoietic character (Lenartowicz, 2017), partly because the would-be social revolutionary is just as much programmed by these rules as anybody else. Thus, social systems programming is an important obstacle to social progress and to the search for creative solutions to contemporary problems.

It in particular hinders individual emancipation, or what humanist psychologists have called “self-actualization” (Heylighen, 1992; Maslow, 1970). This is the ongoing development of an individual’s potentials, and a necessary condition for enduring well-being. Self-actualization requires the ability to find one’s own path in life by exploring a wide range of possibilities and choosing the ones that best fits one’s personality, circumstances and interests. Suppose that a woman has a great talent for mathematics, but is prevented from exploring that interest because of the reigning prejudices, while being forced into a career (e.g. as a housewife) that does not allow her talent to blossom. That woman is likely to remain dissatisfied for the rest of her life, while missing a great opportunity to help society in the domain where she could really have made a difference. Or imagine that a man has a non-standard sexual preference (e.g. homosexual) in a society where such feelings are not considered acceptable. That man too is likely to remain deeply dissatisfied, while moreover feeling ashamed or guilty for not fitting in with the norm.

Yet, these are merely the most obvious examples. Especially in the Western world, questioning these particular hindrances to individual emancipation is becoming a new social norm, rather than a rebellion. In order to reflect on the tension between social rules and the drive for self-actualization, one should also consider individual choices that would be widely frowned upon even in our supposedly liberal culture, even though they do not harm anybody. For example, one might decide not to do any paid jobs but just live from what others are willing to give, or walk around barefoot or wear newspaper as clothes instead of the habitual garb, or use certain neologisms instead of commonly used words.

More generally, we should note that since social systems are continuously evolving, it may so happen that during their evolution a particular rule (such as the taboo on homosexuality) is revoked, thus eliminating what was a major hindrance to human self-actualization in a given society. However, because social systems and human individuals are autonomous organizations with distinct interests, the trajectories of the two do not in general coincide. When they are inconsistent, the social system will obstruct the human trajectory towards self-actualization. Such obstruction is not a mere side effect of the rigidity of social systems: it is an essential part of their identity. An autopoietic system aims at self-maintenance. Therefore, it will counteract any processes that threaten to perturb its organization (Maturana & Varela, 1980; Mingers, 1994). In particular, it will suppress anything that would put into question the rules that define it. This includes self-actualization, which is a condition characterized by openness to new ideas, individual autonomy, and enduring exploration (Heylighen, 1992; Maslow, 1970). Therefore, if we wish to promote self-actualization, we will need

to better understand how these mechanisms of suppression used by social systems function. That will allow us in a subsequent stage to formulate strategies to evade or neutralize them, and thus facilitate emancipation from rigid regimes of thought and behavior. In the next sections, we will review common control mechanisms. The potential counterstrategies will then be elaborated in subsequent papers in this series on social programming.

Reinforcement: reward and punishment

As extensively investigated by behaviorist psychology, the most direct way to induce a particular type of behavior is *conditioning*, or what is now more commonly known as *reinforcement learning*: behaviors that are rewarded by some pleasurable stimulus tend to be repeated; behaviors that are punished by some unpleasant stimulus tend to be suppressed. For example, a rat that presses down a lever and is rewarded with food will be inclined to repeat that press on the lever. The more often this results in a reward, the more its association between lever and pressing is reinforced, eventually leading it to internalize the following stimulus-response connection or *condition-action rule*:

see lever → press lever

However, if the rat received an electric shock each time it pressed the lever, this association would quickly be inhibited, and the rat would learn never to touch the lever.

This learning mechanism functions at a very basic neural level, and can be demonstrated even in simple invertebrates, such as snails or cockroaches. While humans indubitably have a much more complex brain organization than snails, they too have learned most of their behavior and associations via differential reinforcement. As reviewed in a companion paper (Heylighen et al., 2017), the distinctions, associations and rules that constitute social systems have been learned during the process of socialization by the selective reinforcement of “appropriate” behaviors, and suppression of “inappropriate” ones. Such reinforcement does not require a material reward or punishment: a simple acknowledgment, like an answer, smile or “OK”, confirms that an action was appropriate. This functions like a minimal, pleasurable stimulus that calls out for more, by repeating the kind of behavior that elicited it.

Such rewarding stimuli appear to function by triggering a release of *dopamine* in the brain. Dopamine is the neurotransmitter underlying motivation, drive, and feelings of pleasure. Therefore, activities that release dopamine tend to be reinforced and repeated (Glimcher, 2011; Wise, 2004). This mechanism explains many types of addiction, e.g. to cocaine, gambling or social media (Beard, 2005), all of which trigger regular dopamine release. Social interaction is a nearly ubiquitous source of such reinforcing stimuli. Therefore, it has a wide-ranging power in shaping our categorizations, associations and behavior. Maintaining this dopamine-releasing and therefore rewarding stimulation requires continuing participation in the social system. That means acting according to the system’s rules. Thus, social systems program individuals in part through the same neural mechanisms that create conditioning and addiction. This ensures not only that these individuals automatically and

uncritically follow the rules, but that they would feel unhappy if somehow prevented from participating in this on-going social reinforcement game.

Immediate reward and punishment are only the simplest mechanisms of reinforcement and conditioning. Reinforcement can also be achieved through rewards or penalties that are *anticipated*, but that may never occur in reality. Indeed, dopamine can already be released by activities of which the subject has learned that they tend to lead to rewards, even before any actual reward has arrived. This explains the role of dopamine in maintaining drive and motivation when the anticipated success is still far away. After a while, the anticipation of a reward starts to function like a reward in itself. For example, Pavlov's dog learned to expect food after hearing a bell, and already started to salivate before the food had arrived, implying that it experienced the sound of the bell as almost as pleasurable as the food itself.

The power of narratives

Unlike animals, people can anticipate events even when they have never experienced such events in reality. That is because our capabilities for symbolic cognition allow us to conceive of situations that have not occurred yet, and may never occur. These imagined situations can function as “virtual” (but therefore not less effective) rewards that reinforce behavior. For example, an employee may work hard for an organization in the hope of achieving a promotion to a position that may never actually be created. Each action that contributes to this anticipated promotion may therefore produce a small boost in dopamine. A more extreme example is a suicide terrorist motivated by the religious belief of receiving a huge reward in the afterlife—like the proverbial 72 virgins promised to martyrs in the propaganda of certain Islamic groups (Hafez, 2006; Kruglanski et al., 2009).

Social systems exploit this anticipatory ability in part by evolving and propagating stories that illustrate how people who behave in the socially sanctioned manner reap huge rewards, such as fame, fortune, or eternal happiness in an envisioned Heaven—or alternatively receive harsh punishments, like burning in Hell, if they do not behave in this manner. As Malinowski (2014, originally published 1926) pointed out long ago, myths function not to explain why things are the way they are (e.g. why we wear clothes in the myth of Adam and Eve), but as social charters (why we must wear clothes). They comprise commands that legitimize the social order, exhorting and coercing certain behaviors by showing how certain characters are punished or rewarded for specific actions.

Such *narratives* have the advantage that they are easy to grasp, remember and communicate, because they embed abstract norms, rules and aspirations into sequences of concrete events experienced by concrete individuals with whom the audience can easily empathize (Bruner, 1991; Heylighen, 2009; Oatley, 2002). In this way, virtual rewards that in practice are unreachably remote (like becoming a superstar, president of the USA, or billionaire) become easy to imagine as realities. Such a story becomes more believable when it is illustrated by highly visible role models who ostensibly lived the story (such as actual superstars), when it is supported by impressive rituals, works of art or monuments (such as pyramids) (Campbell, 1991), when it is presented in supposedly

sacred Scripture, or when it is spread via ubiquitous media like TV, cinema or Internet. For example, in our present consumer society, the reigning narrative that you will become happy by acquiring ever more money that allows you to buy ever more products is reinforced by an endless series of advertisements, movies and magazine articles.

Herman and Chomsky (1988; Mullen & Klaehn, 2010) have argued that the mass media in practice *manufacture consent*, i.e. make people agree with the way the system functions. They do this by presenting the established social order as the only workable approach, while ignoring or curtly dismissing alternative approaches. Such constant confirmation of a heavily biased narrative ensures that people do not rebel or question the status quo.

Conformist transmission

More generally, reinforcement is more effective the more it is repeated. As a social system is built out of self-reproducing networks of communications (Luhmann, 1995), this ensures that its messages will not be heard once, but again and again. *Conformist transmission* (Boyd & Richerson, 1988; Henrich & Boyd, 1998) denotes the self-reinforcing dynamic according to which you become more likely to adopt a narrative, idea or behavior as more other individuals communicate it to you. Once you have adopted such a belief, you become more inclined to convert others to this belief, or to confirm it when others express it. Thus, an idea that is confirmed by several individuals tends to make further converts who themselves will make further converts. The resulting positive feedback of common beliefs becoming more common means that popular opinions tend to spread until they encompass the whole group. As the same belief is reinforced again and again by every person you meet, it becomes very difficult to develop, retain or adhere to a non-conforming view. This in part explains the counterintuitive result that conformity pressure can overrule first-hand observation (Asch, 1956).

The result is a homogeneous culture of commonly accepted norms and beliefs (Axelrod, 1997) that encompasses a given group of communicating individuals. This culture is however typically different from the cultures in other groups with which there is little communication. These started from perhaps a slightly different distribution of beliefs from which again the most common ones were amplified through positive feedback, until this “winner-takes-all” dynamics erased all rival beliefs. This amplification of minute differences between initial distributions of beliefs (Henrich & Boyd, 1998) explains why the “social construction of reality” tends to produce largely idiosyncratic systems of categories, norms and beliefs in different social systems (Heylighen et al., 2017)

Cognitive dissonance and institutionalized action

Another behavioral mechanism exploited for social programming is our preference for coherence in thought and action. When an individual has mutually inconsistent beliefs, this creates an unpleasant tension, known as *cognitive dissonance* (Festinger, 1962; Harmon-Jones & Mills, 1999). The

simplest remedy is to reject or ignore some of these thoughts, so that the remaining ones are all consistent. This mechanism can obviously be used to eliminate non-conformist ideas and behaviors. A straightforward method is to make an individual perform certain actions that conform to the rules of the social system but that are dissonant with that individual's non-conformist beliefs. Since the actions that have already been performed cannot be denied, it is easier to resolve the tension by denying the beliefs inconsistent with the actions.

For example, imagine that a young man who believes it is wrong to kill human beings is recruited in the army. During the war, he is forced to shoot enemy soldiers. This creates a contradiction between his actions and his beliefs. The painful tension can most easily be relieved by replacing his initial belief by the social system's norm according to which the enemy is not really human, but merely "vermin" that deserves to be eradicated. This mechanism becomes more effective when the actions that confirm the social norms are formalized, ritualized or institutionalized, so that they are repeatedly and unambiguously reinforced. As an illustration, here is the philosopher Žižek's take on religion:

"Religious belief, for example, is not merely or even primarily an inner conviction, but the Church as an institution and its rituals (prayer, baptism, confirmation, confession ...) which, far from being a mere secondary externalization of the inner belief, stand for the very mechanisms that generate it. When Althusser repeats, after Pascal: 'Act as if you believe, pray, kneel down, and you shall believe, faith will arrive by itself', he delineates an intricate reflective mechanism of retroactive, 'autopoietic' foundation" (Žižek, 2010).

Indeed, the undeniable act of praying to God can only be safeguarded from cognitive dissonance by denying any doubts you may have about the existence of God. This creates a coherence between inner beliefs and socially sanctioned actions, which now come to mutually reinforce each other in an autopoietic closure. As anthropologists have detailed in their study of religion, believers often explain away inconsistencies in their beliefs through interpretive drift, which Luhmann (1989: 312) describes as "the slow often unacknowledged shift in someone's manner of interpreting events as they become absorbed in a particular activity". This can be seen as a continuation of the self-organizing evolution through which the different rules of the social system mutually align so as to minimize dissonance.

A further illustration of the power of cognitive dissonance may be found in the "Stockholm syndrome" (Fabrique, Hasselt, Vecchi, & Romano, 2007). This describes a situation in which victims come to voluntarily support their abusers, and sometimes even participate in their crimes—like in the case of Patti Hearst, a billionaire's daughter who was kidnapped and raped by a terrorist group that she eventually joined. Next to conformity pressure, a plausible explanation is that the abusers force the victims to perform acts so dissonant with their prior norms that the victims can only relieve the tension by denying these norms and taking over the norms of the abusers.

Emotions co-opted for social control

Whilst reinforcement presents a fairly simple mechanism to program human behavior, emotions are far more intricate. Nevertheless, emotions provide a powerful impetus to instill actions and attitudes. Social systems have learnt to harness emotions to impel strong and long-lasting effects that are difficult to override through reflection or reasoning. They thus ensure that human behavior does not deviate from their norms and conditioning.

Emotions co-opted for social control act insidiously and in such a manner that people come to police their own behavior even when alone, i.e. in the absence of any social process of reinforcement or punishment. This is because humans internalize social norms in such a way that an external observer is no longer necessary to enforce or uphold these rules. This guarantees that the social system's standards are always maintained, even when there is no practical need apart from the self-perpetuation of the system. For example, if a person is alone at home, it is not necessary to respect clothing standards. Yet, this person may still feel guilty or ashamed should they choose to wear garb that is not considered appropriate for them, such as a man wearing women's clothing. Socially co-opted emotions have developed a function different from the one originally evolved to secure survival. Fear, for example, is a useful response in the face of a threat to one's life. However, a man's fear that he is deranged because he wishes to wear women's clothing whilst alone at home has no objective function or use outside of the social system. By harnessing people's emotions, social systems manage to override their rational reflections, spontaneous behaviors and playful desires. They thus to an important extent take away individuals' control over their own bodies, feelings and self, instead turning them into mere agents of the social system, who police both themselves and others.

All emotions can in principle be co-opted to support a social system. For example, love and awe can be harnessed to venerate the formal (e.g. the king) or symbolic (e.g. Christ) leader of the social order, while anger can be incited to attack its enemies. As our ultimate goal is to promote emancipation, we will here focus on those co-opted emotions that seem to most directly suppress individual deviation from the norms, and thus the potential for personal exploration and self-actualization.

Fear: ostracism and xenophobia

Inducement of *fear* is perhaps the simplest and most straightforward method to prevent the transgression of social norms. Fear is the anticipation of a potentially harmful event, leading the individual to avoid anything that might trigger such an event. In social systems, this anticipated event is typically a punishment for not behaving according to the rules. This punishment can be very concrete, like having to go to bed without dinner, receiving a fine, or being stoned to death. However, it can also be more abstract and general, like experiencing disapproval, rejection or *ostracism*.

Fear of ostracism appears to be a deeply rooted instinct that functions like a powerful check on deviant behavior (Gruter & Masters, 1986; K. D. Williams, 2002). People will go to great efforts

to act in a socially expected way in order to make sure they are not excluded, rejected or ignored by their community—even if this means denying what they truly believe in or who they truly are. This instinctive fear probably dates back to our evolutionary past when social exclusion of an individual commonly ended in that individual dying because of starvation, exposure or the inability to defend against predators. But it also plays in seemingly more innocuous situations, like when a high school student is shunned by the rest of her class because she does not fit in with the local norms (e.g. by not wearing the right brand of clothes or listening to the wrong kind of music). This feeling can be just as devastating, leading to deep loneliness, shame and depression that may end in suicide.

Foucault (2013, originally published 1961) has detailed how many supposedly medical conditions and labels, such as madness or homosexuality, have served to ostracize individuals. During the height of the Enlightenment era those deemed irregular or different were classified as insane. Thus, madness was constructed as a mental and moral illness requiring that sufferers be confined and treated like beasts. The incarceration of the mad served to induce fear in the populace, thereby deterring them from deviating from prescribed behaviors and causing them to repress their identities and desires.

In xenophobia, fear is used by the social system to keep out individuals who belong to a different social system with different norms. Such aliens are portrayed as potentially dangerous intruders that must be shunned or, if necessary, violently repelled. An outside threat is probably the most direct and reliable method to strengthen the coherence of the “in-group” and thus suppress any risk of dissidence. The resulting “Us vs. Them” mentality has been used by political leaders throughout the ages to consolidate their regime.

Guilt: retribution and redemption

Guilt is a more subtle emotion that is to some degree an *internalization* of the fear of punishment for misbehavior. It may well derive from our instinct for reciprocity or fairness, which makes us expect that if we behave badly (or nicely) to someone else, we will eventually be repaid in kind (Baumeister, Stillwell, & Heatherton, 1994). However, even if no retribution for the wrong deed follows, e.g. because it remains unnoticed, the individual may still anticipate some later punishment, e.g. by God in the afterlife, or subconsciously by worrying that something bad will happen. Just like the anticipation of reward is already rewarding, the anticipation of punishment is punishing. This means that it will inhibit the kind of behavior that elicited such anticipation.

The positive aspect of guilt is that it can normally be *redeemed* by performing an action that corrects the wrong deed (Tangney & Dearing, 2003)—such as an apology, repair of damage produced, or restitution of stolen goods. Such redemption sets the record straight, restores a positive relationship with the victim, pre-empts any anticipated retaliation, and thus erases any lingering anxiety about future negative consequences. However, pre-empting the deterioration of a relationship through apology or repair only makes sense if there is another party that was harmed by the action. If the action merely transgressed an abstract social norm, like in the case of the man wearing women’s clothes in his own home, there is no need for reparation and therefore for guilt as an emotion to elicit such reparation—yet guilt may still be experienced. This is because social systems have co-opted

this emotion by making people feel guilty about such transgressions, thus eliciting fear for some abstract retribution and a motivation to redeem oneself by actions that reinforce the social order.

Through socialization we learn about a wide range of behaviors that are deemed unacceptable and therefore punishable. This creates a complex of internalized restraints (Campbell, 1991) that controls our behavior so that we are not tempted to perform one of these unacceptable acts. This complex is similar to what Freud called the “superego”, and what in common parlance is known as “conscience”. If in spite of this control, people willingly or accidentally behave in a way that transgresses these internalized norms, the resulting painful feeling of guilt makes them unlikely to repeat it (Tangney & Dearing, 2003). Thus, guilt is an effective mechanism for preventing actions or even thoughts that deviate from social norms, even when these are harmless and invisible and therefore not physically punishable.

This is individually deleterious when the social system makes people feel guilty about transgressions over which they do not have much control and that cannot be undone, such as having felt sexually attracted to an inappropriate partner, or having exhibited “sinful” thoughts (such as doubting religious doctrine) or behaviors (such as wearing women’s clothes). Such unredeemable guilt may make the individuals experiencing this emotion feel depressed and suicidal (Exline, Yali, & Sanderson, 2000). But this too has been recuperated to reinforce social systems. For example, the Catholic Church has instituted a procedure of “confession” of the sin, after which the sin can be redeemed through prayer or other actions supporting the functioning of the church—and in earlier periods even through an “indulgence”, in which the sinner pays the church a substantial sum in order to be forgiven. An even starker manipulation of the emotion of guilt occurs when people are made to feel guilty about things they were not involved in, but that were supposedly done by some faraway ancestor—like the “original sin” in Christianity. This makes them anxious to perform redeeming actions (like getting baptized and going to Mass) that, unsurprisingly, directly uphold the social system.

Shame: the deficient self

Shame, like guilt, is a negative emotion that is used to prevent the transgression of social norms (Lewis, 1995; Nussbaum, 2009; Tangney, Miller, Flicker, & Barlow, 1996; Williams, 1994). However, shame is more pernicious than guilt, as it is directed not at a specific action performed by a person, but at the person as a whole (Tangney et al., 1996). Thus, while guilt is normally elicited by a misdemeanor in which the person was in control, shame is elicited by an enduring, uncontrollable deficiency (Van Overwalle, Heylighen, Casaer, & Daniëls, 1992) that cannot really be redeemed. An individual will feel shame if s/he does not seem to match up to the standards desired by the social system, e.g. in terms of being considered ugly, stupid, unfashionable, dishonest, cowardly, perverted, or simply not fitting in with the expectations. For example, in many societies women tend to feel ashamed for not being married or not having children at an age when that is expected of them.

Shame makes a person feel small and weak, physically as well as mentally, and desiring to disappear altogether so as not to attract the attention. Thus, people suffering from shame feel powerless to autonomously achieve what they want. Therefore, they might not dare to challenge the

social system, but rather submit to it by presenting themselves as meek or humble, i.e. ready to conform to anything that the higher authority of the social system imposes. But that is in general not enough to atone their negative feelings, as the social system, because of their intrinsic “shortcomings”, is likely to continue to judge them as unworthy of respect or support. This keeps them in the subordinate role of slavishly trying to match the norms, and not in any way stand out, so as to pre-empt the risk of ridicule, humiliation or ostracism.

In that respect, shame is a powerful suppressor of self-actualization. For example, gifted women or gifted people from a non-intellectual background often suffer from shame because their unusual intelligence, creativity and independent thinking make them deviate from the standards of behavior expected for people in their social category (Jacobsen, 2000). Therefore, they tend to dismiss or hide their intellectual abilities to such a degree that they cannot realize their potential. In the less common case where they do succeed in their career, they often suffer from “impostor syndrome” (Clance & Imes, 1978; Clance & O’Toole, 1987). This is the fear that they got to their position purely by luck, and that they will soon be found out and put to shame as impostors who merely pretend to be experts while actually being incompetent. More generally, recurrent feelings of shame predispose people to a wide range of pathologies, including anxiety, depression, suicide, dropping out of education, anger, violence, drug abuse and psychosis (Lewis, 1995; Tangney & Dearing, 2003).

Shame appears to result from an internalization of the negative judgment of others on the self. When an individual transgresses a norm in public, and observes (or imagines) the critical gaze of the others, that person will feel *embarrassment*. This is a relatively simple and universal emotion, which is characterized by physical symptoms such as blushing, bowing the head, and looking down. It probably functions to signal submission, and thus prevent aggression or ostracism in retaliation for any perceived misconduct. While shame and embarrassment are often confused (Tangney, Miller, Flicker, & Barlow, 1996), embarrassment can be characterized as a temporary reaction to a public and concrete shortcoming, and shame as an enduring, personal feeling about a more general shortcoming of the self.

Shame may have originated as an anticipation of the embarrassment or humiliation that would be felt if the “shameful” shortcomings of the individual were made public. But like guilt, shame can be triggered by transgressions that may never actually be observed by anyone. That is because people have internalized the complex of norms in the form of some imaginary “Other” that is always ready to criticize their shortcomings (Williams, 1994). The devastation brought about by this generalized expectation of disapproval was expressed by the existentialist philosopher Jean-Paul Sartre in his famous quote “Hell is other people” (“*L’enfer, c’est les autres*”). The sensation of shame, according to Sartre, arises when a person becomes conscious of the gaze of someone else. At this moment, for the person experiencing shame, the body no longer appears to belong to her or him, but to the “Other”, who now judges and controls the individual, thus turning the self into an object that is restricted in its freedom to act or to be (Sartre, 1956).

The idea that some abstract “Other”, representing the social system, is constantly monitoring and thus controlling us is particularly disconcerting. It is expressed in modern archetypes, like the novelist Orwell’s “Big Brother” and the psychoanalyst Lacan’s “Big Other” (Hook, 2008). It

underlies the present insistence on the protection of privacy, as Internet and other information technologies seem to make it ever easier for others to discover our secret characteristics, preferences and thoughts. Nevertheless, privacy is a relatively modern notion, as people in olden times used to live and sleep together so closely that there was not much about one's body or behavior that could be kept hidden from others. More importantly, there is less need for overall privacy if those others would not judge and disapprove, i.e. emotionally or physically penalize the individual for transgressing any norms.

In his study of self-actualizing people, Maslow (1970) observed that they seem to be relatively free of fear, guilt, shame, disgust and other inhibitions of the self, as they have not internalized any disapproving "Big Other" that would make them feel embarrassed about their personal feelings, actions, or natural processes, such as sex, menstruation or illness. However, even self-actualizing people are compelled to protect their privacy, as they still live in a social system that would disapprove of certain of their behaviors if it were able to observe them.

Disgust: purity and pollution

Disgust, like fear, is another very primitive and universal emotion that has been co-opted by social systems for upholding norms, and in particular "moral" norms (Horberg, Oveis, Keltner, & Cohen, 2009; Kelly, 2011; Nussbaum, 2009). Its original biological function is the avoidance of substances that may contaminate our body or living environment, and thus endanger health. For example, people are normally disgusted by vomit, excrements, rotting meat, dead bodies and vermin, all of which are likely to carry potentially lethal parasites or toxins. The natural reaction is to recoil from, expel or destroy the polluting substance.

Because pathogens such as bacteria or viruses can very easily be transferred from one object to another one, the feeling of disgust just as easily extends from the presumed source of pollution to anything that has been in contact with it, or even just been associated with it (Kelly, 2011). For example, people will typically refuse to drink a glass of juice that contained a cockroach, even if that cockroach had been suitably sterilized, to use a comb previously belonging a dead person, or to eat a piece of chocolate that has the shape of a turd (Kelly, 2011). Notions of contagiousness have been present in societies long before knowledge of pathogenicity, forming a central part of religious and magical beliefs and prescriptions. As the anthropologist Frazer (1990) detailed, the "law of contagion" within magic decreed that things once in contact could act upon each other even at a distance, an idea that remains endemic to reactions evoking disgust.

The disgust reaction is automatic, instinctive and immediate, like when you spit out a worm or a piece of foul-tasting food. Because it is so primitive, it bypasses our more rational reflections about whether a particular thing does or does not transgress the system of norms. Therefore, disgust is particularly useful to exploit for social systems that strive for a quick and uncritical removal of non-conforming individuals, behaviors or ideas. Social systems achieve this by construing an association between such deviations and contaminations that endanger the cleanliness or "purity" of the ideal, moral community. Douglas (2003) suggests that notions of contagion serve to naturalize irrational beliefs about the impurity of certain people, behaviors and events. Contagion fears

typically function on the basis of a strict separation between inner and outer, or self and other, whereby the outer/other is seen as a threat to the inner/self and the individual body is synecdochal for the body politic.

For example, the Nazi ideology portrayed Jews, Gypsies, and Communists as “vermin” that were contaminating the pure German society, and that therefore needed to be exterminated (Pinker, 2011). Thus, Hitler claimed that “the Jew is a maggot in a festering abscess, hidden away inside the apparently clean and healthy body of the nation” (Nussbaum, 2009). Racism and xenophobia are often grounded in a feeling of disgust for people that look different from the norm. Similarly, taboos against homosexuality, nudity, or certain foods (like pork for Muslims and Jews) are commonly justified by the observation that these are “disgusting”. This association is easily made because human bodies, food, and sex are common conduits for infection, while pathogens typically enter or exit via the mouth, penis, vagina, anus, and other orifices of the body (Kelly, 2011). Thus, substances that come out of such orifices, such as menstrual blood, snot or faeces, are a priori suspect and must be flushed away. More generally, disgust can be elicited by things that, like poisons or parasites, breach the boundaries of the body, and by extension the boundaries of the autopoietic social system. Thus, taboos tend to be justified by presenting the breaking of the norms as a form of contamination or pollution. The anthropologist Mary Douglas (2003, 113) has argued that the notions of purity, pollution, and taboo have been put in place to prevent deviations from social prescriptions, thereby ensuring conformity:

“pollution is a type of danger which is not likely to occur except where the lines of structure, cosmic or social, are clearly defined. A polluting person is always in the wrong. He has developed some wrong condition or simply crossed over some line that should not have been crossed and this displacement unleashes danger”.

Because of the danger associated with pollution, the social system seems justified in eliminating the polluting agent. Outsiders or those labeled dissidents become the equivalent of faecal matter that must be flushed away. Therefore, the image of purity threatened by pollution with the resulting fear and disgust for the sources of pollution has been used throughout the centuries to not just expel but violently exterminate whole classes of people, behaviors and ideas, as testified by numerous wars, genocides, ethnic “cleansings”, lynchings, hate crimes, witch hunts, exorcisms, inquisitions, book burnings, and destructions of monuments and works of art. Pinker (2011) attributes the reduction in war and violence over the past centuries in part to the fact that we are less inclined to seek for absolute moral purity and strictly defined rules that would categorize deviant behavior as disgusting.

Structural control mechanisms

Social systems not only control individuals by directly affecting their feelings, but by setting up routines and structures that reinforce rule-following behavior. There are of course endless types of institutions, organizations, political power structures, and legal arrangements designed to impose

rules and control individual behavior. These have been discussed in an extremely broad literature in sociology, management, law, politics and economics, which we are not going to review here. Instead, we will focus on some of the bio-psychological mechanisms that enable such structures to take root in the psyche.

Insecurity

The requisite condition that Maslow (1970) postulated for the development of self-actualization is the satisfaction of basic human needs. People who have learned that they are able to get what they need will develop a sense of perceived competence to tackle problems before they have produced any real damage (Heylighen, 1992). This gives them a fundamental self-confidence or sense of security, i.e. an absence of major fears, anxieties, shame or guilt, and a concomitant willingness to take risks, to venture off the beaten path, and thus to potentially challenge the social norms.

The psychological theory of attachment (Bowlby, 1988) situates the origin of this self-confidence in early childhood, when the child is fully dependent on its mother, father or other caregiver to fulfill its needs. If the caregiver immediately, reliably and sensitively attends to whatever need is signaled by an infant, the infant will develop a *secure attachment* to its caregiver, as it learns that they serve as a dependable extension of itself. This sense of security is strengthened in the later, toddler stage, when the child starts exploring its surroundings independently, albeit still making sure it can easily run back to the caregiver if some need or unknown danger would appear. As long as the caregiver is dependably available to provide the desired remedy, but otherwise allows the child the freedom to explore, the child will become increasingly bold and venture ever farther from the safety of its “secure base”. Eventually, it no longer needs the protector or any other secure base: having internalized the competences previously “outsourced” to the caregiver, it has become fully autonomous. It is ready to continue its journey of self-actualization even when the external emotional and cognitive support is no longer provided.

Unfortunately, security is not the default outcome of early development. Attachment theory distinguishes two sources of insecure attachment: either the caregiver regularly ignores the child’s signals, e.g. by letting it cry for a long time before it receives any attention; or, the caregiver is affectionate and protective but in an undependable way, according to their own feelings rather than the child’s. In the first case, the child receives the message that what it feels and needs is irrelevant, as the environment operates according to its own logic and cannot be bended to the desires of the child. In the second case, the child learns that the means to satisfy its needs is uncertain and must be continuously monitored. Including research on triad relationships (Fivaz-Depeursinge & Corboz-Warnery 1999), which take into account the attachment to a second caregiver (typically the father), we may hypothesize a third case in which the primary caregiver is overly protective of the child or where the secondary caregiver misses out to fetch the child into the triad, both preventing it from exploring the outside world on its own, and thus signaling to the child that this world is intrinsically unsafe. In both the second and third scenarios this makes venturing out to the larger environment too dangerous: the child has not developed any competence to satisfy its needs, and thus its only perceived chance of survival is to cling to the protector. In all cases, the overall effect is that the child (and the later adult) might not develop the self-confidence it needs to autonomously solve its

problems. Thus, improper parenting in the formative years is likely to create a personality that is fundamentally uncertain about what it can or should do.

Such *self-uncertainty* is reinforced by a social environment in which people feel powerless to control their fate, e.g. because of poverty, lack of opportunities, discrimination, a rigid, totalitarian regime, lack of education, or too rapid and confusing changes. As argued by uncertainty-identity theory (Hogg, 2011), individuals tend to compensate for this uncertainty about themselves by submitting to a social system, such as a group, nation, ideology or religion (Barber, 2011; Hogg, Adelman, & Blagg, 2010; Kirkpatrick, 1997). They thus substitute a well-defined collective identity for an unclear individual identity. The more uncertain they are, the more readily they will adhere to group norms that present them with clear-cut guidelines, and the more absolutist or totalitarian the social system they will derive their identity from. This explains the popularity of nationalism, fundamentalism, and extremism in times of turmoil and uncertainty (Hogg, 2014).

Thus, insecurity makes individuals less likely to question social norms and find their own path. This may explain why many social systems seem to promote, explicitly or implicitly, methods of education that produce personal insecurity. A classic illustration is how in ancient Sparta boys were separated from their mothers at an early age and subjected to harsh training in order to raise them into hardened, unquestioning soldiers. The Janissaries, kidnapped as small children by Ottoman troops in conquered non-Muslim villages, were similarly raised as cruel, elite soldiers whose only loyalty was to the Ottoman sultan. Present-day child soldiers in Africa likewise illustrate how a deep insecurity and harsh treatment during the formative years can suppress natural human instincts such as playfulness, empathy and compassion, and replace them by blind obedience.

Such severity is of course extreme. Still, many aspects of traditional education appear to be in contradiction with the principles of secure attachment (Schön & Silvén, 2007). For example, in our society it is considered normal that babies should sleep in a room separate from their parents, and that children should not be allowed to play without close supervision. Until recently, the method of “Ferberization” was promoted to condition babies not to cry. Mothers were encouraged to ignore their weeping infants, letting them cry until the child was exhausted—a practice that from an anthropological point of view is absolutely unnatural and a likely cause of thousands of infant deaths (McKenna, Ball, & Gettler, 2007). Moreover, new parents are frequently advised to quickly entrust their babies to organized forms of care, in which the intimately known, securely available caregiver is replaced by an anonymous institution, which eagerly commences its prescribed social conditioning.

Part of the rationale for such approaches is that mothers do not have the time to fully pay attention to their kids, a problem that dates back to the beginning of agriculture and thus of social systems. One of the differences between women in hunter-gatherer and farming communities is that the former typically bear children every four years or so, while the latter bear children every one or two years. The longer interval between births, and their much more relaxed lifestyle (Gray, 2009) allowed hunter-gatherers to invest much more energy and attention in their children, thus laying the base for secure attachment. Moreover, the very supportive, indulgent style of hunter-gatherer childcare (Liedloff, 1985; Schön & Silvén, 2007) seems much more geared towards breeding autonomous, secure, moral individuals than later, more distant and disciplining methods of

education, which are geared towards obedience and unquestioning acceptance of rules (Narvaez, Wang, & Cheng, 2016).

A further source of insecurity promoted by social systems is the constant competition and jostling for position implied by status hierarchies, as we will now elaborate.

Status and hierarchy

Like many related social species (such as chimpanzees, baboons or wolves), humans have an instinct for forming status hierarchies in which the high-status individuals behave dominantly towards those lower in the “pecking order”, while the low-status ones behave submissively towards those higher up. Yet, hunter-gatherer bands are remarkably egalitarian. They ensure that no hierarchy arises by ridiculing, shunning or if necessary expelling individuals who behave too dominantly and bully others into submission (Boehm, 2001). This democratic organization seems to have been lost with the transition to agricultural settlements. As social systems became more elaborate, they developed complex, rigid hierarchies, where figures at the top (pharaohs, emperors, kings...) had nearly absolute power and were revered as divine authorities (Campbell, 1991). In more recent times, the power of elites is more restricted, and movement up or down the hierarchy has become easier. However, there remains a great social stratification separating the rich and powerful from the poor and destitute.

The common view is that such hierarchical structures are upheld by the individuals or groups that have most power, because that allows them to extract more than their fair share of the resources collected by the community. Therefore, rebellions, revolutions and other attempts to change the social order tend to be directed at removing the elite that is in power. However, in practice the result tends to be that one leader or ruling class is replaced by another one, while the hierarchy remains in place. That is because the rebels tend to be impelled by the same desire to increase their power relative to others, and thus snatch up a position at the top of the hierarchy.

Let us reinterpret this observation in terms of self-perpetuating social systems. A control hierarchy helps the social system to stabilize its network of rules because those at the top have the power to punish or suppress the ones below that might deviate from these rules. The dominant players are motivated to sustain the rules, because these rules confirm their own position of authority. Those at the bottom have more reason to question the system. However, because the system channels most of the resources to the top, the underlings are too weak to challenge it. If exceptionally some of them grow strong enough to overthrow the elite, they would simply be enticed by the riches and power that become available to them, and thus constitute a new elite. In this way, regime changes, invasions and *coup d'états* tend to be recuperated by the social system, so that its autopoiesis remains intact. While the individual agents change, the structure of their interactions is maintained. Thus, social systems have learned to channel the human instinct for status and dominance into acting according to their rules, thereby safeguarding their organization.

How different status hierarchies use co-opted emotions

While we saw how the emotions of fear, guilt, shame and disgust have been co-opted to control behavior, different social systems use them in different ways. The anthropologist Ruth Benedict has proposed a famous distinction between cultures that rely primarily on *guilt* (typically Western ones, such as the US) and those that rely primarily on *shame* (typically Asian ones, such as Japan) (Benedict, 1967; Wong & Tsai, 2007). The Cameroonian philosopher Achille Mbembe sees the African post-colony as defined by ‘a distinctive regime of violence... based on the right to punish... and an *economy of death*’ (Mbembe, 1992, 12). Accordingly, Muller has proposed to include cultures relying on *fear* and the power of punishment (mostly African and Latin-American ones) to this classification (Moore-Jones, 2015; Muller, 2001). Our analysis further suggests the addition of *disgust* to Muller’s shame-guilt-fear triangle of cultural control mechanisms. This turns it into a quadrangle (see Fig. 1).

In the quadrangle, emotions overlap as they are often difficult to distinguish because they rely on similar mechanisms: guilt and shame because both result from transgressing internalized social norms; fear and disgust because both are initially biological instincts meant to protect from harm; guilt and fear because guilt is to some degree a fear of retribution; and shame and disgust because both are elicited by observable deviations from a socially defined ideal.



Figure 1: the quadrangle of emotions used to control behavior

Each negative emotion can now be associated with its complement: the positive feeling that is supposed to replace it when the norms are optimally followed. For guilt, this is not the “innocence” listed in Muller’s original triangle (which is merely an absence of guilt), but *pride*, which can be seen as the satisfaction resulting from successfully performing a socially valued action (Lewis, 1995). For shame, the complement is *honor*, or the public appreciation that you are upholding the norms. For disgust, it is *purity*, i.e. keeping strictly within the symbolic boundaries. For fear, it is *power*, which is the situation in which you do not have to fear any punishment, attack or ostracism but rather can instill fear in others.

These emotions potently support status hierarchies: the negative pole typically indicates a low position in the hierarchy, and the positive pole a high one. Shame in particular points to a feeling of inferiority, humiliation or submission, while honor denotes high status and respect. However, honor is vulnerable to being lost and turned into shame because of some perceived transgression of the norm. Therefore, in honor-bound cultures people can react very violently to such perceptions (Nisbett & Cohen, 1996). This typically happens by attacking either the individual that brings shame to the group (like in honor killings, in which e.g. a father murders his daughter because she rejected an arranged marriage) or the individual that accuses another one of such a shameful transgression (like in duels in which e.g. a husband defends the honor of his wife).

Disgust is commonly directed at low-status groups, such as homeless people, Gypsies, or the Dalits (“Untouchables”) in India, who typically do not fit within the criteria for cleanliness and purity characterizing the high-status group (Kelly, 2011). Fear is most commonly felt by those lowest in the hierarchy, as they are at the mercy of the more powerful ones higher up. Guilt gives a person the status of a criminal or sinner, while its complement, pride, typically signals a moving up in the ranks.

In these cases too, the high-status position is vulnerable to being lost, thus ensuring individuals are on their guard to protect it by upholding the social order. For example, a powerful head of state may be deposed, and have to hide in fear of his life. A proud winner of an Olympic medal may turn out to be guilty of taking forbidden performance-enhancing drugs. And a virgin who had an affair with an outsider may be seen to have lost her purity and become a target of disgust. Such humiliating experiences can be seen as losses in “personal significance” (Kruglanski et al., 2009) or “self-certainty” (Hogg, 2014). The resulting feeling of deep insecurity may explain why people in such situations are ready to submit themselves to absolutist social systems that offer a quick redemption, e.g. by sacrificing themselves for the collective cause by becoming a suicide terrorist (Kruglanski et al., 2009).

Conclusion

We have surveyed a number of fundamental psychological mechanisms that social systems use to control individual behavior so as to suppress any deviations that may endanger their autopoietic organization. In a companion paper (Heylighen et al., 2017), we investigated how the network of interactions between individuals tends to evolve into a coherent, autopoietic system in which social actions or communications trigger further actions, according to a set of implicit rules. In the present paper we looked at some of the behavioral mechanisms that support this reinforcement, and that can be used by the emergent social system to pre-empt deviations that may endanger its autopoietic organization. The risk of such deviations is real because humans remain autonomous agents, whose individual and biological interests are not generally aligned with those of the social system. For example, the social system may demand from its “subjects” that they sacrifice time, effort, resources, loved ones and even themselves in order to strengthen the social system’s symbolic order—e.g. by performing wasteful rituals, offerings, wars or suicides. Such demands contradict basic human

instincts for survival, procreation, and the pursuit of happiness. Therefore, the social system needs powerful methods to overrule these instincts.

We noted that the simple neural *reinforcement* mechanism that underlies the self-organization of social systems also underlies the process of conditioning. By repeatedly following it up by a reward, a behavior is not just taught, but automated and imprinted into the brain, so that it will be produced immediately and unthinkingly under the right conditions. Such a reward can be a simple social acknowledgment that an action was appropriate, or an anticipation that some later recompense may follow, even if that anticipated reward is purely symbolic. In the brain, the reward is realized as a release of dopamine, the neurotransmitter that keeps us motivated to continue an activity, and that underlies addictions. Thus, participating in a social system is in a sense addictive. This explains people's apprehension of being left out of some on-going social activity—even when they do not need to fear any actual expulsion.

The power of reinforcement is extended by narratives, which promise people as yet imaginary rewards and punishments if they either obey or transgress the rules, and by conformist transmission, through which more common beliefs spread to encompass the whole group, so that eventually the same message is repeated by everyone you encounter. Finally, the system reinforces itself by demanding people perform a variety of rituals and other institutionalized or formalized actions that are consonant with the rules of the system, but perhaps not with certain privately held beliefs. This is another method to suppress deviant ideas, because our drive to avoid cognitive dissonance then pushes us to abandon these personal beliefs.

While reinforcement ensures that the social game is kept going, emotions ensure that transgressions of the rules are prevented. We discussed four negative emotions that have been co-opted (Kelly, 2011) for social control: *fear*, *guilt*, *shame* and *disgust*. Such co-opted emotions function surreptitiously in that they come to pervade people so completely that they not only police others but also police themselves according to social system tenets. Individuals become symbols themselves of the social order. They incarnate social system values, exhibiting them not only physically (through dress, action etc.) but also manifesting them metaphysically in their beliefs and choices.

Fear and disgust are very primitive reactions that evolved to evade dangers such as bodily harm and poisonous substances. Social systems have co-opted them by associating social transgressions with such dangers. In the case of fear, these dangers are punishment, exclusion from the group (ostracism), or attack by strangers (xenophobia). In the case of disgust, dangers are more symbolic: corruption of the “pure” social order by some agent, behavior or idea that can be associated with pollution. But because these emotions are so immediate and powerful, not much rational justification is needed to trigger them. Thus, the reaction towards the assumed danger can be very violent, explaining horrid aberrations such as genocides, witch-hunts and ethnic cleansings. The idea of ostensibly ‘cleansing’ an ethnic group illustrates how notions of purity and pollution are mobilized by the social system in order to construct and regulate symbolic boundaries. Things, places, people that are construed as outer must remain as such, and therefore if necessary violently removed, so that the inner group, like the human body, remains clean and impermeable to contamination.

Guilt and shame are more complex, self-conscious emotions that have been in part socially constructed to control individual behavior even in the absence of social interaction. Both result from an anticipation and internalization of the negative reaction of others to the self. Guilt is probably an internalization of the fear of punishment or retribution for wrong behavior. It is implemented as an internal system of norms (commonly called superego or conscience) that produces anxiety whenever such a norm is transgressed. Shame is probably an internalization of the embarrassment or humiliation that is felt when an individual's shortcomings are found out by others. It seems to be implemented as the imagined gaze of some generalized "Other" that critically judges the self. Guilt results from a wrongful action, and can therefore in principle be redeemed by correcting the wrong. Shame, on the other hand, is a negative judgment about the person as a whole, and can only be mitigated by that person keeping a low profile and avoiding anything that may make it vulnerable to criticism.

The impact of these emotions is amplified by the development of status hierarchies. Here, norm transgression is punished by loss of status and the concomitant negative emotions of shame, guilt, fear and disgust, while norm obedience is rewarded by maintenance or gain of status and the associated positive feelings of honor, pride, power and purity. Thus, our mammalian instinct for establishing pecking orders, which has been attenuated within the fiercely egalitarian hunter-gatherer bands (Boehm, 2001), has been amplified in social systems in order to strengthen their control on behavior. By creating a great power differential between those at the top and those at the bottom of the hierarchy, the social system has created a strong motivation for the ones above to defend the system and thus their own position, and for the ones below not to question it, in order not to sink even deeper. This tense equilibrium tends to be reinforced by a general feeling of insecurity and dependence starting in childhood, so that individuals on all rungs of the ladder are inclined to cling to the symbolic authority of the system rather than take the risk to explore their own, personal goals and ideas.

In sum, social systems have evolved to be very effective in programming individual behavior, emotions and beliefs, and in pre-empting or suppressing any tendency to deviate from their rules. While such control is to some degree necessary to curb crime, free riding, and internal conflict (Campbell, 1991), this is achieved at an enormous cost in human happiness, autonomy, creativity and self-actualization. The relative peace, happiness and relaxed playfulness exhibited by hunter-gatherer bands and the most liberal, social-democratic nations of the present age (Veenhoven, 2010) seems to indicate that the benefits of cooperation and coordination can be achieved without rigid programming or harsh suppression of non-conformism.

Conservative and religious thinkers, on the other hand, commonly argue that you need social control mechanisms based on fear (e.g. of God or of capital punishment), guilt (e.g. about sinful thoughts), shame (e.g. the public shaming of people that have committed misdemeanors), and disgust (e.g. for pornography or homosexuality) in order to prevent crime and immoral behavior (cf. Nussbaum, 2009). However, statistical data rather seem to point in the opposite direction: crime (such as homicide, violence and corruption) and other "immoral" activities (such as abortion, teenage pregnancy and drug addiction) tend to be least common in liberal, secular countries and regions (such as Western Europe, Japan, New Zealand, or New England) and more prevalent in conservative,

strongly religious regions (such as the US Bible Belt, Africa or Latin America) (Nisbett & Cohen, 1996; Paul, 2005; Pinker, 2011; Zuckerman, 2009). This can be explained by the fact that an upbringing that is both liberal, in the sense of respecting individual autonomy, and nurturing, in the sense of based on intimate, caring, personal interactions, produces more mature, peaceful and moral individuals than an upbringing focused on obedience to formal rules. This is confirmed by observations of both hunter-gatherer bands and modern families (Narvaez, 2014; Narvaez et al., 2016).

More generally, it is worth reflecting how we can liberate ourselves from such social systems programming while promoting human well-being. In further articles in this series we plan to do this; respectively at the individual level of achieving integral self-actualization, and at the collective level of achieving a "human takeover" of society (Lenartowicz, 2017).

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