

Behavioral and Emotional Mechanisms Co-opted for Social Control: Social Systems Programming II

Francis Heylighen, Marta Lenartowicz, Kate Kingsbury‡, Shima Beigi & Tjorven
Harmsen

Evolution, Complexity and Cognition group

Vrije Universiteit Brussel

‡Department of Anthropology,

University of Alberta

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.

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, 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. We need in particular to

understand how they have developed their power to “program” individuals into blindly obeying their rules.

In a preceding paper (Heylighen, Lenartowicz, Kingsbury, Harmsen, & Beigi, 2017), inspired by the sociological theories of Luhmann (1986, 1995) and Parsons (1991), we analyzed social systems as autopoietic networks of distinctions and rules that govern the interactions between individuals. 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 evolved through the repeated reinforcement of certain types of social actions.

Such a system of rules tends to self-organize towards a self-perpetuating configuration. This means that the actions or communications observing these rules engender other actions that observe these same general rules. In other words, the network of social actions or communications perpetually reproduces itself. It is closed in the sense that it does not generate actions of a type that is not already part of the system; it is self-maintaining in the sense that all actions that are defining parts of the system are eventually produced again (Dittrich & Winter, 2008). This *autopoiesis* turns the social system into an autonomous, organism-like agent, with its own identity that separates it from its environment. This identity or “self” is preserved by the processes taking place inside the system, and therefore actively defended against outside or “non-self” influences that may endanger it.

In this perspective, the human beings who participate in the social system are merely a resource to be exploited by the system for its own perpetuation (Lenartowicz, 2016; Luhmann, 1986). While the social 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 to some degree 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 they direct. In general, the relation between the two types of autopoietic agents, human individuals and social systems, is one of *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).

Still, there are plenty of 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,

- 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,
- exhaustion of scarce natural resources for the mere perpetuation of the economic system.

The question 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 manipulate 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 sheep, 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.

In the present paper, we investigate a range of neural, emotional and behavioral mechanisms that social systems have co-opted to make people act in the interest of social systems' perpetuation, while overriding their individual interests. But first, we need to go into further detail about the peculiar powers that social systems have over human individuals, affecting their beliefs, emotions, 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 together 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 others and 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 the earlier hunter-gatherer bands, humans were nomadic and relatively self-sufficient. Thus, dissenting individuals or small groups could easily leave the band, joining or forming another band. That produced a loose, flexible and egalitarian social organization, in which coordination happened informally through discussion, mutual help or collaborative action. Without well-defined authority, rules could not be imposed, and spontaneous, playful, uninhibited behavior was the norm (Gray, 2009; Woodburn, 1998). This individual freedom seems to have been the default condition for

most of human existence. These first human groupings were “social” in the sense of forming a cooperative, caring community, but they were not yet consolidated into autopoietic systems governed by formal rules, and defined by clear 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.”

In sharp contrast, agricultural civilizations typically set themselves apart from nature and 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 smattering of prescriptions and taboos (Campbell, 1991).

Here, being a dissident who flouts the rules is much more 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 (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 nations, these same domains sometimes have a majority of female students. 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 (like showcasing successful female role models) can help remedy it. 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. Yet, 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, the 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 Afghani women should cover their bodies entirely with a “burqa” dress, or 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. As reviewed in our preceding paper (Heylighen et al., 2017), these rules have self-organized out of distributed social interactions. Therefore, there is no individual or authority that has the power to change them or announce them obsolete. That means in practice that we are *enslaved* by the autopoietic social system: we are programmed to obey its rules without questioning.

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. That 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 also hinders individual emancipation, or what humanist psychologists have called “self-actualization” (Heylighen, 1992; Maslow, 1970). This is the ongoing, free and full 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 will 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 one’s supposedly liberal culture, even though they do not harm anybody. Perhaps it might be a decision to not do any paid jobs but just live from what others are willing to give, to walk around

naked (or just barefoot), to not arrive at appointments when one does not feel like doing that at the moment, or to use certain neologisms instead of commonly used words.

The obstruction of societal change and self-actualization 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, 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 various common control mechanisms. The potential counterstrategies will then be elaborated in a subsequent paper 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 our preceding 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.

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)).

Narratives and conformist transmission

Social systems exploit this anticipatory ability in part by evolving and propagating stories that illustrate how people that behave in the socially sanctioned manner reap huge rewards, such as fame, fortune, power or eternal happiness in an envisioned Heaven—or alternatively receive harsh punishments, like burning in Hell, if they do not behave in this manner. 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 narrative becomes more believable when it is illustrated by highly visible role models who supposedly 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, far from reporting on an objective ‘reality’, 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.

More generally, reinforcement is more effective the more it is repeated. Since 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 and propagate a narrative, idea or behavior as more other individuals communicate it to you. The resulting positive feedback of widespread beliefs becoming more widespread means that majority opinions tend to grow until they encompass the whole group, thus creating homogeneous cultures (Axelrod, 1997). As the same belief is reinforced again and again by every person you meet, it becomes very difficult to develop or hold on to a non-conforming view. This in part explains the counterintuitive result that conformity pressure can overrule first-hand observation (Asch, 1956).

Emotions co-opted for social control

Reinforcement is a very simple and general mechanism to program behavior and shape neural connections. Emotions are more complex behavioral and neural mechanisms that have evolved to help the organism cope with specific types of threats and opportunities. They typically 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 emotions so as to ensure that human behavior does not deviate from their norms.

The explanation of how the abstract autopoeitic networks of distinctions of rules could have “learned” to exploit human emotions is evolutionary: from the endless variations of distinctions, rules and networks that appeared during human socio-cultural evolution, the ones most successful to persist and spread were those that made the best use of the instinctual mechanisms 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 disgust reaction is instinctively triggered by signs of disease, such as physical deformities (Kelly, 2011). This makes it easy to evolve a 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 (e.g. having a different skin color or shape of the eyes). In this way, the emotion of disgust is co-opted by the system to exclude “non-self”, i.e. people or behaviors that do not obey the social norms. 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, but can easily be evoked by social systems that categorize particular “abnormal” conditions as targets for disgust, fear or shame.

Such emotions co-opted for social control act insidiously, by internalizing social norms in such a way that people police their own behavior even when alone. This guarantees that the social system’s standards are always upheld, even when there is no need for that apart from the self-perpetuation of the system. For example, if an individual 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. 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 take away individuals’ control over their own bodies, feelings and self, instead turning them into 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. However, 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 self-actualization.

Fear: ostracism and xenophobia

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 killed. 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—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 actually 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. Nevertheless, 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 particularly deleterious when the social system makes people feel guilty about transgressions about which they did not have much control and that cannot be undone, such as having felt sexually attracted to an inappropriate partner, or having exhibited “sinful” thoughts or behaviors (like wearing women’s clothes). Such unredeemable guilt may make them 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 and Judaism. 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 will 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 are successful 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 (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*. Embarrassment 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 the misdemeanor. While shame and embarrassment can be easily confused (Tangney, Miller, Flicker, & Barlow, 1996), we may characterize embarrassment as a temporary reaction to a public and concrete shortcoming, and shame as a more lasting, personal feeling about a more general shortcoming of the self.

Shame may have originated as an anticipation of the potential embarrassment that would appear if the “shameful” shortcomings of the individual would be 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 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. However, 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 no need for 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 "Big Other" that would make them feel embarrassed about their personal feelings, actions, or natural processes, such as sex, menstruation or urination. 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 clean 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, or to use a comb previously belonging a dead person.

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 transgressions and pollutions that endanger the cleanliness or "purity" of the ideal, moral community.

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). 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 comes easily because human bodies, food, and sex are common conducts for infection (Kelly, 2011). 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) 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. 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.

Behavioral 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 can appropriately satisfy their needs will develop a sense of perceived competence to tackle problems before they have produced any serious 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 or other caregiver to fulfill its needs. If the mother immediately, sensitively and reliably attends to whatever need is signaled by an infant, the infant will develop a *secure attachment* to its caregiver, as it learns that the

caregiver serves 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 mother if some need or unknown danger would appear. As long as the mother is dependably available to provide the desired remedy, but otherwise allows her child the freedom to explore, the child will become increasingly bold and venture ever farther from the safety of its “secure base” with the mother. Eventually, it no longer needs its mother 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, secure attachment is not the default outcome of early development. Insecurity can develop in two ways: either the mother regularly ignores her child’s signals, e.g. by letting it cry for long before it receives any attention; or, the mother is affectionate and protective but in an undependable way, according to her own feelings rather than the ones of the child. 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. 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 and hope for her favorable mood. In both cases, the overall effect is that the child (and the later adult) will not develop the self-confidence it needs to autonomously solve its problems. Thus, lack of secure attachment creates a personality that is fundamentally uncertain about what it can or should do.

Such *self-uncertainty* is further reinforced by a social environment in which people feel powerless to control their fate, e.g. because of poverty, war, discrimination, economic crisis, lack of education, or simply too rapid and confusing changes. As demonstrated 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). The more uncertain they are, the more readily they will adhere to group norms that present them with unambiguous 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 insecure attachment. A classic illustration is how in ancient Sparta boys were separated from their mothers and subjected to a harsh training in order to raise them into hardened, unquestioning soldiers. The Janissaries, kidnapped as 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 like playfulness, empathy and compassion, and replace them by blind obedience.

Such harshness is of course extreme. Yet, many aspects of traditional education seem 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 got 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 (Gray, 2009; Woodburn, 1998). 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 interpretation is that such hierarchical structures are created 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 is merely 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.

The role of co-opted emotions in status hierarchies

While we saw how the emotions of fear, guilt, shame and disgust have been co-opted to control behavior, different social systems use them to different degrees. The anthropologist Ruth Benedict has proposed a famous distinction between cultures that primarily rely on *guilt* (typically Western ones, like the US) and those that primarily rely on *shame* (typically Asian ones, like Japan) (Benedict, 1967; Wong & Tsai, 2007). More recently, Muller has proposed to include cultures relying on *fear* and the power of punishment (mostly African and South-American ones) to this classification (Moore-Jones, 2015; Muller, 2001). But our analysis suggests to further add *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 expectations, 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 punishment, 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 is associated with its complement: the positive feeling that is supposed to replace it when the social 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 powerfully interact with status hierarchies: the negative pole normally indicates a low position in the hierarchy, and the positive one a high status. 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 caste of “Untouchables” in India, who typically cannot afford the criteria for cleanliness or purity characterizing the high-status group (Kelly, 2011). Fear is most commonly felt by those lower 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 opposite, pride, typically signals a moving up in the ranks.

In these cases too, the high-status position is vulnerable to being lost, thus keeping individuals 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) that may explain why people in such situations are ready to submit to absolutist social systems that offer them a quick redemption, e.g. by sacrificing themselves for the collective cause by becoming a suicide terrorist.

Cognitive dissonance

A last mechanism exploited for social programming we will discuss is the human desire for coherence in thought and action. When an individual has mutually inconsistent beliefs or feelings, this creates an unpleasant tension, known as *cognitive dissonance* (Festinger, 1962; Harmon-Jones & Mills, 1999). The simplest remedy is to deny or suppress some of these thoughts, so that the remaining ones are consistent. This strategy can obviously be co-opted to suppress non-conformist ideas and behaviors. A simple method is to force an individual to 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 intended to confirm the social norms are formalized, ritualized or institutionalized, so that it becomes difficult to evade them. 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) explains 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 system mutually align so as to maximize coherence (Heylighen et al., 2017).

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.

Conclusion

In a preceding 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. Such social systems emerge through mutual alignment in which actions that are aligned with other actions are reinforced, while non-aligned actions are inhibited and eventually eliminated. This dynamics has been confirmed by simulations and experiments that illustrate the emergence of languages, conventions and coordinated actions (Garrod & Doherty, 1994; Pickering & Garrod, 2006; Steels, 1998). It is characteristic of general processes of self-organization in complex adaptive systems consisting of interacting agents (Heylighen, 2013).

In the present paper, we looked at some of the specifically human mechanisms that support this reinforcement, and that can be used by the emergent social system to protect itself against 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. The present paper surveyed some of the psychological mechanisms co-opted for this purpose.

First, 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.

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 do not seem to exist as such in nature, but 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 setting the record straight. 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 increased 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, 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 is 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. Finally, the system reinforces itself by demanding people perform a variety of rituals and other controlled or formalized actions that are consonant with the rules of the system, but perhaps not with certain privately held values. This is another method to suppress deviant ideas, because our drive to avoid cognitive dissonance then pushes us to abandon these private beliefs.

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 (Gray, 2009) and by the most liberal, social-democratic nations of the present age (Veenhoven, 2009) seem 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 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).

For all these reasons, it is worth reflecting how we can liberate ourselves from such social systems programming while promoting human well-being. In subsequent articles in this series we plan to do this; respectively at the individual level of achieving self-actualization, and at the collective level of achieving a “human takeover” of society, in which social systems would again become subordinated to people rather than the other way around (Lenartowicz, 2016).

References

- Asch, S. E. (1956). Studies of independence and conformity: I. A minority of one against a unanimous majority. *Psychological Monographs: General and Applied*, 70(9), 1–70. <https://doi.org/10.1037/h0093718>
- Axelrod, R. (1997). The dissemination of culture. *Journal of Conflict Resolution*, 41(2), 203.
- Barber, N. (2011). A Cross-National Test of the Uncertainty Hypothesis of Religious Belief. *Cross-Cultural Research*, 45(3), 318–333. <https://doi.org/10.1177/1069397111402465>
- Baumeister, R. F., Stillwell, A. M., & Heatherton, T. F. (1994). Guilt: an interpersonal approach. *Psychological Bulletin*, 115(2), 243–267.
- Beard, K. W. (2005). Internet addiction: a review of current assessment techniques and potential assessment questions. *CyberPsychology & Behavior*, 8(1), 7–14.
- Benedict, R. (1967). *The Chrysanthemum and the Sword: Patterns of Japanese Culture*. Houghton Mifflin Harcourt.
- Bond, R., & Smith, P. B. (1996). Culture and conformity: A meta-analysis of studies using Asch's (1952b, 1956) line judgment task. *Psychological Bulletin*, 119(1), 111–137. <https://doi.org/10.1037/0033-2909.119.1.111>
- Bowlby, J. (1988). *A secure base: Parent-child attachment and healthy human development* (Vol. xii). New York, NY, US: Basic Books.
- Boyd, R., & Richerson, P. J. (1988). *Culture and the Evolutionary Process*. University of Chicago Press.
- Bruner, J. (1991). The narrative construction of reality. *Critical Inquiry*, 18(1), 1–21.
- Campbell, D. T. (1991). A Naturalistic Theory of Archaic Moral Orders. *Zygon®*, 26(1), 91–114. <https://doi.org/10.1111/j.1467-9744.1991.tb00804.x>
- Cullen, B. (1999). Parasite ecology and the evolution of religion. In *The Evolution of Complexity*. Dordrecht: Kluwer.
- Dittrich, P., & Winter, L. (2008). Chemical organizations in a toy model of the political system. *Advances in Complex Systems*, 11(04), 609. <https://doi.org/10.1142/S0219525908001878>
- Douglas, P. M. (2003). *Purity and Danger: An Analysis of Concepts of Pollution and Taboo*. Routledge.
- Exline, J. J., Yali, A. M., & Sanderson, W. C. (2000). Guilt, discord, and alienation: The role of religious strain in depression and suicidality. *Journal of Clinical Psychology*, 56(12), 1481–1496. [https://doi.org/10.1002/1097-4679\(200012\)56:12<1481::AID-1>3.0.CO;2-A](https://doi.org/10.1002/1097-4679(200012)56:12<1481::AID-1>3.0.CO;2-A)

- Fabrique, N. de, Hasselt, V. B. V., Vecchi, G. M., & Romano, S. J. (2007). Common Variables Associated with the Development of Stockholm Syndrome: Some Case Examples. *Victims & Offenders*, 2(1), 91–98. <https://doi.org/10.1080/15564880601087266>
- Festinger, L. (1962). *A Theory of Cognitive Dissonance*. Stanford University Press.
- Foucault, M. (2013). *History of Madness*. Routledge.
- Garrod, S., & Doherty, G. (1994). Conversation, co-ordination and convention: An empirical investigation of how groups establish linguistic conventions. *Cognition*, 53(3), 181–215.
- Glimcher, P. W. (2011). Understanding dopamine and reinforcement learning: The dopamine reward prediction error hypothesis. *Proceedings of the National Academy of Sciences*, 108(Supplement 3), 15647–15654. <https://doi.org/10.1073/pnas.1014269108>
- Gray, P. (2009). Play as a foundation for hunter-gatherer social existence. *American Journal of Play*, 4, 476–522.
- Gruter, M., & Masters, R. D. (1986). Ostracism as a social and biological phenomenon: An introduction. *Ethology and Sociobiology*, 7(3), 149–158. [https://doi.org/10.1016/0162-3095\(86\)90043-9](https://doi.org/10.1016/0162-3095(86)90043-9)
- Hafez, M. M. (2006). Rationality, Culture, and Structure in the Making of Suicide Bombers: A Preliminary Theoretical Synthesis and Illustrative Case Study. *Studies in Conflict & Terrorism*, 29(2), 165–185. <https://doi.org/10.1080/10576100500496964>
- Harmon-Jones, E., & Mills, J. (Eds.). (1999). *Cognitive dissonance: Progress on a pivotal theory in social psychology* (Vol. xviii). Washington, DC, US: American Psychological Association. <https://doi.org/10.1037/10318-000>
- Henrich, J., & Boyd, R. (1998). The Evolution of Conformist Transmission and the Emergence of Between-Group Differences. *Evolution and Human Behavior*, 19(4), 215–241.
- Herman, E. S., & Chomsky, N. (1988). Manufacturing consent: A propaganda model. *Manufacturing Consent*. Retrieved from <http://www.msu.ac.zw/elearning/material/1297953361chomsky.pdf>
- Heylighen, F. (1992). A cognitive-systemic reconstruction of Maslow's theory of self-actualization. *Behavioral Science*, 37(1), 39–58. <https://doi.org/10.1002/bs.3830370105>
- Heylighen, F. (2009). *Life is an Adventure! An agent-based reconciliation of narrative and scientific worldviews* (ECCO Working Papers No. 2009–11). Citeseer. Retrieved from <http://pcp.vub.ac.be/Papers/Life-Adventure.pdf>
- Heylighen, F. (2013). Self-organization in Communicating Groups: the emergence of coordination, shared references and collective intelligence. In À. Massip-Bonet & A. Bastardas-Boada (Eds.), *Complexity Perspectives on Language, Communication and Society* (pp. 117–149). Berlin, Germany: Springer. Retrieved from <http://pcp.vub.ac.be/Papers/Barcelona-LanguageSO.pdf>

- Heylighen, F., Lenartowicz, M., Kingsbury, K., Harmsen, T., & Beigi, S. (2017). *Social Systems Programming: The Self-organization of Socially Constructed Distinctions and Rules* (ECCO Working Papers).
- Hogg, M. A. (2011). Uncertainty-Identity Theory. *Handbook of Theories of Social Psychology: Volume Two*, 62.
- Hogg, M. A. (2014). From Uncertainty to Extremism: Social Categorization and Identity Processes. *Current Directions in Psychological Science*, 23(5), 338–342. <https://doi.org/10.1177/0963721414540168>
- Hogg, M. A., Adelman, J. R., & Blagg, R. D. (2010). Religion in the Face of Uncertainty: An Uncertainty-Identity Theory Account of Religiousness. *Personality and Social Psychology Review*, 14(1), 72–83. <https://doi.org/10.1177/1088868309349692>
- Hook, D. (2008). Absolute Other: Lacan's 'Big Other' as Adjunct to Critical Social Psychological Analysis? *Social and Personality Psychology Compass*, 2(1), 51–73. <https://doi.org/10.1111/j.1751-9004.2007.00067.x>
- Horberg, J. E., Oveis, C., Keltner, D., & Cohen, A. B. (2009). Disgust and the moralization of purity. *Journal of Personality and Social Psychology*, 97(6), 963–976. <https://doi.org/10.1037/a0017423>
- Jacobsen, M.-E. (2000). *The Gifted Adult: A Revolutionary Guide for Liberating Everyday Genius*. Ballantine Books.
- Kelly, D. (2011). *Yuck!: The Nature and Moral Significance of Disgust*. MIT Press.
- Kirkpatrick, L. A. (1997). A Longitudinal Study of Changes in Religious Belief and Behavior as a Function of Individual Differences in Adult Attachment Style. *Journal for the Scientific Study of Religion*, 36(2), 207–217. <https://doi.org/10.2307/1387553>
- Kruglanski, A. W., Chen, X., Dechesne, M., Fishman, S., & Orehek, E. (2009). Fully Committed: Suicide Bombers' Motivation and the Quest for Personal Significance. *Political Psychology*, 30(3), 331–357. <https://doi.org/10.1111/j.1467-9221.2009.00698.x>
- Lenartowicz, M. (2016). Creatures of the Semiosphere: A problematic third party in the “humans plus technology” cognitive architecture of the future global superintelligence. *Technological Forecasting and Social Change*. Retrieved from https://www.researchgate.net/profile/Marta_Lenartowicz/publication/283491001_Creatures_of_the_Semiosphere_A_problematic_third_party_in_the_'humans_plus_technology'_cognitive_architecture_of_the_future_global_superintelligence/links/563a66ac08aead0531dcb26c.pdf
- Lewis, M. (1995). *Shame: The Exposed Self*. Simon and Schuster.
- Liedloff, J. (1985). *The continuum concept: Allowing human nature to work successfully*. Da Capo Press. Retrieved from http://playpen.icomtek.csir.co.za/~acdc/education/Dr_Anvind_Gupa/Learners_Library_7_March_2007/Resources/books/conconcept.pdf

- Luhmann, N. (1986). The autopoiesis of social systems. *Sociocybernetic Paradoxes*, 172–192.
- Luhmann, N. (1995). *Social systems*. Stanford University Press.
- Luhmann, T. (1989). *Persuasions of the Witch's Craft: ritual magic in modern culture*. Harvard University Press
Cambridge, MA.
- Maslow, A. H. (1970). *Motivation and personality* (2nd ed.). New York: Harper & Row.
- Maturana, H. R., & Varela, F. J. (1980). *Autopoiesis and Cognition: The Realization of the Living*. D Reidel Pub Co.
- McKenna, J. J., Ball, H. L., & Gettler, L. T. (2007). Mother–infant cosleeping, breastfeeding and sudden infant death syndrome: What biological anthropology has discovered about normal infant sleep and pediatric sleep medicine. *American Journal of Physical Anthropology*, 134(S45), 133–161. <https://doi.org/10.1002/ajpa.20736>
- Milgram, S. (1963). Behavioral Study of obedience. *The Journal of Abnormal and Social Psychology*, 67(4), 371–378. <https://doi.org/10.1037/h0040525>
- Milgram, S., & Gudehus, C. (1978). *Obedience to authority*. Ziff-Davis Publishing Company. Retrieved from <http://www1.psych.purdue.edu/~willia55/120/LectureSocialF10.pdf>
- Mingers, J. (1994). *Self-Producing Systems: Implications and Applications of Autopoiesis*. Springer Science & Business Media.
- Moore-Jones, P. J. (2015). The benefits and pitfalls of a multicultural teaching faculty and a monocultural student population: An interpretive analysis of tertiary teachers' and students' perceptions in the United Arab Emirates. *Journal of Language and Cultural Education*, 3(3), 69–84. <https://doi.org/10.1515/jolace-2015-0021>
- Mullen, A., & Klaehn, J. (2010). The Herman–Chomsky Propaganda Model: A Critical Approach to Analysing Mass Media Behaviour. *Sociology Compass*, 4(4), 215–229. <https://doi.org/10.1111/j.1751-9020.2010.00275.x>
- Muller, R. (2001). *Honor and Shame: Unlocking the Door* (1st edition). Philadelphia, Pa.: Xlibris.
- Narvaez, D. (2014). *Neurobiology and the Development of Human Morality: Evolution, Culture, and Wisdom* (Norton Series on Interpersonal Neurobiology). W. W. Norton & Company.
- Narvaez, D., Wang, L., & Cheng, Y. (2016). The evolved developmental niche in childhood: Relation to adult psychopathology and morality. *Applied Developmental Science*, 20(4), 294–309.
- Nisbett, R. E., & Cohen, D. (1996). *Culture of honor: The psychology of violence in the South*. Westview Press.
- Nussbaum, M. C. (2009). *Hiding from Humanity: Disgust, Shame, and the Law*. Princeton University Press.
- Oatley, K. (2002). Emotions and the story worlds of fiction. *Narrative Impact: Social and Cognitive Foundations*, 39–69.

- O'Neill, S. P. (2015). Sapir–Whorf Hypothesis. In *The International Encyclopedia of Language and Social Interaction*. John Wiley & Sons, Inc. <https://doi.org/10.1002/9781118611463.wbielsi086>
- Parsons, T. (1991). *The Social System*. Psychology Press.
- Paul, G. S. (2005). Cross-National Correlations of Quantifiable Societal Health with Popular Religiosity and Secularism in the Prosperous Democracies. *Journal of Religion and Society, 1*, 7.
- Pickering, M. J., & Garrod, S. (2006). Alignment as the basis for successful communication. *Research on Language & Computation, 4*(2), 203–228.
- Pinker, S. (2011). *The better angels of our nature: The decline of violence in history and its causes*. Penguin. Retrieved from
- Poulin, R. (2010). Parasite Manipulation of Host Behavior: An Update and Frequently Asked Questions. In T. J. R. H. Jane Brockmann Marc Naguib, Katherine E. Wynne-Edwards, John C. Mitani and Leigh W. Simmons (Ed.), *Advances in the Study of Behavior* (Vol. 41, pp. 151–186). Academic Press. [https://doi.org/10.1016/S0065-3454\(10\)41005-0](https://doi.org/10.1016/S0065-3454(10)41005-0)
- Sandler, M., & Lee, J. (2013). *Barefoot Walking: Free Your Feet to Minimize Impact, Maximize Efficiency, and Discover the Pleasure of Getting in Touch with the Earth*. Potter/TenSpeed/Harmony.
- Sartre, J.-P. (1956). *Being and nothingness* (Vol. Ixix). Oxford, England: Philosophical Library.
- Schön, R. A., & Silvén, M. (2007). Natural Parenting—Back to Basics in Infant Care. *Evolutionary Psychology, 5*(1), 102–183.
- Steels, L. (1998). The origins of ontologies and communication conventions in multi-agent systems. *Autonomous Agents and Multi-Agent Systems, 1*(2), 169–194.
- Storek, J. S. (2011). *The hubris and humility effect and the domain-masculine intelligence type: exploration of determinants of gender differences in self-estimation of ability*. UCL (University College London). Retrieved from <http://discovery.ucl.ac.uk/1331910/>
- Tangney, J. P., & Dearing, R. L. (2003). *Shame and Guilt*. Guilford Press.
- Tangney, J. P., Miller, R. S., Flicker, L., & Barlow, D. H. (1996). Are shame, guilt, and embarrassment distinct emotions? *Journal of Personality and Social Psychology, 70*(6), 1256.
- Veenhoven, R. (2009). Well-being in Nations and Well-being of Nations. *Social Indicators Research, 91*(1), 5–21.
- Williams, B. (1994). *Shame and Necessity*. University of California Press. Retrieved from <http://gen.lib.rus.ec/book/index.php?md5=3AF172AA4C6746DC7540DCFDB72A80DB>

- Williams, K. D. (2002). *Ostracism: The Power of Silence*. Guilford Press.
- Wise, R. A. (2004). Dopamine, learning and motivation. *Nature Reviews Neuroscience*, 5(6), 483–494.
<https://doi.org/10.1038/nrn1406>
- Wong, Y., & Tsai, J. (2007). Cultural models of shame and guilt. *The Self-Conscious Emotions: Theory and Research*, 209–223.
- Woodburn, J. (1998). Egalitarian societies. *Limited Wants, Unlimited Means: A Reader on Hunter-Gatherer Economics and the Environment*, 87–110.
- Žižek, S. (2010). “The Spectre of Ideology”(1989). *Cultural Theory: An Anthology*, 228.
- Zuckerman, P. (2009). Atheism, Secularity, and Well-Being: How the Findings of Social Science Counter Negative Stereotypes and Assumptions. *Sociology Compass*, 3(6), 949–971. <https://doi.org/10.1111/j.1751-9020.2009.00247.x>