The Role of the Physiological Reward System in Susceptibility to Propaganda and in the Organisation of Society

Igor Furgel

(first edition)

Version 2.00-web (en) as of 30th August 2026

This work has shown that the physiological central reward system plays a key role in both human susceptibility to propaganda and the organisation of society.
It was found that both an increased dependence on psychoactive substances and an individual's enhanced susceptibility to propaganda are caused by the fact that the use of the *associative system* (System 1 according to D. Kahneman) is, statistically speaking, rewarded above the population average by the central reward system. This conclusion holds true regardless of whether the magnitude of the reward received lies above or below the individual's personal threshold for conscious perception of that reward.

In examining the role of the individual reward system in the organisation of society, we analysed the contribution made by each element of the triad {liberty, equality, [fraternity and love]} to the voluntary submission of the statistical majority of society's members to its order.
It was found that, of all the elements listed, only 'liberty' (which in this context is synonymous with 'freedom'), as a characteristic of social relations, leads to a stable, automatic activation of the reward system amongst the statistical majority of members of a socium, thereby minimising this majority's motivation to change the existing order of that socium. Therefore, 'liberty' as a characteristic of social relations is suitable for organising society in such a way that its members voluntarily submit to this social order.

This analysis has also shown that there are at least two main reasons why the feeling of 'freedom' ('liberty') consistently activates the reward system: one main reason is 'resource-minimising', the other – 'anxiety-reducing'. The feeling of 'freedom' ('liberty') contributes to saving an individual's resources and to reducing the basic forms of existential angst, as described by F. Riemann, which are directly linked to *un*freedom.

I have also shown that it is precisely the difference in the defining characteristics of 'love' on the one hand and the social order on the other – as properties of social relationships – that leads to the necessity of a certain statistically stable size of the socium, beyond which personal 'love' can, in principle, no longer remain the primary mechanism for the reproduction of the social order.

The work also made it possible to answer the question: 'How should a socium – i.e., also a society – be organised so that its members voluntarily submit to its order?' It has shown that, in order to achieve this political goal, a society should maintain the following three infrastructures:

- the infrastructure for a real diversity of consumer choice,
- the infrastructure for a real legal certainty and ethical certainty, and
- the infrastructure for manipulating the consciousness of members of society.

With regard to the organisation of these infrastructures, I have also identified at least two fundamental questions that every sovereign society should answer for itself. The entire organisation of that society, including its political system, depends on the specific answer to these questions for a particular society at a particular historical period of its existence.

This work may be of interest to readers who are interested in sociological topics and their connection to the functioning of the physiological reward system.

©Igor Furgel

This (first) edition (Version 2.00 (en)) was published on 30th August 2026, German National Library (Deutsche Nationalbibliothek), https://d-nb.info/1417851619/

The manuscript of the first chapter of this work was written on 5th February 2026.

The first edition in Russian (version 2.00 (ru)) was published on 30th August 2026, German National Library (Deutsche Nationalbibliothek), https://d-nb.info/1417854731/

The first edition in German (version 2.00 (de)) was published on 30th August 2026, German National Library (Deutsche Nationalbibliothek), https://d-nb.info/1417889853/

©Igor Furgel

Contents

©Igor Furgel

1 The Physiological Reward System and Susceptibility to Propaganda

We begin our analysis with some well-documented facts about the functionally centralised physiological reward system[1].
The functionally centralised reward system (FCRS) is a neural network that forms part of the central nervous system and therefore cannot exist without it [1], [2].

Bilaterally symmetrical animals[2] (Bilateria: animals with a true head and longitudinal axis) represent the earliest major evolutionary branch, in which a centralised organisation of the nervous system, associated with cephalisation and directed movement, became widespread. In these groups, dopaminergic reward systems are already involved in reinforcement, learning and 'reward-seeking behaviour'.

In animals with a decentralised nervous system, such as cnidarians (e.g., jellyfish, Cnidaria) or echinoderms (e.g., starfish), no analogous FCRS [2], [3] has yet been identified, which represents a key component of motivation and the processing of reward signals. Instead, their behaviour is controlled by distributed neural networks, which are responsible for sensory processing, behavioural coordination and, in some taxa, also for simple forms of associative learning and behavioural plasticity.

It is important to note that the functionally centralised reward system, which exists only in animals with a centralised nervous system, represents one of the most important instruments of *the adaptive mechanism* (namely, *the correction* and *prevention mechanisms*)[3].

The central reward system (CRS) is a functionally centralised reward system implemented by structures belonging to the central nervous system (CNS). It is implemented by specific neural circuits, in which dopamine plays a key role as a neurotransmitter. In mammals, such specific neural circuits are realised as the mesolimbic dopaminergic system, which constitutes a key component of motivation and the processing of reward signals. In other vertebrates not belonging to the class of mammals, there are evolutionarily related neural circuits that are regarded as evolutionary counterparts of the mammalian mesolimbic system.

For the sake of simplicity, we shall confine our discussion here essentially to humans and human society[4], as these are precisely the subject of this work. However, there is nothing to suggest that the findings of the forthcoming analysis would not be applicable to all animals with a functionally centralised reward system.

In humans, as in all living beings possessing any kind of nervous system – whether centralised or decentralised – there exists the *associative system* responsible for rapid, spontaneous and

[1] The reward system is a functionally organised neural network responsible for the evaluation of stimuli, motivation, learning and behavioural choice.
[2] Examples of this include worms and early invertebrates that end in a head.
[3] For *the adaptation mechanism*, see [4], CHAPTER I "THE UNIVERSAL FORM OF BEING", section 3.6.
[4] '*Socium*' is a social unit (entity), a group of '*will owners*', a socially connected system of interacting '*will owners*', a society of any size held together by any internal relationships. Based on this definition, a 'society' is a special case of a socium.
A '*will owner*' is an *adaptive* system with *freedom of choice*.
Definitions of these terms can be found in [4], GLOSSARY A.

©Igor Furgel

intuitive reactions to the current situation without rational deliberation[5]. The *associative system* is automatically activated when a person finds themselves in a situation that is familiar to them, i.e., for which they already have an association stored in their long-term memory. The *associative system* matches the current situation with one that has already been stored, and if they match, the corresponding association stored in long-term memory is used as a guide for action[6].
Since the *associative system* works with associations that are already stored in long-term memory, insofar as they exist there, the use of the *associative system* saves the individual's resources, because the *matching operation* and the absence of rational deliberation, i.e., the absence of forming causal chains, require a significantly lower expenditure of resources than the *comparison operation* and forming causal chains through the creation of more abstract models of the current situation[5]. It is precisely this lower resource consumption that is being rewarded[7].

The anatomical correlate of the *associative system* in mammals is the amygdala [5]. It is also one of the central components of the limbic system.
The most important basic anatomical structure of the central reward system in mammals is the mesolimbic system [6]. As the dopaminergic component of the limbic system, the mesolimbic system connects the midbrain (VTA[8]) with limbic structures, such as the nucleus accumbens.
The mere anatomical proximity between the amygdala (the anatomical correlate of the *associative system*) and the mesolimbic system (the basic anatomical structure of the reward system) is in itself a significant indicator of their functional connection.

Thus, the activation of the *associative system* is accompanied by an automatic activation of the reward system, which in turn triggers the release of dopamine[9]. This means that the use of the *associative system* is automatically and immediately 'rewarded'.

The amount of dopamine released – also when the *associative system* is used – can either exceed or fall below the threshold of personal perception. In the first case, we consciously perceive the dopamine release and typically experience it as a pleasant state of well-being, a sense of feeling good. In the second case, we perceive the dopamine release unconsciously; that is, our brain registers it as a 'reward', yet we do not experience any pleasant sense of well-being – in other words, we do not consciously perceive this release.

Every person develops – as a result of their socialisation – an autobiographical profile, i.e., a set of associations stored in long-term memory. As we mentioned above: when a person finds themselves in a situation that is familiar to them – that is, for which they already have an association stored in their long-term memory – their *associative system*, and consequently their reward system, is activated at that moment[10], accompanied by a release of dopamine.

If the amount of dopamine released exceeds the individual's perception threshold, this 'reward' is perceived as a 'pleasant situation', a 'pleasant conversation' or 'confirmation of one's own

[5] Regarding the terms *'associative system'* and *'causal system'*: see [4], CHAPTER II "THE HUMAN. THE ANIMATE. THE INANIMATE", sections 2.5 – 2.8. These systems respectively correspond to System 1 and System 2 according to D. Kahneman.
[6] see [4], CHAPTER II "THE HUMAN. THE ANIMATE. THE INANIMATE", section 2.5
[7] The Principle of Least Resources Consumption (the Principle of Most Choice), see [4], CHAPTER II "THE HUMAN. THE ANIMATE. THE INANIMATE", section 1.2
[8] the ventral tegmental area
[9] or a similar neurotransmitter, such as octopamine in bees and other insects
[10] following a successful match of the current situation with one already stored; see [4], CHAPTER II "THE HUMAN. THE ANIMATE. THE INANIMATE", section 2.5

©Igor Furgel

worldview', whilst the stored association or opinion is perceived and confirmed as 'good', 'positive' or 'correct'.
If, on the other hand, the amount of dopamine released falls below the individual's perception threshold, we do not consciously perceive this release. Nevertheless, our brain still registers it as a reward.

Such 'familiar' situations include, for example, the following:

- A person hears opinions in the media or on social networks that match or are close to their own views, or their worldview is confirmed in a conversation. In such cases, thanks to the *associative system*, the amount of dopamine released usually exceeds the personal perception threshold, i.e., we react to this with a pleasant feeling of well-being.
- A person has already mastered cycling or driving, meaning they already have associations linked to these actions, which are stored in their long-term memory. Let us assume they are currently cycling or driving in a normal traffic situation. In this case, the amount of dopamine released – due to the *associative system* being used for familiar actions – lies below the personal perception threshold, i.e., our brain receives a 'small' reward that we do not consciously perceive.
  However, there are also people whose brains receive a reward[11] whilst cycling routinely that lies above their personal perception threshold (either because their dopamine release is statistically above average[12], or because their dopamine perception threshold is statistically below average), so that they actually feel this dopamine release whilst cycling as usual. For such people, this can lead to more frequent, or even excessive, cycling.

In other words, in a familiar situation, we receive external confirmation of an association that has already been stored, and this external confirmation is accompanied by a dopamine release.

Since, in a familiar situation[13], a person receives a dopamine reward thanks to the link 'activation of the *associative system* -> reward', they proactively seek to recreate this situation. This can happen in various ways: for example, they may join a club, an interest group, a political party, a religious community, and so on. The decisive criterion here is that the members of the respective group share similar views and a similar worldview. When they find themselves among like-minded people and communicate with one another, they activate similar associations in each other and the corresponding *associative system* – and thus also the corresponding reward system. Thanks to this communication, which is reminiscent of an 'echo chamber', they trigger a dopamine release in one another, which they perceive as positive and pleasant self-affirmation or self-assertion.

Admittedly, not everyone joins a group with shared interests, such as a political party[14]. This raises the question: 'How do people, who wish to join a group with shared interests (such as a political party), differ from those who do not intend to do so?'
There are a number of factors – both social and psychological – that influence such a decision. In this context, the following hypothesis suggests itself: one of the differences – at a psychological and physiological level – is that a person who receives a statistically

[11] namely the act of driving itself and not the overall situation, for example the surrounding landscape
[12] In this work, the expression 'statistically above/below average' always refers to 'statistically above/below the average compared to the average value for the human population'.
[13] which we perceive as 'positive' and 'pleasant' because it reactivates our stored autobiographical association
[14] As at 31 December 2024 in Germany: total number of members of federal political parties: 1,141,154; total population: 83,580,000 (https://de.statista.com) => 1.4 % of Germany's total population are members of federal political parties.

©Igor Furgel

above-average reward in the form of dopamine for activating their *associative system* is more inclined to join a 'club echo chamber' in order to experience this reward more frequently. One could say that a kind of dependence on this 'club echo chamber' develops: the individual strives to repeat this situation, which they perceive as 'pleasant', over and over again. This dependence is explicit when the reward received exceeds the individual's perception threshold (either because the dopamine release is statistically above average or because the individual's dopamine perception threshold is statistically below average), and implicit in the opposite case.

This means it is likely that people who willingly join an interest group out of conviction receive, from a purely physiological perspective, a statistically above-average dopamine release for using their *associative system*[15].
People who do not tend to join an interest group out of conviction, from a purely physiological perspective, i) experience a statistically average or below-average dopamine release through the use of their *associative system*, and ii) the reward received in the process lies below their personal perception threshold.

This chain of reasoning also leads to the conclusion that people, in whom the use of the *associative system* triggers a dopamine release that is above the statistical average, are more susceptible to the effects of propaganda[16], when the content of this propaganda is close to or well aligned with their already stored, i.e., pre-existing associations ('suitable propaganda'). This increased susceptibility to 'suitable propaganda' can be explained by the fact that people with this physiological speciality strive to repeatedly create situations of 'immersion in suitable propaganda', which increasingly amplifies the effect of this propaganda and can even lead to a dependence on it.

Dependence on psychoactive substances is also closely linked to the dopaminergic system, because many psychoactive substances strongly activate the brain's reward system, thereby increasing the release of dopamine. Consequently, a psychoactive substance and the stimuli associated with it, thanks to the way the *associative system* works, are perceived as particularly important and are anchored in long-term memory.
Although different substances act differently, the result remains similar: an enhancement of the dopamine effect in the mesolimbic reward system. As a result of repeated overstimulation, the brain adapts through its *adaptation mechanism*. This adaptation can lead to a situation where more of the substance is needed to achieve the same effect (the phenomenon of *habituation*[17]), everyday things appear less appealing, and stimuli associated with the psychoactive substance automatically trigger the desire to repeat the experience. Therefore, a part of dependence represents a learning and long-term memory process (utilising the *associative system*), in which dopamine reinforces the link between a specific substance, a context and a reward.

It is clear from the above considerations that both – an increased dependence on psychoactive substances and an individual's enhanced susceptibility to propaganda – are caused by the fact that the use of the *associative system* is, statistically speaking, rewarded to an above-average degree compared with the average for the human population.
This conclusion holds true regardless of whether the magnitude of the reward received lies above or below the individual's personal threshold for conscious perception of that reward.

[15] The preferential use of the *associative system* correlates clearly with the "having-self-identification". This means that this physiological speciality – the dopamine reward for using the *associative system*, which is statistically above the population average – also makes "having-self-identification" likely in the individual; see [4], CHAPTER V "THE THRIFTINESS OF NATURE AND THE STABILITY OF SOCIETY", there Chapters 1 and 2.
[16] the term 'propaganda' as defined in [7]
[17] For the phenomenon of *habituation*, see [4], CHAPTER I 'THE UNIVERSAL FORM OF BEING', section 3.6.1.

©Igor Furgel

If, in an individual, the use of the *associative system* i) is statistically under-rewarded compared to the average of the human population and ii) the reward received in the process lies below the personal threshold of perception, that individual generally develops both a lower dependence on psychoactive substances and a lower susceptibility to propaganda.

Since it is precisely the use of the resource-saving *associative system* that is rewarded by the central reward system, the vast majority of people favour the *associative system* and use it most frequently.
For a small proportion of people, the use of the *causal system* is also rewarded, even though this system consumes far more resources than the *associative system*. The *causal system* is responsible for forming new causal chains by creating more abstract models of the current situation, i.e., for rational reasoning and for carrying out the operation of *comparison*[18]. Performing these functions requires a significantly greater expenditure of resources than performing the functions of the *associative system*, as mentioned above.

Such a reward occurs, for example, particularly when an unexpected analytical algorithm is applied, or an unexpected result is achieved ('reward for exclusivity'), as well as when targeted mental or physical effort (e.g., in sporting competitions) is crowned with something that is perceived as success ('reward for success'). People experience this reward as a feeling of mental or physical satisfaction.
It is precisely for this reason that this small minority of people of this particular type, statistically speaking, utilise their *causal system* more actively than the population average, in order to receive a reward even more frequently[19].

Depending on a particular person's inner attitude, the use of the *causal system* may, in addition to consuming a great deal of resources, be subject to a further natural 'brake'. The *causal system* frequently uncovers discrepancies through *comparisons*, for example in statements or between a person's behaviour and ethical standards. If a particular person is inclined to perceive the uncovering of inconsistencies as a success, the use of the *causal system* is also rewarded in this case ('reward for success'). If, on the other hand, a particular person is inclined to view the uncovering of an inconsistency as a failure, then the 'reward for success' does not occur, because the failure is not perceived as a success. The absence of this 'reward for success' in such a mindset will also inhibit the use of the *causal system* in that person.
Using the *causal system* to a greater extent than the population average triggers an automatic process of critical self-reflection in humans, through a *comparison* of their actual behaviour with relevant reference points, such as ethical[20]. This critical self-reflection usually reveals discrepancies between the person's actual behaviour and the relevant reference points, thereby reducing the 'reward for success'. This, in turn, significantly reduces the likelihood of dopamine dependence resulting from the use of the *causal system*.

The following statistical correlation can also be derived from the considerations set out above: The degree of an individual's 'ordinariness'[21] (the degree of an individual's 'substrateness' /

[18] Regarding the terms *'associative system'* and *'causal system'*: see [4], CHAPTER II "THE HUMAN. THE ANIMATE. THE INANIMATE", sections 2.5 – 2.8. These systems respectively correspond to System 1 and System 2 according to D. Kahneman.

[19] The use of the *causal system* at a frequency statistically higher than the population average clearly correlates with "being-self-identification". In other words, this rare physiological trait – the dopaminergic reward for using the *causal system* – also makes "being-self-identification" likely in the individual; see [4], CHAPTER V "THE THRIFTINESS OF NATURE AND THE STABILITY OF SOCIETY", specifically Chapters 1 and 2.

[20] see [4], CHAPTER II "THE HUMAN. THE ANIMATE. THE INANIMATE", specifically Section 2.5

[21] "The petty man", according to Confucius, "the common man", according to I. Furgel; see[4], CHAPTER V "THE THRIFTINESS OF NATURE AND THE STABILITY OF SOCIETY", specifically Chapter 2.

©Igor Furgel

the degree to which an individual 'is a substrate') correlates with the extent to which that individual's reward for using the *associative system* is above average: The greater this reward, the higher the degree of 'ordinariness' of that individual. Conversely, the greater an individual's reward for using the *causal system*, the higher the degree of 'authority'[22] of that individual (the degree to which the individual is "a leadership personality").

One characteristic of the so-called "leadership personality"[23] is "being-self-identification". In order to lead a socium (society, company, etc.) by setting non-trivial goals – that is, goals not anchored in long-term memory as a result of socialisation – a "leadership personality" shall, amongst other things, be capable of defining such non-trivial goals, for which it shall inevitably utilise its *causal system*, for what "leadership personality" is rewarded more strongly.
Conversely, this means that the so-called 'common man'[23], as they are more strongly rewarded for using the *associative* rather than the *causal system*, cannot set non-trivial goals and is therefore only capable of steering a social entity by pursuing trivial goals and repeating routines already familiar to them for that purpose.
Regardless of which goals – trivial or non-trivial – the exercise of political power in a particular society at a specific historical moment is associated with, there is always a likelihood that the person in power will develop a dopamine dependence as a result of exercising that power. However, the likelihood of developing a dopamine dependence through frequent[24] use of the *causal system*[25] is (due to genuine self-reflection, see above) significantly lower than through frequent[24] use of the *associative system*[26].

The above analysis therefore provides the basis for the following statements:

Statement (STM.) 1:

Both an increased dependence on psychoactive substances and an enhanced susceptibility of the individual to propaganda are caused by the fact that the central reward system, which is inherent to the central nervous system, rewards the use of the *associative system* at a rate statistically higher than the population average.

STM. 2:

An individual's degree of 'ordinariness' correlates with the extent to which that individual's reward for using the *associative system* lies statistically above the population average: the greater this reward, the higher the degree of 'ordinariness' of that individual. Conversely, the greater an individual's reward for using the *causal system*, the higher that individual's degree of 'authority'.

[22] "The noble man", according to Confucius, "the leadership personality", according to I. Furgel; see [4], CHAPTER V "THE THRIFTINESS OF NATURE AND THE STABILITY OF SOCIETY", Section 2 therein.
[23] see [4], CHAPTER V "THE THRIFTINESS OF NATURE AND THE STABILITY OF SOCIETY", in particular Chapter 2
[24] statistically more frequently than average
[25] i.e., in people with the "being-self-identification" ("the leadership personalities")
[26] i.e., in people with the "having-self-identification" ("the common men")

©Igor Furgel

2 The Physiological Reward System and the Organisation of Society

It is interesting to note that the reward system, as one of the most important instruments of *the adaptation mechanism* (namely *the correction* and *prevention mechanisms*), influences not only individual behaviour but also social behaviour, both within human sociums and in animal communities.
One of the associations stored in long-term memory during the process of socialisation is the position of a member of a socium within that socium's stratification or hierarchy[27]. Confirmations of this specific social-position-association also activate the reward system, what leads an 'ordinary' member of the socium to strive to maintain their social position within the hierarchy of that socium, as stored in long-term memory; in other words, this social position is effectively conserved[28]. The preservation of social position contributes significantly to strengthening the stability of society, because it reduces the desire to change one's current social position and consequently diminishes the motivation of 'ordinary' members of the socium to fight for a change in their hierarchical position within that group. The influence of the reward system on the stability of socium has been extensively confirmed, for example through the behaviour of bee colonies (see, for example, [8], [9]) and of herd animals such as horses, sheep and primates (see, for example, [10], [11], [12]).

Let us now ask a more general question: 'How should a socium – i.e., also a society – be organised so that its members voluntarily[29] submit to its order?'

To narrow down the scope of our consideration of this question, let us turn to the motto of the French Republic: "Liberty, Equality, Fraternity"[30]. This triad was also the famous motto of the Great French Revolution of 1789: Maximilien Robespierre proposed, in his speech of 5th December 1790, that it be used in its present form. Given that this triad was the motto of the Great French Revolution, has survived to this day and is enshrined in the Constitution of the French Republic, there are compelling reasons to assume that this triad has been uniting French society on a voluntary basis for more than two centuries. We shall therefore examine each element of this triad from the perspective of the contribution it makes to supporting that the statistical majority of members of society voluntarily submit to its order.

[27] This also encompasses an animal's hierarchical position within its animal community: in a herd, a swarm, a bee colony, etc.

[28] The preservation of social position is not a deterministic, but a statistical tendency; i.e., a statistically significant majority of a population strives to preserve their respective social position.
Certain social positions, which I refer to as non-hierarchical – such as child, father, mother, nursery school child, pupil, pensioner – are automatically assigned to individuals within the human population by a system of social rules (social policies). Social positions, such as those within the hierarchy of a company or a socium, are assigned to individuals through selection procedures within the respective organisation (organisational policies). I refer to such social positions as hierarchical.
The policies (organisational rules and procedures) governing the assignment of various social positions amongst animals in animal communities are based on chemical (e.g., in bees and ants) and/or physical (such as acoustic signals in birds or strength competitions in herd animals) communication mechanisms.
In human sociums, such systems of social rules (social policies) may also be based on rational considerations and ethical principles, because only humans possess the *causal system*.

[29] This means that security authorities only resort to coercive measures in the most extreme emergencies; in other words, the stability of society does not rest on repression.

[30] "La devise de la République est "Liberté, Egalité, Fraternité" ", see Article 2 of the French Constitution of 4 October 1958.

©Igor Furgel

2.1 'Fraternity' and 'Love'

In this section, we shall consider not only 'fraternity' as found in the motto of the modern French Republic, but also 'love': both as characteristics of social relationships. Although there are fundamental differences between 'fraternity' and 'love', they overlap to some extent as characteristics of social relationships and embody one of humanity's basic psychological needs – "relatedness"[32], which, according to self-determination theory[33], represents one of the three basic psychological needs. We will discuss the relevant details further below in sections 2.1.1 and 2.1.2.

2.1.1 'Fraternity'

Let us begin our consideration with the element 'fraternity'. According to the Constitutional Council's 2018 decision[31], 'fraternity' is a constitutional principle. It is a principle of solidarity and mutual aid amongst people.
What might be the psychological equivalent of the understanding of 'fraternity' as solidarity and mutual aid? Solidarity and mutual aid, as characteristics of social relationships, embody "relatedness"[32], which, according to self-determination theory[33], constitutes one of the three basic psychological needs. Thus, 'fraternity', as a characteristic of social relationships, embodies one of the basic psychological needs: "relatedness".
According to self-determination theory [13], the fulfilment of each of the three basic psychological needs activates the central reward system, thereby triggering intrinsic motivation and a sense of well-being. Consequently, the fulfilment of the need for "relatedness", for 'fraternity', also activates the reward system, which is accompanied by the release of dopamine. The activation of the reward system itself, as well as the release of dopamine – which induces a sense of well-being – minimises the individual's motivation to change the existing order of the respective socium. One example is membership in solidarity (mutual benefit) funds such as health insurance or pension funds, where the immediate and/or deferred mutual benefits activate the central reward system of the members of such funds.
But how stable is the activation of the reward system through 'fraternity' amongst the statistical majority of a socium? 'Fraternity' within a socium is constantly undermined by the opportunism ('ordinariness', see above) of the statistical majority of its members: As soon as one member of a socium ceases to behave in a fraternal manner and instead acts opportunistically, most of the remaining members of the socium also cease to adhere to the principles of fraternity. This means that 'fraternity' as a characteristic of social relationships is highly unstable and, when implemented alone, is therefore unsuitable for organising society in such a way that its members voluntarily submit to this social order.

2.1.2 'Love'

Let us now turn to the element of 'love' as a characteristic of social relationships. The term 'love' as a social relationship between one person and another means, in this context, accepting

[31] Decision No. 2018-717/718 QPC of 6th July 2018
[32] "relatedness": the need to feel connected to other people, to be accepted and to maintain trusting relationships; see [13] ("feeling connected/belonging").
[33] Self-determination theory (SDT) [13]. Two further psychological basic needs according to this theory: "autonomy" ("feeling of choice/control") – the perception of one's own actions as voluntary and based on one's own decisions – and "competence" ("feeling of capability/mastery") – the feeling of successfully mastering tasks and difficulties.

©Igor Furgel

that other person just as it is. Such acceptance encompasses, amongst other things, the loving person's care for and protection of that other person.

As we wrote in section 2.1.1, 'fraternity' is understood as a social relationship in the sense of solidarity and mutual aid between people, which also encompasses mutual care and protection amongst the members of a socium guided by the principle of 'fraternity'. 'Love', as a social relationship, is understood as the loving person's care for and protection of the other (the beloved). What, then, is the difference between 'fraternity' and 'love'?

'Fraternity', in the sense of mutual care and mutual protection, is the willingness to help the other, but without self-sacrifice, i.e., without losing sight of one's own situation in the broadest sense of the word. 'Fraternity' is first and foremost a relationship of solidarity and mutual recognition: "You are one of us, which is why I regard your interests, in a certain sense, as my own, and am therefore prepared to help you, whilst also expecting help from you[34]". It presupposes equality, mutual aid, loyalty, a shared destiny or a sense of shared belonging. That said, 'fraternity' does not necessarily require deep emotional closeness. 'Fraternity' means: "We are equal and bound together by something we share".

'Love', in the sense of caring for the beloved and protection by the loving person – this is the loving person's willingness to devote itself entirely to the beloved and to sacrifice itself for them, regardless of its own situation. 'Love' is a more comprehensive and intense valuing of the other person as a unique, irreplaceable human being: "It is you, specifically, who matters to me". This may include care, attachment, the desire for closeness, the joy in the other person's existence[35], as well as the willingness to consider its well-being. 'Love' says: "You are valuable to me".
We can therefore see that there are fundamental differences between 'fraternity' and 'love', even though these characteristics of social relationships overlap to some extent. Consequently, 'love', as a characteristic of social relationships, embodies – just like 'fraternity' – one of the basic psychological needs: "relatedness"[32], which, according to self-determination theory[33], represents one of the three basic psychological needs.

Having distinguished and delineated 'fraternity' and 'love' as characteristics of social relationships, and having analysed 'fraternity' in section 2.1.1 with regard to its suitability for organising society in such a way that its members voluntarily submit to the given social order, we shall now focus on the term 'love' and its suitability for achieving the same goal.

The terms of 'love' and 'anxiety' are – from a philosophical perspective – categorial complementarities[36], see [4], CHAPTER I "THE UNIVERSAL FORM OF Being", section 4.2 "Frequently Encountered Categorial Complementarities", Table A2. Therefore, 'love' represents an ideal means of overcoming anxiety: Due to their categorial complementarity, where there is 100 % 'love', there is 0 % anxiety. Love for another person helps that person to overcome their existential angst, whilst a brotherly attitude towards another person helps that person to partially reduce their existential angst.
For the statistical majority of people, successfully overcoming anxiety goes hand in hand with the activation of the central reward system, which contributes to the adaptive consolidation of the corresponding behavioural pattern. Thus, when the beloved perceives love from the loving person, the reward system is activated in the beloved.

[34] so-called "functional love"
[35] so-called "existential love"
[36] The term "categorial complementarity" is defined in [4], CHAPTER I "THE UNIVERSAL FORM OF Being", section 1.1 "Definitions".

©Igor Furgel

The activation of the reward system itself – the release of dopamine, which induces a feeling of well-being – minimises the motivation of the individual (in this case, the beloved) to change the existing social order of the socium in question.

This raises the question: "Why, throughout the entire historical span of human history, is there not a single statistically large society known, i) in which its members would have voluntarily submitted to a specific social order, based essentially on the social relationship of 'love', and ii) which would have endured for a historically long period? In other words: Why has no statistically large and historically long-lasting society succeeded in making 'love' the primary mechanism for the reproduction of the social order?"[37]

The answer to this question is multifaceted and ranges from the level of social and personal relationships to that of individual psychology and physiology.
As we noted above, 'love' means valuing the other person (the beloved) as a concrete, irreplaceable human being: "It is you, specifically, who matters to me", "You are valuable to me". However, social order is also intended to connect people who do not know one another and do not love one another. In a statistically large society, the personal relationship expressed by "I love you" alone is not sufficient. It requires impersonal norms and trust in impersonal institutions that ensure the functioning of both normative procedures – including coercive measures in certain cases – and informal procedures, such as reputation-based mechanisms.
Both 'love' and public order are social relationships. However,

- 'love' represents a personal, emotional and context-specific characteristic of social relationships (not necessarily mutual), whilst
- public order represents an impersonal, mass-scale, repetitive, socially-contextual characteristic of social relationships that requires statistical predictability.

In this context, 'love' personalises the value of a specific other, whilst social ethics and universal morality depersonalise it. In the first case: "I must look after you because it is you – precisely you and no one else." In the second: "I must look after you because every human being has a certain value."

Thus, 'love' on the one hand and public order on the other, as distinct characteristics of social relationships, exhibit fundamentally different defining features: 'love' is personal, selective and requires a certain degree of mutual personal acquaintance, whilst a statistically large society relies on pre-determined mechanisms that operate between all members of society, including – and above all – those who do not know one another.

STM. 3:

> It is precisely the difference in the defining characteristics of 'love' on the one hand and the social order on the other – as properties of social relationships – that leads to the necessity of a certain statistically stable size of the socium, beyond which personal 'love' can, in principle, no longer remain the primary mechanism for the reproduction of the social order. This statement holds true even if the overwhelming majority of the members of this socium are capable of love, and even if the culture of that socium actively promotes it.

[37] 'Love' as a social relationship is understood as the loving person's care for and protection of the beloved. 'Love' becomes the primary mechanism for the reproduction of social order only when a significant part of the behaviour normatively expected from members of society is ensured precisely by 'love' in the sense described above, rather than by other characteristics of social relationships, such as anxiety of sanctions, material benefit or the impersonal obeying of rules.

©Igor Furgel

At the level of individual psychology and physiology, it is very demanding to bestow genuine love – in the sense of care and protection – upon another (beloved) person; that is to say, it requires the investment of significant own resources in the other (in the beloved). It is precisely for this reason that it is psychologically and physiologically impossible to love many people at the same time, because this would contradict the Principle of Least Resources Consumption[38].

For the reasons outlined above, 'love' – as a characteristic of social relationships – is not suitable, when implemented alone, for organising a society in such a way that its members voluntarily submit to that social order.

2.2 'Equality'

Let us continue our discussion with the term 'equality'. As with the term 'fraternity', the French Constitution uses the term 'equality' as a constitutional principle without defining it in terminological terms. Article 1 of the Constitution sets out at least part of the principle of equality: France ensures the equality of all citizens before the law, without distinction as to sex, origin, race or religion. Furthermore, it respects all religious denominations[39].
'The equality of all citizens before the law' as a constitutionally enshrined characteristic of social relations does not represent an immediate trigger for the activation of the central reward system for the statistical majority of members of a socium.
If equality is perceived not as a matter of course, but as an expression of fairness, the feeling of being treated justly can activate the individual reward system.
However, as people do not often come into direct contact with the justice system and are therefore not frequently confronted with the principle of equality before the law – and often take it for granted – 'equality' as a characteristic of social relations does not represent a stable source for the activation of the reward system. Consequently, 'equality' as a characteristic of social relationships has practically no influence on an individual's motivation to change the existing order of a given socium and is therefore, when implemented alone, unsuitable for shaping society in such a way that its members voluntarily submit to this social order.

2.3 'Liberty'

NOTE on the semantic relationship between the notions of 'liberty' and 'freedom' for the English edition only: see chap. 6 below.

Let us now turn our attention to the remaining element of the three that make up the motto of the French Republic, namely 'Liberty', which comes first in this motto. The French Constitution uses the term 'Liberty' in the sense defined in the "Declaration of the Rights of Man and of the Citizen" of 26th August 1789. In its preamble, the Constitution refers to the Declaration[40]. The

[38] The Principle of Least Resources Consumption (the principle of most choice), see [4], CHAPTER II "THE HUMAN. THE ANIMATE. THE INANIMATE", section 1.2 therein.

[39] "La France est une République indivisible, laïque, démocratique et sociale. Elle assure l'égalité devant la loi de tous les citoyens sans distinction d'origine, de race ou de religion. Elle respecte toutes les croyances. Son organisation est décentralisée. La loi favorise l'égal accès des femmes et des hommes aux mandats électoraux et fonctions électives, ainsi qu'aux responsabilités professionnelles et sociales", see Article 1 of the French Constitution of 4 October 1958.

[40] "Le Peuple français proclame solennellement son attachement aux Droits de l'Homme et aux principes de la souveraineté nationale tels qu'ils ont été définis par la Déclaration de 1789, …", see the Preamble to the French Constitution of 4 October 1958.

©Igor Furgel

Declaration, for its part, defines 'liberty' in Article 4: "Liberty consists in the ability to do anything that does not harm others: thus, the exercise of the natural rights of every human being is limited only by those boundaries which ensure that other members of society are able to enjoy the same rights. These boundaries can only be established by law"[41].
This definition of the term 'liberty' – liberty is limited only by the same liberty of others, and the limits are laid down by law – implies a reduction and minimisation of constraints and obstacles in the activities of members of society (in a more general sense: in the activities of the subjects of society) to the socially necessary minimum.
The consistent reduction to a minimum of the constraints and obstacles in the actions of the statistical majority of society's members means that, with rare exceptions, they find themselves in situations with which they are already well acquainted. Indeed, the fewer constraints and obstacles there are, the less a person needs to think rationally (causally) about which constraints and obstacles exist in the situation at hand and how to deal with them.

As we have already mentioned above (chap. 1, p. 6), a person's *associative system* is automatically activated when the person finds itself in a situation that is well familiar to it, i.e., for which the person already has an association stored in its long-term memory. As we know (chap. 1, p. 6), every activation of the *associative system* is accompanied by an automatic activation of the reward system, which is linked to the release of dopamine. This means that when a person finds themselves in a situation that is familiar to them, this is accompanied by an automatic activation of the reward system.

It follows from the above that a consistent minimisation of constraints and obstacles to the activities of the statistical majority of society's members – that is, the sense of 'liberty' – leads, with rare exceptions, to an automatic activation of the central reward system in the statistical majority of society's members. This, in turn, deprives the statistical majority of society's members of the motivation to change the existing social order.

Thus

STM. 4:

> 'liberty' ('freedom') as a characteristic of social relations leads, among the statistical majority of members of a socium, to a stable, automatic activation of the reward system, thereby minimising the motivation to change the existing social order among the statistical majority of the socium's members. Therefore, 'liberty' as a characteristic of social relationships, even if implemented alone, is suitable for organising society in such a way that its members voluntarily submit to this social order.

We can therefore see that the feeling of 'liberty' activates the *associative system*, which in turn activates the reward system in the statistical majority of society's members, because the use of the *associative system* saves the individual's resources, see chap. 1, p. 6. Thus, the feeling of 'liberty' activates the reward system in order to consolidate a pattern of behaviour that saves resources.

At this point, it is interesting to highlight the following correlation: the greater an individual's reward for using the *associative system* compared to the population average, the higher that individual's degree of 'ordinariness' is; see chap. 1, p. 9. An individual's degree of

[41] "La liberté consiste à pouvoir faire tout ce qui ne nuit pas à autrui : ainsi, l'exercice des droits naturels de chaque homme n'a de bornes que celles qui assurent aux autres membres de la société la jouissance de ces mêmes droits. Ces bornes ne peuvent être déterminées que par la loi", see Article 4 of the "Declaration of the Rights of Man and of the Citizen" of 26 August 1789.

©Igor Furgel

'ordinariness' is, in turn, proportional to its degree of 'opportunity'[42]. Thus, the more an individual's reward system for using the *associative system* is activated above the average, the higher that individual's degree of 'opportunity'. In turn, the higher an individual's degree of 'opportunity', the more that individual values the minimisation of constraints on their activities as a member of society. In other words: the more actively an individual's reward system is stimulated by the use of the *associative system*, the more that individual values 'liberty' in the sense of minimising all possible constraints on its activities.

In addition to the 'resource-related' reason described above, as to why the feeling of 'liberty' activates the reward system, I also see a further, psychological reason for this. We shall discuss this psychological reason below.

Fritz Riemann introduced four basic forms of anxiety; see [4], CHAPTER VII "PSYCHOLOGICAL TYPES: THE CONTINUATION", section 3.4 "The Existential Angst and Adaptation":

1) The anxiety of self-giving (Selbsthingabe), which is experienced as an ego-loss and dependency;
2) The anxiety of self-realisation (Selbstwerdung), which is experienced as insecurity and isolation;
3) The anxiety of change (Wandlung), which is experienced as transience and uncertainty;
4) The anxiety of necessity (Notwendigkeit), which is experienced as finality and lack of freedom.

All four of these basic forms of anxiety are the basic forms of existential angst[43]. Existential angst is precisely what makes humans (as a biological species) humans, that is, what distinguishes human beings from all other living beings. Existential angst arises from the fact that humans are capable of thinking about and reflecting on their own future, including their own finitude as a holistic system[44]. The psychological types of human beings correlate with the basic forms of anxiety[45].

Let us now consider each of the four basic forms of existential angst.

1) The anxiety of self-giving is experienced as a loss of one's own 'self'. The anxiety of losing one's own 'self' arises when a person ventures into the unknown, into 'terra incognita', where it is particularly easy to lose one's own 'self'. When a person finds itself in the unknown, it is unfamiliar with the conditions prevailing there: principles, rules, procedures, surroundings. Consequently, the person feels an *un*freedom of action in the face of the unknown: it does not know how to act appropriately there. In other words, the anxiety of the unknown is the anxiety of the *un*freedom of action. The corresponding psychotype is the "contemplative introvert" ("schizoid personality" according to F. Riemann)[46].

[42] see [4], CHAPTER V "THE THRIFTINESS OF NATURE AND THE STABILITY OF SOCIETY", in particular Chapter 1

[43] see [4], CHAPTER VII "PSYCHOLOGICAL TYPES: THE CONTINUATION", in particular section 3.4 "Existential Angst and Adaptation"

[44] Beings that differ from humans merely reflect their current state, which depends exclusively on their previous (but not on their future!) states, see [4], CHAPTER II "THE HUMAN. THE ANIMATE. THE INANIMATE", specifically section 2.3 "Risk Reflection".

[45] see [4], CHAPTER VII "PSYCHOLOGICAL TYPES: THE CONTINUATION", specifically section 3.3 "Fritz Riemann" and section 3.5 "Universal Classification System of Psychological Types"

[46] see [4], CHAPTER VII "PSYCHOLOGICAL TYPES: THE CONTINUATION", specifically section 3.5 "Universal Classification System of Psychological Types"

©Igor Furgel

2) The anxiety of self-realisation, which is experienced as isolation. The anxiety of isolation arises when a person no longer sees any choice. That is why, in its isolation, the person feels *un*freedom of choice: if I am isolated, I no longer have a choice, as the 'door' is locked. In other words, the anxiety of isolation is the anxiety of the *un*freedom of choice. The corresponding psychotype is the "contemplative extravert" ("depressive personality" according to F. Riemann)[46].
3) The anxiety of transformation, of change, which is experienced as uncertainty regarding the future. The anxiety of future uncertainty is the anxiety of the unknown, because the future is fundamentally uncertain. In the face of the unknown, a person feels *un*freedom of action: they do not know how to act appropriately in that situation, similar to the "anxiety of self-giving" (see #1) above). In other words, the anxiety of the unknown is the anxiety of the *un*freedom of action. The corresponding psychotype is the "active introvert" ("compulsive personality" according to F. Riemann)[46].
4) The anxiety of necessity, which is experienced as a lack of freedom. The anxiety of *un*freedom is the anxiety of having no choice. If I am not free, I fundamentally have no choice; otherwise, I would be free. This means that the anxiety of unfreedom is the anxiety of the *un*freedom of choice, just as with the "anxiety of self-realisation" (see #2) above). The corresponding psychotype is the "active extravert" ("hysterical personality" according to F. Riemann)[46].

Thus, the four basic forms of existential angst, when expressed in terms of *un*freedom, can be traced back to the anxiety of two categories of *un*freedom:

- the anxiety of the *un*freedom of choice (the anxiety of self-realisation #2) and the anxiety of necessity #4)) and
- the anxiety of the *un*freedom of action (the anxiety of self-giving #1) and the anxiety of change #3)).

At the same time, we know that there are two categories of freedom: the freedom of choice and the freedom of action, see [4], CHAPTER I "THE UNIVERSAL FORM OF BEING", section 4.2 "Frequently Encountered Categorial Complementarities", Table A1. Freedom of action and freedom of choice are categorial complementarities; that is to say, these terms are not equivalent to one another: freedom of action is the insight into (recognition of) necessity, whilst freedom of choice is the use of opportunities[47]. From a philosophical perspective, both categories – freedom of choice and freedom of action – constitute the term 'freedom' ('liberty') through their dialectical complementarity.

The anxiety of the *un*freedom of choice is overcome with the help of its direct antagonist: the freedom of choice. The anxiety of the *un*freedom of action is likewise overcome with the help of its direct antagonist: the freedom of action. Thus, all four existing basic forms of existential angst are overcome by the feeling of freedom: freedom of choice and freedom of action in their dialectical complementarity.
For the statistical majority of people, the successful overcoming of anxiety is accompanied by the activation of the central reward system, which contributes to the adaptive consolidation of the corresponding behavioural pattern.
Freedom of choice overcomes the anxiety of self-realisation #2) and the anxiety of necessity #4). This is why, for the statistical majority of extraverts, the feeling of freedom of choice activates the reward system.

[47] see [4], CHAPTER III 'COGNITION AND KNOWLEDGE', in particular chap. 3, footnote 164

©Igor Furgel

Freedom of action overcomes the anxiety of self-giving #1) and the anxiety of change #3). Therefore, the feeling of freedom of action also activates the reward system, albeit in the statistical majority of introverts.

We can therefore see that the feeling of 'freedom' ('liberty') – that is, freedom of choice and freedom of action in their dialectical complementarity – activates the reward system in the statistical majority of members of society. Thus, the feeling of 'freedom' ('liberty') activates the reward system in order to consolidate a behavioural model that overcomes existential angst in all its forms.

STM.5 :

> There are therefore at least two main reasons why the feeling of 'freedom' ('liberty') consistently activates the reward system: one main reason is 'resource-minimising', the other – 'anxiety-reducing'. This dual effect of the feeling of 'freedom' ('liberty') further reinforces the statement **STM. 4**, p. 16: "…Therefore, 'liberty' ('freedom') as a characteristic of social relationships, even if implemented alone, is suitable for organising society in such a way that its members voluntarily submit to this social order."

2.4 A Society in Which Submission to the Social Order does not Evoke Rejection

We can now answer the question posed above on page 11: "How should a socium – i.e., also a society – be organised so that its members voluntarily submit to its order?"

The answer to this question can be formulated as follows:

STM. 6:

> Socium should be organised in such a way that the statistical majority of its members perceive virtually no constraints or obstacles in the activities of the members of society – precisely those constraints and obstacles that are necessary for the stability of that socium. This gives the statistical majority of the socium's members a feeling of freedom (liberty), which directly leads to an automatic activation of the central reward system, thereby minimising the motivation amongst the statistical majority of the socium's members to change the existing social order.

How can a society be organised in practice in such a way that the statistical majority of its members perceive virtually no constraints or obstacles necessary for the stability of that society? What are the minimum necessary characteristics and functions that shall be implemented in such a society?

As we have already mentioned in section 2.3, page 18, there are two categories of freedom: the freedom of choice and the freedom of action. Freedom of choice and freedom of action complement one another categorially: freedom of action is the insight into (recognition of) necessity, whilst freedom of choice is the use of opportunities. From a philosophical perspective, both categories – freedom of choice and freedom of action – constitute the term 'freedom' ('liberty') through their dialectical complementarity.
Thus, in order to give the statistical majority of members of society a feeling of freedom, society should be organised in such a way that the statistical majority of its members feels both the freedom of choice and the freedom of action. In the following, we shall examine, step by step,

©Igor Furgel

how the members of a society can be given a feeling of freedom of choice and of freedom of action.

2.4.1 Ensuring a Feeling of Freedom of Choice

The diversity of consumer choice, in the broadest sense of the term, ensures a feeling of freedom of choice[48]. This feeling of freedom activates the reward system for two reasons: due to the 'resource-minimising' and 'anxiety-reducing' effects; see section 2.3.
The 'anxiety-reducing' factor is particularly effective for people with psychotypes that are prone to an anxiety of *un*freedom of choice: the anxiety of self-realisation, see anxiety #2) in section 2.3, and the anxiety of necessity, see anxiety #4) in the same section.
The activation of the reward system triggers a release of dopamine[49], see chap. 1, p. 6. We refer to this dopamine, the release of which is ultimately triggered by the diversity of consumer choice, as 'abundance-dopamine'.

Diversity of consumer choice should – within the framework of the existing social order in the respective society – ensure the freedom of choice regarding any type of products and services, including, amongst others, any products and services relating to consumption, culture, education, leisure, as well as religious, political and other forms of self-identification through affiliation[50] (this is a fundamentally open list).

In turn, to ensure the diversity of consumer choice, at least the following functioning infrastructures should be established within society:

1) The infrastructure for a real diversity of consumer choice, which should include, at a minimum, a sufficient, easily accessible and affordable energy supply, a competitive economy, a diverse culture, various forms of affordable leisure activities, accessible and diverse education, and an efficient executive power.
2) The infrastructure for manipulating the consciousness of members of society, which is intended to encompass at least the propagandistic components of "The Educative" (of "the educative power")[51] in the fields of education, culture, leisure and the media[52]. This infrastructure can be used to (partially) compensate for the inadequate capacity of the infrastructure to support a real diversity of consumer choice.

In any statistically large socium, both infrastructures should function. The balance between their capacities should be set in such a way that the statistical majority of members of society has a lasting feeling of freedom of choice.

[48] by reducing the constraints on the activities of members of society to the socially necessary minimum
[49] or similar neurotransmitters such as, for example, octopamine in bees and other insects
[50] see [4], CHAPTER V "THE THRIFTINESS OF NATURE AND THE STABILITY OF SOCIETY", in particular chap. 2
[51] "An ethical system should also be organised for the entire society. … In order to be able to fulfil this task, school, religion(s) and mass media – each – provide the entire society with an 'education service' promulgating common ethical codes among the members of society. This service, which we call 'The Educative', aims to induce a balance of interests through individual-internal factors. It is so significant for the adherence to an acting agreement that we can also call it a 'power'." See [4], CHAPTER VI "POLITICAL SYSTEMS: THEIR ROOTS AND DEVELOPMENT", specifically chap. 4.
[52] The media are means of mass information and communication.

©Igor Furgel

2.4.2 Ensuring a Feeling of Freedom of Action

A feeling of freedom of action[53] is ensured by legal certainty and ethical certainty.

First, we shall explain what is meant by legal certainty and ethical certainty, drawing on the established case law of the highest courts.
The general legal principle of *legal certainty* presupposes the stability of the legal order and the enforceability of court decisions that have been handed down. In implementing the legal order, due regard must be paid to the principle of upholding citizens' trust in the law and in the actions of the State. This principle presupposes the maintenance of an appropriate level of stability in the legal order, the prohibition of arbitrary changes to the existing system of legal norms, and the predictability of legislative policy, so that the parties to the relevant legal relationships can foresee the legal consequences of their actions to a reasonable extent and can be certain of the permanence of their recognised legal status, their acquired rights and the effectiveness of their legal protection.

We define the term of 'ethical certainty' as follows:
Ethical certainty exists when a member of a socium is able to determine the degree to which its behaviour conforms to the ethical principles and norms of that socium. This term stands in contrast to the term 'ethical uncertainty'.

As we already know, the feeling of freedom – in this case, of the freedom of action – activates the reward system for two reasons: for 'resource-minimising' and 'anxiety-reducing' reasons; see section 2.3.
The 'anxiety-reducing' factor is particularly effective in people with psychotypes that are prone to an anxiety of *un*freedom of action: the anxiety of self-giving, see anxiety #1) in section 2.3, and the anxiety of change, see anxiety #3) in the same section.
The activation of the reward system triggers a release of dopamine[54], see chap. 1, page 6. We refer to dopamine, the release of which is ultimately triggered by legal certainty and ethical certainty, as 'success-dopamine'.

Legal certainty and ethical certainty are intended to ensure members of society the predictability of their actions within the framework of that society's existing order:

- Legal certainty enables members of society to foresee the legal consequences of their actions to a reasonable extent and to be assured of the stability of their recognised legal status, their acquired rights and the effectiveness of their legal protection;
- Ethical certainty enables members of society to foresee the ethical consequences of their actions to an appropriate extent and to be confident that their behaviour complies with that society's ethical principles and standards.

In turn, to ensure legal certainty and ethical certainty, at least the following functioning infrastructures should be established within society:

1) The infrastructure for a real legal certainty and ethical certainty, which should comprise at least an effective legislative power, an effective judiciary power and an effective educative power[51, p.20] (for this purpose, an effective education system and largely fact-based media are part of it).

[53] by reducing the obstacles to the activities of members of society to a socially necessary minimum
[54] or similar neurotransmitters such as, for example, octopamine in bees and other insects

©Igor Furgel

2) The infrastructure for manipulating the consciousness of members of society, which is intended to encompass at least the propagandistic components of "The Educative" (of "the educative power") in the fields of education, culture, leisure and the media. This infrastructure can be used to (partially) compensate for the inadequate capacity of the infrastructure to support a real legal certainty and ethical certainty.

In any statistically large socium, both of these infrastructures should function. The balance between their capacities should be set in such a way that the statistical majority of members of society have a lasting feeling of freedom of action.

2.4.3 Influence of Ensuring a Feeling of Freedom of Choice and of Freedom of Action on the Organisation of a Society

Whilst maintaining the objective of organising a socium in such a way that its members voluntarily submit to its order, and noting that this socium should maintain the following three infrastructures for this purpose:

- the infrastructure for a real diversity of consumer choice (see section 2.4.1),
- the infrastructure for a real legal certainty and ethical certainty (see section 2.4.2) and
- the infrastructure for manipulating the consciousness of members of society (see sections 2.4.1 and 2.4.2),

we shall ask ourselves what further fundamental questions this society should answer for itself.

We consider the following to be the fundamental questions regarding the organisation of these three infrastructures, which every sovereign society should answer for itself:

1) Who are the 'owners', 'operators' and 'risk owners'[55] of these three infrastructures[56]?
   With the exception of the infrastructure for legal certainty, where the owner, operator and risk owner is, by definition, the state as the most important political and legal institution, the owners, operators and risk owners of these three infrastructures can be state and public institutions as well as private companies and individuals.
   For example, there can be owners and operators of manufacturing plants, owners and operators of service companies, owners and operators of mass media, owners and operators of private channels on various network platforms, etc.
   The owners of an infrastructure are often also its risk owners. However, risk owners can also be financial service providers, such as (private and state-owned) banks, insurance companies and funds.
   It is important to bear in mind that 'owners', 'operators' and 'risk owners' may have – and usually do have – interests that do not completely coincide. The primary objective of 'operators' is to ensure the operational functionality of the infrastructure they operate. The 'risk owners' have as their primary objective the minimisation of financial risk arising from the infrastructure in operation. The primary objective of the 'owners' of an infrastructure is to maximise the profit derived from owning that infrastructure. Consequently, owners find themselves 'caught between two stools': they wish both to ensure the operational functionality of their infrastructure, in order to attract more users, and to minimise the financial risk associated with owning that infrastructure.

[55] 'Risk owner': a legal entity that has the duties and powers to manage the risks arising from the operation of an infrastructure.

[56] 'Owners', 'operators' and 'risk owners' may generally be different legal entities: public authorities, institutions, legal persons and natural persons. This means that the owner may be one legal entity, the operator another, and the risk owner a third, whereby these legal entities need not be identical to one another.

©Igor Furgel

The differing interests of the single ‘actors’ (legal subjects), who occupy the roles of ‘owners’, ‘operators’ and ‘risk owners’ undoubtedly influence the specific functioning of these infrastructures and, consequently, the way in which these infrastructures support such an organisation of society, in which its members voluntarily submit to its order.

2) What relationship between a real diversity of consumer choice, real legal certainty and ethical certainty, and the manipulation of the consciousness of members of a socium ensures a stable state of subjective satisfaction amongst members of society, whilst minimising the consumption of resources required to maintain all three of the infrastructures necessary for this?
   An equivalent formulation of this question in an operationalisable form is as follows: What is the optimal balance between a real diversity of consumer choice, a real legal certainty and ethical certainty, and the mechanisms for shaping societal preferences, whereby a sustainably high level of subjective satisfaction is achieved at minimal overall cost for maintaining the relevant infrastructures?

The entire organisation of a given society, including its political system, depends on the specific answer to these questions for that society at a particular historical period in its existence[57].

The structure described in section 2.4, which makes it possible to organise a society in such a way that its members submit to the social order without rejection, is schematically illustrated in the following diagram:

[57] see [4], CHAPTER VI “POLITICAL SYSTEMS: THEIR ROOTS AND DEVELOPMENT”, in particular chap. 3

©Igor Furgel

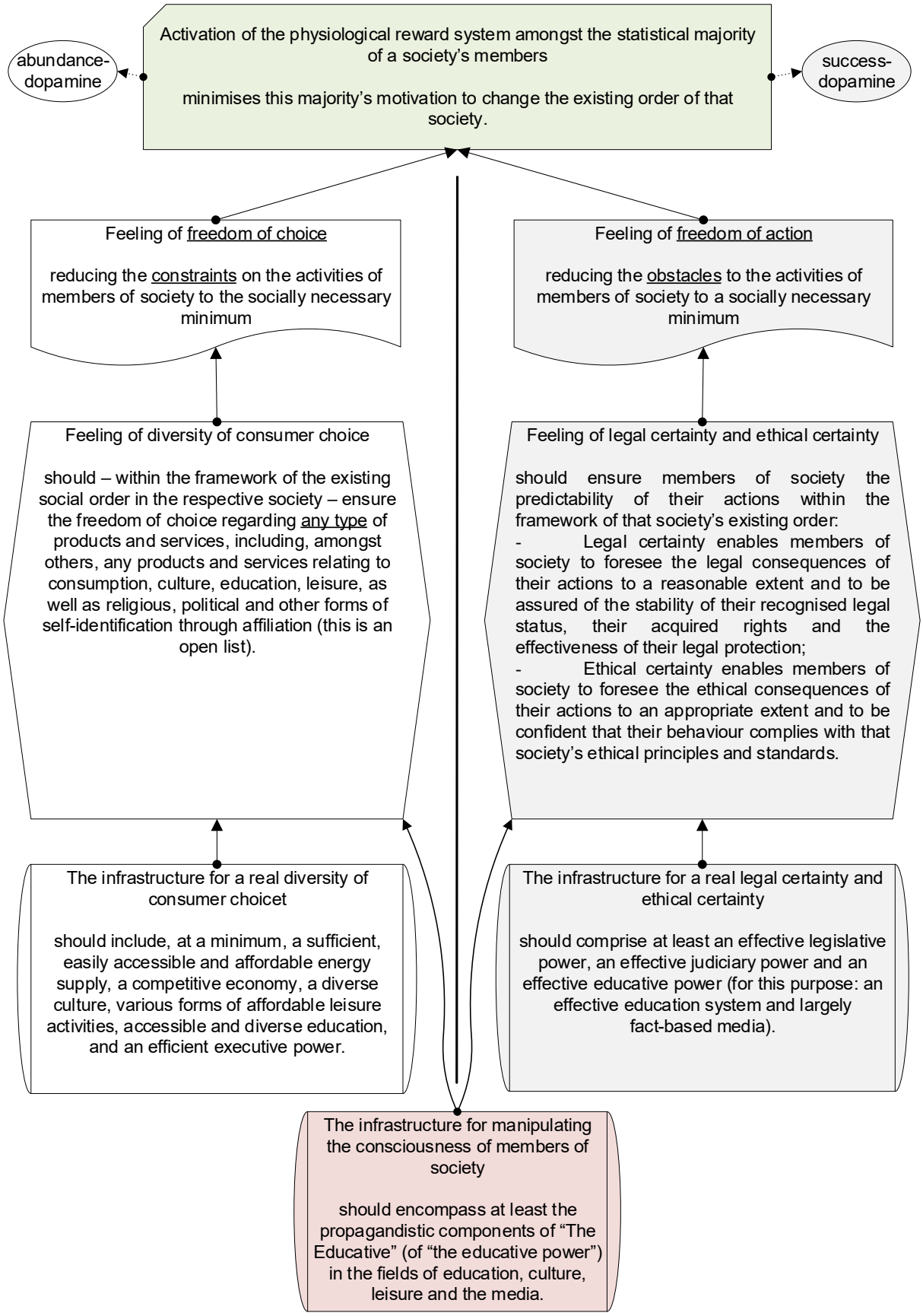

Fig. 1: Abstract organisational structure of a society that voluntarily submits to its order

©Igor Furgel

3 Conclusion

This work has shown that the physiological central reward system plays a key role in both human susceptibility to propaganda and the organisation of society.

It was found that both an increased dependence on psychoactive substances and an individual's enhanced susceptibility to propaganda are caused by the fact that the use of the *associative system* (System 1 according to D. Kahneman) is, statistically speaking, rewarded above the population average by the central reward system[58]. This conclusion holds true regardless of whether the magnitude of the reward received lies above or below the individual's personal threshold for conscious perception of that reward.
A further conclusion that could be drawn at the individual's level of consideration is that an individual's degree of 'ordinariness' correlates with the extent to which that individual's reward for using the *associative system* lies statistically above the population average: the greater this reward, the higher the degree of 'ordinariness' of that individual. Conversely, the greater an individual's reward for using the *causal system* (System 2 according to D. Kahneman), the higher that individual's degree of 'authority'.

In examining the role of the individual reward system in the organisation of society, we analysed the contribution made by each element of the triad {liberty, equality, [fraternity and love]} to the voluntary submission of the statistical majority of society's members to its order.

It was found that, of all the elements listed, only 'liberty' (which in this context is synonymous with 'freedom', see chap. 6), as a characteristic of social relations, leads to a stable, automatic activation of the reward system amongst the statistical majority of members of a socium[59], thereby minimising this majority's motivation to change the existing order of that socium. Therefore, 'liberty' as a characteristic of social relations – even if implemented alone – is suitable for organising society in such a way that its members voluntarily submit to this social order.

This analysis has also shown that there are at least two main reasons why the feeling of 'freedom' ('liberty') consistently activates the reward system: one main reason is 'resource-minimising', the other – 'anxiety-reducing'. The 'resource-minimising' reason is based on the fact that the feeling of 'freedom' ('liberty') activates the *associative system*, and the use of the *associative system* saves the individual's resources[60]. The 'anxiety-reducing' reason is based on the fact that the feeling of 'freedom' – both the freedom of choice and the freedom of action – reduces the basic forms of existential angst described by F. Riemann, which are directly linked to the *un*freedom of choice and to the *un*freedom of action, respectively[61].

[58] The central reward system is a functionally centralised reward system implemented by structures belonging to the central nervous system.
[59] '*Socium*' is a social unit (entity), a group of '*will owners*', a socially connected system of interacting '*will owners*', a society of any size held together by any internal relationships. Based on this definition, a 'society' is a special case of a socium.
A '*will owner*' is an *adaptive* system with *freedom of choice*. Definitions of these terms can be found in [4], GLOSSARY A.
[60] The feeling of 'liberty' ('freedom') activates the reward system to reinforce a pattern of behaviour that saves the individual's resources.
[61] The feeling of 'freedom' ('liberty') activates the reward system to reinforce a pattern of behaviour that reduces existential angst.

©Igor Furgel

It is precisely the difference in the defining characteristics of 'love' on the one hand and the social order on the other – as properties of social relationships – that leads to the necessity of a certain statistically stable size of the socium, beyond which personal 'love' can, in principle, no longer remain the primary mechanism for the reproduction of the social order. This statement holds true even if the overwhelming majority of the members of this socium are capable of love, and even if the culture of that socium actively promotes it.

I then formulated the question: "How should a socium – i.e., also a society – be organised so that its members voluntarily submit to its order?"
The consideration carried out has shown that the answer to this question is as follows: "Socium should be organised in such a way that the statistical majority of its members perceive virtually no constraints or obstacles in the activities of the members of society – precisely those constraints and obstacles that are necessary for the stability of that socium. This gives the statistical majority of the socium's members a feeling of freedom (liberty), which directly leads to an automatic activation of the central reward system, thereby minimising the motivation amongst the statistical majority of the socium's members to change the existing social order."

The analysis carried out has shown that, in order to achieve the political objective of organising society in such a way that its members voluntarily submit to its order, that society should maintain the following three infrastructures for this purpose:

- the infrastructure for a real diversity of consumer choice,
- the infrastructure for a real legal certainty and ethical certainty, and
- the infrastructure for manipulating the consciousness of members of society.

With regard to the organisation of these infrastructures, every sovereign society should answer two fundamental questions for itself:

- Who are the 'owners', 'operators' and 'risk owners' of these three infrastructures?
- What is the optimal balance between a real diversity of consumer choice, a real legal certainty and ethical certainty, and the mechanisms for shaping societal preferences, whereby a sustainably high level of subjective satisfaction is achieved at minimal overall cost for maintaining the relevant infrastructures?

The entire organisation of a given society, including its political system, depends on the specific answers to these questions for that society at a particular historical period in its existence.

©Igor Furgel

4 Bibliography

[1] Eric R. Kandel (editor) ... [et al.]; art editor, Sarah Mack *Principles of neural science*, 5th ed., New York, McGraw-Hill Medical, 2013, ISBN: 978007139011

[2] Jon H Kaas (editor-in-chief) *Evolution of nervous systems*, Vanderbilt University, Nashville, TN, United States, 2nd edition, Amsterdam, Boston, Elsevier/Academic Press, 2017, ISBN: 9780128040423

[3] Geoffrey North, Ralph J Greenspan *Invertebrate neurobiology*, Cold Spring Harbor, N.Y., Cold Spring Harbor Laboratory Press, 2007, ISBN: 9780879698195

[4] Igor Furgel *Being and Systemacy*, Westarp BookOnDemand, 1st edition, 2022, ISBN: 978-3-96004-131-3

[5] Rupa Gupta, Timothy R Koscik, Antoine Bechara, Daniel Tranel *The amygdala and decision-making*, Neuropsychologia, 201, 49(4), 760-766, doi: 10.1016/j.neuropsychologia.2010.09.029

[6] Antonio Alcaro, Robert Huber, Jaak Panksepp *Behavioral Functions of the Mesolimbic Dopaminergic System: an Affective Neuroethological Perspective*, Brain Res Rev, Author manuscript; available in PMC: 2008 Dec 1, *Published in final edited form as:* Brain Res Rev. 2007 Aug 21, 56(2): 283–321. doi: 10.1016/j.brainresrev.2007.07.014

[7] Bernays, Edward Louis *Propaganda*, New York, Horace Liveright, 1928

[8] David J Schulz, Andrew B Barron, Gene E Robinson *A Role for Octopamine in Honey Bee Division of Labor*, Brain, Behavior and Evolution, 2002, 60(6), 350–359, doi: 10.1159/000067788

[9] Andrew B Barron, Gene E Robinson *Selective modulation of task performance by octopamine in honey bee (Apis mellifera) division of labour* Journal of Comparative Physiology A Neuroethol Sens Neural Behav Physiol., 2005, 191(7), 659–668, doi**:** 10.1007/s00359-005-0619-7

[10] Iain D Couzin *Collective Cognition in Animal Groups*, Trends in Cognitive Sciences, 2009, 13(1), 36–43, doi: 10.1016/j.tics.2008.10.002

[11] Michael Numan, Thomas R Insel *The Neurobiology of Parental Behavior*, New-York, Springer, edition 2003, ISBN: 978-0387217994

[12] Steve W C Chang , Lauren J N Brent, Geoffrey K Adams, Jeffrey T Klein, John M Pearson, Karli K Watson, Michael L Platt *Neuroethology of Primate Social Behavior*, Proceedings of the National Academy of Sciences (PNAS USA), 2013; 110 Suppl 2: 10387-94, doi: 10.1073/pnas.1301213110

[13] Richard M. Ryan and Edward L. Deci *Self-Determination Theory. Basic Psychological Needs in Motivation, Development, and Wellness*, New York: Guilford Press, November 6, 2018, ISBN: 9781462538966

©Igor Furgel

[14] Светоносова Т. А. *Концепты LIBERTY и FREEDOM: сходства и различия*, Филологические науки. Вопросы теории и практики, Москва, 2025, Том 18, Выпуск 2, ISSN 2782-4543 (online), ISSN 1997-2911 (print), https://philology-journal.ru/article/phil20250113/fulltext[62]

5 Acknowledgements

I would like to express my sincere thanks to my wife, Dr Irina Furgel, for our extremely interesting and useful discussions on this topic.

6 Attachment #1: Note on the Semantic Relationship between the Notions of 'Liberty' and 'Freedom'

For the English edition only.

In English, there are to nouns expressing the abstract notion of *being free*: 'liberty' and 'freedom', whereby, for example, in German and in Russian there is only one single noun for this: 'Freiheit' (DE) and 'свобода' (RU), respectively.
Therefore, to avoid any misunderstandings that might arise from the use of these two different words in the English edition of this work, I would like to clarify which specific semantic meaning of these nouns is intended and used in this work.

This specific semantic meaning of the words 'liberty' and 'freedom' is '*the state* (*nature*) of *being free*'. This specific semantic meaning is common for both words, see [14].

As stated in [14], section "Conclusion": "Thus, the similarities between the concepts of LIBERTY and FREEDOM are defined as a combination of their core semantic components: *the state* (*nature*) of *being free* and *not being under control*; *privilege* and *exclusivity*. Furthermore, the concepts of LIBERTY and FREEDOM are united by the peripheral semantic component of *familiarity*.
The differences between the concepts of LIBERTY and FREEDOM are objectified by the semantic components *acting without the permission of others – being free from something* (*slavery, dependence, control*), and this indicates that LIBERTY is a unique phenomenon in its own right; it does not seek to depend on others, whereas FREEDOM, on the contrary, is granted or bestowed, FREEDOM is granted. The concept of LIBERTY has a semantic component of *an image personifying an event*, which places LIBERTY amongst truths and goals to be achieved, whilst *freedom* has semantic components of *the possibility of free expression, the possibility of having a say*, which place it amongst rights and freedoms."[63]

[62] Svetonosova T. A. *Concepts LIBERTY and FREEDOM: similarities and differences*, Philology. Theory & Practice, Moscow, 2025, Volume 18, Issue 2, ISSN 2782-4543 (online), ISSN 1997-2911 (print), https://philology-journal.ru/article/phil20250113/fulltext

[63] The original citation from [14]: "Таким образом, сходства концептов LIBERTY и FREEDOM определяются как комбинация их ядерных семантических компонентов *состояние* (*естество*) *быть свободным* и *не*

©Igor Furgel

быть под контролем; привилегия и *исключительность.* Кроме того, концепты LIBERTY и FREEDOM объединяет периферийный семантический компонент *фамильярность.*

Различия концептов LIBERTY и FREEDOM объективированы семантическими компонентами *действовать без разрешения других – быть свободным от чего-либо* (*рабства, зависимости, контроля*), и это указывает на то, что LIBERTY – уникальное явление само по себе, оно не стремится зависеть от других, а FREEDOM, наоборот, даруется или даётся, FREEDOM предоставляют. Концепт LIBERTY имеет семантический компонент *образ, олицетворяющий событие*, который ставит LIBERTY в ряд истин и целей для достижения, тогда как *freedom* имеет семантические компоненты *возможность свободного выражения, возможность иметь право голоса*, которые ставят его в ряд прав и свобод."

©Igor Furgel