General Systemic Imbalance Control Principles

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In this paper, we for the first time introduce the scientific misjudgement argument which is of increasing importance in emerging science development and give a generalisation. In the context of systems, selforganisational and orgiton theory we develop then general valid arguments for selforganisational and cybernetic systems and how imbalance can and must be controlled to properly fulfil systems and as a special application humankind's, existential conditions, with relation to power. Basically, we explain systems here by a dynamic interplay of two competing powers or forces over time or room-time, that interfere with each other. As a result, we have found that this is a systems maximisation problem, which leads, in an open system to a paradox increase, which is unified on a higher emergent level, which we call here the coupling/uncoupling dichotomy.

Keywords: Scientific misjudgement argument, System theory, Orgiton theory, Self organisational theory, Collateral benefit, Social-mechanics

1 Introduction

In general we get system control by feedback loops, which is called cybernetics, since Norbert Wiener [1, 2]. Elementary operations in a cybernetic control loop are observing and action, which is related to observability and controllability according to the influential definitions by Kálmán [3]. In systems theory there is the important notion of strong and weak coupling, according to [4], which corresponds exactly to the notation of uni- and bidirectionality in orgiton theory [5,6], which has been lately extended to multidirectionality, increasing potential order, which is then also related to the central/decentral dichotomy of systems [7, 8].

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The increasing order can also be described by thermodynamics [9, 10] by different systems that gain higher safety in complex, and networked systems, like communications systems [11] and selforganisational systems in general, generalised with the emergence theorem, which defines new order steps in selforganising systems as local stable attractors [10, 12] in accordance with chaos theory. An interesting relation is also given by the higher ordering function relation of cybernetic back-loops [13], which shifts the degrees of freedom to the inner system side, versus the outer side in open loops. This means decentral selforganisational systems allow for deeper self-stable goals, increasing by this overall system stability and instability together, which is exactly what we will argue in this paper later, with different arguments for yielding balancing conditions for overall open system stability. A first attempt towards group stability and its measure and simulation of information entropy is given in [14].

Let us give first examples for a systemic imbalance control, for later analysis:

Example 1. In todays newspaper [15] the political stability was thematised, as in Austria currently there are seven federal chancellors in five years, and within the last two months period an October 2021 baby would have observed three of them up to the day. Accordingly Bloomberg TV cites the current state by that Austria looks Heidi-cute from the outside. But its politics is a whole other level of Wild Wild West. The article proposes to improve stability by means of party finance control, which we would refer to later on as stronger coupling, independent justice, which we would call decoupling, or looser coupling, transparent media-sponsorship, which we would refer to the principle of observability which is also a loose coupling according to systems theory. This as a mere example, which we do not fully agree, represents a media media-opinion, which is itself unidirectional coupled, by media-sponsorship, which is cause and result of the corruption scandal together, and with this can be regarded as the blind spot, which is necessarily part of all cybernetic systems as, e.g. stressed by Heinz von Förster. On the other side, independent media, are representing, or mirroring the public, the people that buy the media, or are merely interested in it because they are *open access*, which allows then for deeper goals of the individual [16]. In both cases, in sponsored media, and in free media there is a back coupling by the media, and hence a strong coupling, but with regard to the osmotic paradigm [17] there is less resistance and hence higher transmission probability, in this latter case of communication, and in general of a flow variable, e.g. Power (W = Watt), which can be defined as Energy per time (J/s = Joule per second). As suggested in [15] the now 'critical variables' party-finance, media and justice control are related to (political) power p, and influence i which can only be compensated by p,i reduction. We do not agree do this point, according to our given, later hypotheses, as this suggestion would lead to system overall order reduction, whereas the

goal of a complex society to solve complex problems has to be an order increase to better compensate for complex problems. Due to the intrinsic non-linearity of societal problems it is in general not always better to do more of the same to get better results, in the opposite it is likely that at a certain degree, there happens a change, which we refer to, according to orgiton theory [5, 6], analogously to self-organisational theory [18], in general as a phase change.

Example 2: On the other side Edward Snowden describes the observance systems as Orwellian in scope [19, 10:46], quoting by this USA's federal courts decisions, which can be also regarded as an in principle higher orgitonal state, that is by definition of higher orgitonal order construction always some sort of unidirectional first, and becomes later, e.g. by whistle blowing, or media echoing bidirectional, which is then again increasing order according to the *directionality principle* [7, 20].

Content. The content of this paper comprises first in Section 2 the given methods. In Section 3.1 we refer to the theoretic preliminaries, giving a background of the new propositions, and are diving a bit deeper into social-mechanics interactions and their possible promising generalisations. In Section 3.2 we define the theory extensions of this work with regard to underlying theoretic frameworks. In Section 4 we make a short summary of the results, and give conclusions and an outlook.

2 Methods

This paper uses systemic analysis by means of axioms and natural language logic argumentation.

3 Theory

In this Section first some theory preliminaries are given, and then the theory for systemic balance control is formulated with axioms, which can be regarded as an orgiton, systems, or selforganisational theory extension.

3.1 Theory Prelimininaries

Thomas Frohnwieser has shown in his investigation [21] that in a mechanical respectively physical application, a force characteristics of a downwards moving entity is inhibited, under certain circumstances, which leads then to the force characteristics in a potential field as can be seen, as a generalisation, in Figure 1 schematically, which can be derived form the more general Liouville theorem, which can be regarded as a wide valid system theoretic base for many physical

applications [22, p. 176 ff], describing the nature of flow, or an entity changing over time. According to Gerhard Wunsch, the form can also be called continuity equation of Markov processes (77.1).

$$\frac{\partial q}{\partial t} + div(q \cdot h) = 0 \tag{77.1}$$

Here h is the generator or application specific variable, q the density and t the time. From (77.1) continuity equations in many disciplines can be derived, like in hydrodynamics, electrodynamics, stochastic Markov-processes, statistical mechanics and from its generalised form even the Schrödinger equation, which is shown mathematically in [22, p. 187 ff].

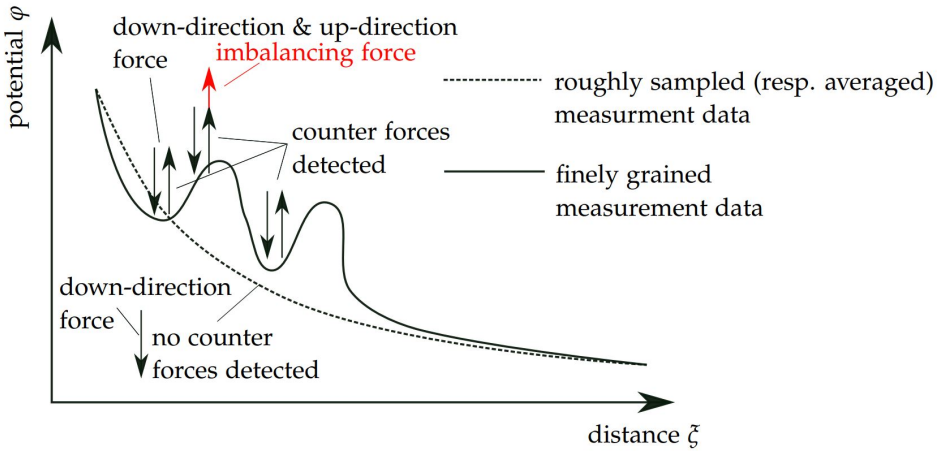

Figure 1: Potential flow and inhibiting forces

With regard to Figure 1, and the solution in Figure 1 several things can be said and followed. First the two lines denote different solutions with regard to measurement results. In the first measurement the dotted line was yielded which in fact was an artefact with regard to the phenomenon that the downhill rolling spindle had stopped as in the straight sketched line. It later on turned out that the measurement was exact enough, but by means of the averaging process the wrong - with regard to the observed phenomenon - results were inferred, that were not sufficient to depict the oscillations, according to the scanning-theorem, and hence the scanning intervals were over the critical limits. This is an excellent example of expectation triggered experimental situation. In the search for the right solution the problem turned out to be more complex, and in the first theory approach the hidden variables appeared then and could be calculated exactly in a Newton mechanistic framework. This is shown in the arrows in Fig-

ure 1. The dotted line curve has a monotone decreasing shape, and hence can be characterised by one force arrow. The other curve is characterised by stable and unstable stopping points, indicating a static equilibrium and a general dependence of a second force, indicated by the second arrow. Another interesting feature in this dynamics is that to get movement an imbalancing force is necessary, and at first paradoxically, the movement in the, e.g. downward direction even needs an excess imbalance to move in this direction. Exactly this is a property of nonlinear systems, that sometimes not more but less of a sort or even the opposite may lead to an overall progression, which is generally true no matter whether the goal is order decreasing or order increasing. Processes of the first kind we denote as an anti-orgiton, and such of the second kind as an orgiton.

So when we apply the flow of energy and denote it as power, the political interpretation, or of any societal power, which is related to a social (animal/robot[1]) group, which means, an animal or a machine that is

(a) collaborating communicatively,

(b) with regard to action, and

(c) is also an individual.

Such a power can be measured, by the used energy, with regard to individual (human, men, women, children, animals, plants, robots...) power and its used impact with regard to the intended effects, which is in the case of control theory a quantity of observation and controllability of a flow variable.

Further remarks. A remark to these first elements of a social-mechanics is, that when we use such notations as power, social equity, etc. then we have to take into account that we have to translate all the available phenomena into the given variable, which can be done by analogies, and needs also transformation conditions. E.g. the currency of power, understood as a communication property, then relates to physical processes, which can be understood as a wider cybernetic back-loop on the one side and translatable meta-properties on the other side. It may be not so easy to construct such variables, that model the phenomena, in such a way that with those variables, quantities can be measured, calculated and predicted. It is like that, e.g. the phenomenon of power can be put in a series of conservation equations, like this is done in pure physics. Those quantities can then may be a sum or portfolio of different kinds of flows that give together osmotically an overall succeeding flow and with this an effect in one specific direction.

[1]See also [23] for the new discovery that social robots can increase productivity.

3.2 Theory of Systemic Imbalance Control - Principles

Here we define for the first time the *scientific misjudgement argument*:

Axiom 3.1 *If it is science or science-o_0, that* $\boxed{\textit{does not imply}}$ *that science should be applied, because science is a result of generalisation and as such it can interfere with an individual true decision.*

Axiom 3.1 says directly that individual decisions or decisions from a specific stand-point can be true although another view may be true from another side, which is a function of this individual and is also true. In this case we then have a clear contradiction, and for this decisions have to be ordered by priorities. In fact we get thereby, as a generalisation, an argument, that orders systems by individual behaviour, and is this then an argument for decision ethics, based on an escape sequence to Axiom 3.1. In fact to this argument the second order scientific misjudgement argument can be formulated:

Scientific ethics misjudgement argument:

Axiom 3.2 *If it is an ethics of science or science-o_1 that imposes hierarchical order from individuals to higher number groups with regard to their value (value proposition of the individual), then this does not imply that scientific ethics should be applied, because scientific ethics is a result of generalisation (or a specific algorithm) and as such it can interfere with an individual true decision.*

We can see, that Axiom 3.2, comprises the escape sequence of Axiom 3.1 and that the further generalisation in the case of science-o_i for $i \to \infty$, shows that the individual has always right (with regard to the property of being an individual), which is then a proof of the equilibrity conditions of any individual, as is defined and solidified in the UN-charta for the Universal Declaration of Human Rights (see, e.g. [24, 25]) of the world, which states the equilibria existential condition of humans with respect to each other.

But there is another conclusion to this, that no matter how far we go as society, there is no way possible to overrule the existential position, which then can be regarded as a means and power of selforganisation, at least with the restriction not to do self-harm, or giving up the existential position of life. With this, minimal conditions or a certain order of the system can be understood, in this context, of a living system, in general of any selforganisational or orgitonal system.

We learn from this, that science does never imply any action, and is hence *neutral* with regard to application.

And no matter how we act, we have always to dismiss science, although it may be reasonable to sort ethics decisions scientifically, and by this increase the order of life, the order of decisions.

The argument to sacrifice someone on behalf of the group is a typical war argument, and usually argues with the inevitable or total. But instead of relying on collateral damage we should focus on *collateral benefit*, which is the orientation towards existential growth or increase, and which is always in agreement with von Förster's first ethics axiom: Always act in such a way that the number of choices becomes larger! (original in German: Handle stets so, daß die Anzahl der Wahlmöglichkeiten größer wird!) [26, 16].

Axiom 3.3 *Collateral benefit is conficient, or cooperative and efficient. It is building on the existential condition of individuals and increases it by societal, or overall benefit, as a side effect of individual decisions (especially because the collective bias is inhibited due to the selforganisational power, of true whole in an individual representation).*

For the increase in order for dual-power systems we can formulate the fundamental conficient growth condition: *Coupling/Uncoupling Dichotomy*:

Axiom 3.4 *Coupling and Uncoupling at the same time is potentially increasing order, and simultaneously destabilising it.*

When we refer to Example 1 in the beginning, we can follow from the given Axiom 3.4, that we need to have a stronger coupling and together an uncoupling. When the power of the individual increases because he has a safety guard in form of an Artificial Intelligence (AI) (cf. also [16,27]), which (who) protects him by assisting him in decisions, this increases thereby the decision number peak according to Figure 2 and reduces hence the distance, between the parties. This is then a stronger coupling, both with regard to the couplings or decisions on both sides, which leads then, relatively, to increased equilibrium conditions.

Referring to Example 2 on the other side, shows, that a meta-system increases the order because of the meta-state, and by this destabilises order in the underlying systems. This is exactly what Edward Snowden had criticised. The unlawful or unconstitutional situation, creates on the long term a decoupling on the side of the observing party, which is not order decreasing, when there is a, from time to time equilibrium, e.g. by whistle blowing or other forms of back-mirroring of information, e.g. by wise laws, that restrict unlawfulness effectively. We can see from this example, the Orwellian observance in the case of a feed-backed world or system is as long tolerable, as long on the other side privacy concerns are increasingly secured, e.g. by secure, encrypted data streams and with it, privacy with regard to the UN-Charta. The closer connection (here Orwellian system observation) has to be compensated by a decoupling, which means by increased privacy rights.

We see that in both examples, we have an increased coupling, this is the observer state, and a decoupling that is a privacy state. Alex Pentland works on these techniques, to secure privacy, and first prototypes of such economy drivers have been implemented in Swiss banks [28]. They can be regarded as a universal or general rule for systemic imbalance control of bigger systems and systems with increasingly higher network, decision, relation and communication density.

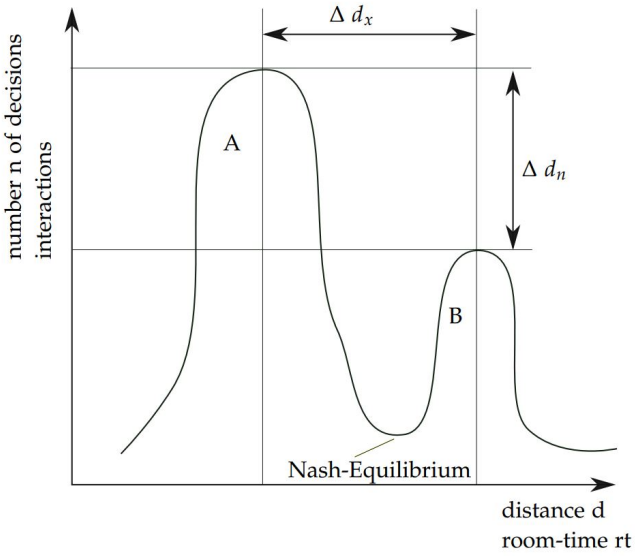

Figure 2: Number of decisions/interactions & room-time/distance plane

From Axiom 3.1 and 3.2 follows that according to Figure 2 the equilibrium condition is the long term trajectory, because otherwise the organisational bias Δd_x, Δd_n or both would increase, which leads then to a from standpoint A versus standpoint B optimisation. And as we have argued, is the collective always connected with a bias, as it is a general or abstract entity and by this of an emergent and intrinsic decoupled order.

The Nash-equilibrium, which is the for both minimal consensus, yielding a rational sure win-win situation, will then probably increase for the elevated individual values or powers due to a higher interaction - technologically enhanced - information and with this strong coupling or a towards multidirectionality throughput (cf. also [7]).

Axiom 3.5 *Enhancing factors (like Artificial Intelligence) with regard to Figure 2*

increase the imbalance unproportionally, and need for this sake increasing balancing compensation.

Axiom 3.5 can be regarded as partial transition solution, which is happening selforganisationally with regard to Axiom 3.6, when the system grows. On the other hand, the system may be directed according to Axiom 3.1 and 3.2 in an unexistential feasible direction for B, so that safety regulations have to be taken from A to B exclusively. This may slow down the societies development, but in any case this fulfils the minimals standards, that have been agreed on. The other option of allowing an unlawful (looked at from a higher cultural standard) or in order reduced form, can and will destabilise the system, as there is a negative or antiorgitonal momentum, which means that the overpower is lead by a limited, e.g. a power reserve. Depending on the system, this may then be feasible, especially when the emerged entity reserve is entering into variability conditions that increase evolutionary fruitful recombinations of network elements.

Axiom 3.6 *In a sparse network, the overall optimum by overpower of A over B, is, as this is unidirectionality, the one and only solution as A or, e.g. technology and power are the limiting factors. When the network density is increasing the collateral benefit (Axiom 3.3) is also increasing potentially together with its increasing multidirectionality.*

According to Axiom 3.6 the network density increases potentially order.

Axiom 3.7 *The n,d density or distance $\overline{AB}$ can be regarded as an acceleration analogon: Newton acceleration: $\partial^2 x/\partial t^2$ (The variable x stands here for room and t for time). Societal acceleration: $\partial^2 n/\partial(rt)^2$, $\partial^2 n/\partial d^2$ or $\partial^2 n/\partial\overline{AB}^2$.*

Departing from Axiom 3.7, we can follow analogously to [13] that information is (1) a higher orgiton, which is then related to number counts or informational units, fulfilling informational balances. And (2) the potential higher order, with regard to the n-axis (ordinate in Figure 2), leads then to a lower relative $\overline{AB}$ distance, which means a high societal density, and hence a higher informational gain for both or a win-win situation, by increasing potentially the Nash-equilibrium. And this is valid for many dimensions. In fact, this density increase leads then in overall to a decrease in overpower efficiency, which means that decentralisation has to occur to have an overall optimum, which is then controlling locally.

4 Summary and Outlook

In a first *preliminary approach* in Section 3.1 we have given a system theoretic model, adapted from Newton-mechanics to its generalisation in a general flow field, which we have shaped in the socio-economic context, as an example with relation to political power, and sketched some possible ways and problems with regard to a transformation in numeric modelling. In Section 3.2 we have formulated basic axioms around the property of societal equality conditions, which refer then to the difficulty of scientific decisions. According to this model, ethics is a higher order orgiton of science, which leads then to an increasing cascade of order, which is fulfilled finally, when all citizens of a state are free. Nonetheless the role of domestication is done in the meanwhile by organisations, which tend to overrule people. Especially each orgitonal entity, be it a human or an organisation has a specific goal perspective which is in principle incommensurable with the other, which can be characterised by number-distance (n-d) planes, that are in the best case equibalanced. An imbalance leads to a systematic overruling and hence to systematic disadvantages of people. Hence the imbalance conditions has to be overcome by coming nearer on the one side and more in number on the other side. This can be interpreted as power equilibrium, which is given by close interaction and together as a safety belt, which can be understood as a power safety belt, e.g. an AI that increases the individual power, for a balance of fears [29], which is in case of the variable power, then a power balance.

We plan to give further theoretic foundations for the link of mechanics and social-mechanics. Nonetheless each researcher who is interested in the field is invited to contribute to this fascinating topic which is solving the puzzle how to mathematise social-mechanics, and make it by this computable and a bit more predictable, at least in principle, as we know, how irreversible life processes are. But when we apply those then matured theories, models and algorithms to computational processes, we might get increasingly better explaining results, which will make the world a bit more computable or predictable, which could make the difference that makes the difference [30, cf. also] not only one time, and is path to a prosperous future life.

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