

General Systemic Imbalance Control Principles

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al.

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Bibliography Literatur

- Cybernetics
- Orgiton-Theory
- Acceleration of Modern Society

- Goal: General Ethics Analysis & Force Balances and Considerations towards the new discipline of **Social Mechanics**.
- Model: 7 Axioms \longrightarrow **Scientific Misjudgement Argument**.

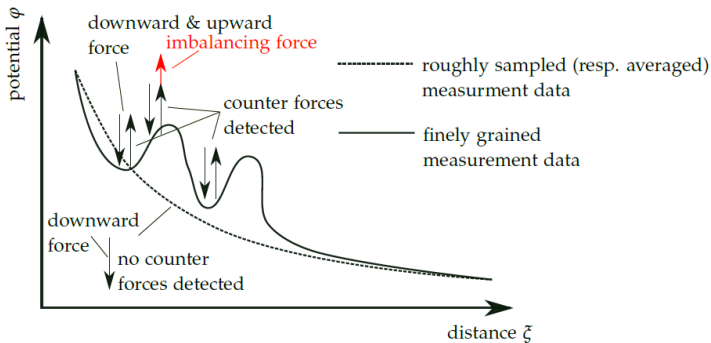


Figure 1: Potential flow and inhibiting forces.

Scientific Misjudgement Argument:

Axiom 1: If it is science or science- o_0 , that 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 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.

Axiom 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).

Axiom 4: Coupling and Uncoupling at the same time is potentially increasing order, and simultaneously destabilising it.

Axiom 5: Enhancing factors (like Artificial Intelligence) with regard to Figure 1 & 2 increase the imbalance unproportionally, and need for this sake increasing balancing compensation.

Axiom 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) is also increasing potentially together with its increasing multidirectionality.

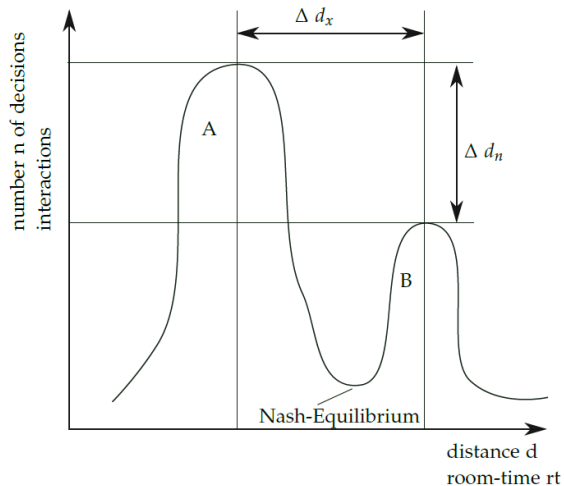


Figure 2: Number of decisions/interactions & room-time/distance plane.

Axiom 6 \rightarrow network density \uparrow potentially order.

Axiom 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 $\partial^2 n / \partial \overline{AB}^2$.

Conclusions and Outlook I

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Summary and Conclusions:

- Ethics is higher origin of science
- Power can be taken literally and mathematised according to Newtonian Mechanics

Outlook:

- Natural Language as Source for Axiomatisation → New discipline **Social Mechanics**
- Formulation of Computational Social Mechanics analogously and building on classical mechanics → Finite Element Analysis of Social Mechanics

Thank you cordially for your attention!



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PS.: The presentation can later also be found at:
<http://www.dr-heiden.com/Vortraege.htm>



Bateson, Gregory (1987). *Steps to an ecology of mind collected essays in anthropology, psychiatry, evolution, and epistemology*. [Repr., with new preface]. Chandler publications for health sciences. Northvale, N.J., London: Aronson, 521 p. ISBN: 0-87668-950-0 978-0-87668-950-9.



Frohnwieser, Thomas (July 1, 2016). "Investigation of the deflection of a shaft to the rolling characteristics of a solar sail (original in German: Untersuchung der Durchbiegung einer Welle auf das Abrollverhalten eine Sonnensegels)". Bachelorthesis 1. Carinthia University of Applied Sciences.

Heiden, B. (2019). *Predictive Decision Making - Bernhard Heiden, University of Applied Sciences, Villach Austria, Interview on Intellisys 2019 Conference in London*. Ed. by London: Intelligent Systems Conference (IntelliSys) 2019. URL: <https://www.youtube.com/watch?v=e76PSmnm0Io> (visited on 01/05/2022).



Heiden, Bernhard, Volodymyr Alieksieiev, and Bianca Tonino-Heiden (2021). "Selforganisational High Efficient Stable Chaos Patterns". In: *Proceedings of the 6th International Conference on Internet of Things, Big Data and Security - Volume 1: IoTBDS, INSTICC*. SciTePress, pp. 245–252. ISBN: 978-989-758-504-3. DOI: 10.5220/0010465502450252.



Heiden, Bernhard, Tobias Knabe, Volodymyr Aliexsieiev, and Bianca Tonino-Heiden (2022). “Production Orgitonzation - Some Principles of the Central/Decentral Dichotomy and a Witness Application Example”. In: pp. 1–14. unpublished.



Heiden, Bernhard and Ulrich Leitner (2018). “Additive Manufacturing – a system theoretic approach”. In: *ICAT 2018, Maribor*. Ed. by Igor Drstvenšek. 10.-11. Oct. Ljubljana: Interesansa - zavod, pp. 136–139. ISBN: 978-961-288-789-6.

- Heiden, Bernhard and Bianca Tonino-Heiden (2014).
“Possibilities and Limits of a Generalized Theory of
Evolution on Base of the Theory of Selforganization:
Dedicated Aspects (in German: Möglichkeiten und Grenzen
einer verallgemeinerten Evolutionstheorie auf der Basis der
Theorie der Selbstorganisation: Ausgewählte Aspekte)”.
MA thesis. Graz: Karl-Franzens Universität Graz. URL:
[https://unipub.uni-
graz.at/obvugrhs/content/titleinfo/332996](https://unipub.uni-graz.at/obvugrhs/content/titleinfo/332996).
— (Aug. 2020). “Key to Artificial Intelligence (AI). Intelligent
Systems and Applications, IntelliSys 2020”. In: *Advances in
Intelligent Systems and Computing*. Ed. by K. Arai,
S. Kapoor, and R. Bhatia. Vol. 1252. Springer, Cham.,
pp. 647–656. DOI: 10.1007/978-3-030-55190-2_49.

- Heiden, Bernhard and Bianca Tonino-Heiden (2022a). “Diamonds of the Orgiton Theory”. In: 2022 11th International Conference on Industrial Technology and Management (ICITM). Oxford, Great Britain. unpublished.
- (2022b). “Emergence and Solidification-Fluidisation”. In: *LNNS 296*. Intelligent Systems Conference (Intellisys) 2021, Amsterdam, The Netherlands, fully virtual conference, 2-3 September 2021. Ed. by Kohei Arai. Lecture Notes in Networks and Systems. Springer Nature Switzerland AG, pp. 1–10. DOI: 10.1007/978-3-030-82199-9_57.
- (2022c). *Philosophical Studies - Special Orgiton Theory / Philosophische Untersuchungen - Spezielle Orgitontheorie (English and German Edition) (unpublished)*.

Heiden, Bernhard and Bianca Tonino-Heiden (2022d). “System Ordering Process Based on Uni-, Bi- and Multidirectionality – Theory and First Examples”. In: *2021 International Conference on Business Intelligence and Information Technology (BIIT2021)*. Ed. by A. E. Hassanien. LNDECT 107. Springer Nature. DOI: 10.1007/978-3-030-92632-8_55.



Heiden, Bernhard, Bianca Tonino-Heiden, and Volodymyr Alieksiev (2021). “Ladder of Trust”. In: *Proceedings of the Future Technologies Conference (FTC) 2021*. Vol. 3. Lecture Notes in Networks and Systems. Virtual / Vancouver, pp. 804–813. DOI: 10.1007/978-3-030-89912-7_61.



- Heiden, Bernhard, Bianca Tonino-Heiden, Tanja Obermüller, Christian Loipold, and Wolfgang Wissounig (Aug. 2019). “Rising from Systemic to Industrial Artificial Intelligence Applications (AIA) for Predictive Decision Making (PDM) - Four Examples”. In: *Advances in Intelligent Systems and Computing*. Springer International Publishing, pp. 1281–1288. DOI: 10.1007/978-3-030-29513-4_94.
- Heiden, Bernhard, Bianca Tonino-Heiden, Wolfgang Wissounig, Pascal Nicolay, Michael Roth, Silvia Walder, Xing Mingxing, and Willem Maat (2019). “Orgiton Theory”. unpublished.
- Kálmán, Rudolf E. (1960). “Contributions to the Theory of Optimal Control”. In: *Boletín de la Sociedad Matemática Mexicana* 5, pp. 102–119. URL: <https://www.ee.iitb.ac.in/~belur/ee640/optimal-classic-paper.pdf> (visited on 06/27/2021).

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Kanitscheider, Bernulf (2006). "Chaos und Selbstorganisation in Natur- und Geisteswissenschaft". In: *Selbstorganisation: Ein Denksystem für Natur und Gesellschaft*. Ed. by Milos Vec, Marc Thorsten Hütt, and Alexandra Freund. Böhlau Verlag, Köln, pp. 66–90.

Kwang-Cheng, Chen (Mar. 4, 2022). *Keynote - Wireless Networked Artificial Intelligence in a Smart Factory*. Keynote Speech on FICC 2022 Conference. URL: <https://youtu.be/5EiHclUIz20> (visited on 03/05/2022).

Lunze, Jan (2008). *Automatisierungstechnik*. 2nd ed. Oldenburg Verlag, München. ISBN: 978-3-486-58061-7.

Pentland, Alex (Nov. 2, 2021). *Building a New Economy: Data as Capital - Alex Pentland, MIT*. Ed. by Lars Sorensen. URL: <https://www.youtube.com/watch?v=dA10nsTFTks> (visited on 12/05/2021).

Pias, Claus, Heinz von Förster, Joseph Vogl, Wolfgang Pircher, Ute Holl, Erhard Schüttpelz, Henning Schnidgen, Annette Bitsch, Lily E. Kay, Wolfgang Hagen, Erich Hörl, Jerome Segal, Wolfanga Coy, Herbert Hrachovec, Dirk Baecker, Stewart Brand, Warren S. McCulloch, Walter Pitts, Arturo Rosenbluth, Norbert Wiener, and Julien Bigelow (2004). *CYBERNETICS - KYBERNETIK, The MACY - CONFERENCES 1946*. Ed. by Claus Pias and Joseph Vogl. diaphanes, Zürich, Berlin.



Renner, Georg (Dec. 5, 2021). "Die atemlose Republik: Kommt die Stabilität je wieder?" In: *Kleine Zeitung, Styria, Austria*, pp. 6–7.



Snowden, Edward (Apr. 18, 2017). *Snowden: Democracy Under Surveillance*. Ed. by Learn Liberty. William and Mary Media Council. URL: <https://www.youtube.com/watch?v=gWbaUfFfhly> (visited on 12/05/2021).



Tonino-Heiden, Bianca, Bernhard Heiden, and Volodymyr Alieksiev (2021a). "Artificial Life - Investigations about a Universal Osmotic Paradigm (UOP)". In: *Intelligent Computing, LNNS*. Computing Conference 2021, 15.-16. July 2021. Ed. by K. Arai. Vol. 285. Virtual / London: Springer Nature, pp. 595–605. DOI: 10.1007/978-3-030-80129-8_42.



- Tonino-Heiden, Bianca, Bernhard Heiden, and Volodymyr Aliexsieiev (2021b). “Safety Rings Principle and Energy and Information Networks Coupling”. In: *Artificial Intelligence and Sustainable Computing: Proceedings of ICSISCET 2021*. Ed. by Manjaree Pandit, M. K. Gaur, Prashant Singh Rana, and Akhilesh Tiwari. Springer Nature Singapore Pte Ltd., pp. 1–12. unpublished.
- UN (Apr. 26, 1946). *Statement of Essential Human Rights Presented by the Delegation of Panama*. URL: <https://digitallibrary.un.org/record/631107?ln=en> (visited on 12/04/2021).
- (1948). *Allgemeine Erklärung der Menschenrechte*. URL: <https://www.humanrights.ch/de/ipf/grundlagen/rechtsquellen-instrumente/aemr/> (visited on 12/04/2021).

von Förster, Heinz (1997). *Wissen und Gewissen: Versuch einer Brücke*. Ed. by Siegfried J. Schmidt. 4th ed. suhrkamp taschenbuch wissenschaft.

Wiener, Norbert (1963). *Kybernetik : Regelung und Nachrichtenübertragung im Lebewesen und in der Maschine*. Cybernetics or control and communication in the animal and the machine (deutscher Originaltext). Econ Verlag. 287 pp.

Wunsch, Gerhard (2000). *Fundamentals of process theory: structure and behaviour of dynamic systems in technology and natural science, original in German: Grundlagen der Prozesstheorie: Struktur und Verhalten dynamischer Systeme in Technik und Naturwissenschaft*. Teubner Verlag, Stuttgart.