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Cybernetic Socialism with Cutting-Edge Characteristics

Socialism, a socioeconomic ideology in where the working class owns and controls the means of production (also known as the “workplace”), has its origins in the era of coal and steam. This revolutionary ideology has since persisted and evolved into various forms, one such evolution is the development of “Cybernetic Socialism". Cybernetic Socialism is rather unique in that this form of socialism leans technocratic, and places computers and electronic automation as a fundamental part of the socialist road to communism. This evolution of socialism has its origins in the Khrushchev-era USSR, and was briefly attempted during Salvador Allende’s brief tenure in the Chilean presidency. Allende’s attempt was revolutionary, and proved minor successes and proved redundancy, but more than fifty years have since passed, and computers have likewise matured (Clancey 112; Espejo 88). Using these present-day technologies, it has suddenly become increasingly elementary that socialism could be implemented by real-time computer network systems. Additionally, machine learning could prove to be an essential tool to assist the aforementioned computer systems in completing and assessing advanced economic directives. Per contra to idealism, cybernetic forms of socialism has reared its faults and contradictions, some of which could render cybernetic socialism as a mere fantasy. As such, it remains important that historical context must not be disregarded.

Cybernetic Socialism has been attempted before. During the brief tenure of democratic socialist, Chilean president Salvador Allende during the early 1970s, attempted to implement a more democratic form of centrally planned socialism in lieu of then modern mainframe developments termed “Project Cybersyn” (Clancey 107). The Chilean government, as part of an

effort to democratically and peacefully transition from a market capitalist economy to a centrally planned socialist economy, expanded the authority of the nation's state-owned corporation for national development, also known as "Corporación de Fomento de la Producción de Chile" (CORFO), in 1970 (Espejo 80). To assist in this endeavorment, Chilean engineer Fernando Flores enlisted the aid of cybernetics theorist Stafford Beer (Clancey 108). Stafford Beer envisioned CORFO as reorganized where it became, "mapped it into a recursive structure with CORFO as the system-in-focus, embedding four ramas (groups of related industrial sectors)", which in laymen terms refers to economic units feeding and receiving data utilizing similar processes (Espejo 82). The system utilized a central control room in where economic ministers and the presidency were able to monitor and adjust the national economy in near real-time (Clancey 122). Furthermore, each economical unit possessed a Telex communications systems which would enable the unit to decentrally manage and communicate with all the connected units in the system (Clancey 122). However as a consequence of General Augusto Pinochet's coup-de-tat in 1973, the project was permanently halted. (Clancey 120). After Khrushchev's election post-Stalin, the Soviet government realized the necessity for economic reform. "In our time, the time of the atom, electronics, cybernetics, automation, and assembly lines, what is needed is clarity, ideal coordination and organization of all links in the social system both in material production and in spiritual life.", was what Soviet First Secretary Nikita Khrushchev stated in 1962 during the fourth plenary session of the Communist Party of the Soviet Union Central Committee (Clancey 117). Later in 1963, Soviet engineer Victor Glushkov proposed a similar system to later Chile's "Project Cybersyn". However, this system could be seen as to a greater extant more bureaucratic and with a greater emphasis on a top-down hierarchy, as compared to a bottom-up, anarchistic approach, which could be discerned as autocratic in nature (Clancey 118). However, the Soviet government viewed the project too prohibitively expensive and Glushkov was sidelined later in the 1960s (Clancey 117–18). Coincidentally, global corporations related to the sale of physical products have

for the last fifty years innovated logistical and sales planning that presently resemble the planning functions of cybernetic socialism.

With further progress in the realm of computer science and mass-data processing, large corporations the likes of Walmart, Amazon, and IKEA en masse have implemented crucial traits of centrally planned socialism; these traits include: a central planning body, a central bureaucracy tasked in handling economic matters, and a centralized process designed for greater efficiency in logistical and business matters. The aforementioned corporations utilize computer systems for the efficient and optimized logistical allocation of goods (Phillips and Rozworski 17). Walmart had historically adopted an IBM 370/135 for the coordination of stock control in the conglomerate's first distribution system in 1970 (Phillips and Rozworski 31). Further on, Walmart implemented a system known as "Collaborative Planning, Forecasting and Replenishment" (CPFR), a system for all connected entities to synchronize economic forecasts and activities, supply chain cooperation, standardization of "Universal Product Codes" (UPC), and "Radio-Frequency ID Tagging" (RFID). Not to mention, Walmart utilizes a "Retail Link Database" that connects real-time demand with suppliers and distributes real-time sales data from register tills throughout the system (Phillips and Rozworski 35–36). Another global corporation, IKEA, has likewise implemented a complex centrally planned logistical system. IKEA initially worked with a decentralized system; however since 2003, IKEA developed a new centrally planned alternative (Jonsson et al. 3). As IKEA spans across fifty-five countries, serviced by thirty distribution centers, vendor-ed by 1400 suppliers, the company implemented a multi-stage planning process assisted by computers (Jonsson et al. 3; Jonsson et al. 7–9). Under IKEA's current planning process, the company established a central planning function with the name "IKEA of Sweden". Wherein the planning function supervises the decisions regarding marketing, purchasing, logistics, and other strategies. The planning involves several internal bureaucratic bodies before being executed by suppliers, distribution employees, and stores. The company likewise pooled resources in the development of software intended for the

smooth daily operations of the planning functions (Jonsson et al. 15–18). Simultaneously, conglomerates alike the conglomerates mentioned previously, have since started to deploy the use of a technology still in its advent.

Machine Learning will in the present, and near future, serve as an essential apparatus for economic and business calculations. Presently, machine learning algorithms exist for gross domestic product calculations and theorized for use in circular economies. According to Xiangru Chen of the University College London, London:

> Interconnected devices such as computers, mechanical and digital machines, objects, animals, and people are all part of the internet of things (IoT), a system that allows data to be transferred over a network without any human intervention. Sensors, processing power, software, and other technologies embedded in physical objects (or groups of such objects) allow them to communicate and exchange data with other devices over the Internet or other communications networks (Chen 3131).

Using waste management as a main point, Xiangru Chen posits that IoT-based devices could be used to remotely signal waste collection needs, and assist in an algorithm to determine the quickest routes for collection (Chen 3130; Chen 3134–38). A similar algorithm could be developed instead for the distribution of goods using existing infrastructure. Similarly, an algorithm exists for the forecasting of the Italian economy, developed as an experiment of the viability of machine learning in estimating economic recovery and recession (Paruchuri 52). In addition, another study exists regarding the use of machine learning for demand forecasting in the Indonesian national economy (Aamer et al. 1). Both studies concluded that machine learning proved either superior, or on par with conventional processes (Paruchuri 55; Aamer et al. 9). However, even with the possible aid of modern technologies, it must be emphasized that cybernetic socialism is imperfect.

On the contrary, cybernetic socialism has garnered criticisms and concerns either directly, or indirectly in lieu of similar traits in currently existing planning. One such criticism exists in the

implementation of Project Cybersyn, wherein the implementation over-emphasized operational complexity over organizational complexity. According to cyberneticist Raul Espejo, “Not much attention was given to enabling lateral coordination within and among plants and enterprises.” (Espejo 88). This meant that workers in one unit would have difficulties in communicating with an adjacent unit, resulting in inefficient communication. On the other hand, a noted problem exists in IKEA’s central planning processes, caused by a lack of worker training and rigidness of the software used in the planning process (Jonsson et al. 24–25). Another issue that troubled IKEA was a difficulty in synchronizing information between computer networks throughout IKEA’s system, and in data quality (Jonsson et al. 20). Nevertheless, such problems can be mitigated and resolved through experimentation and reforms of future implementations.

To summarize, cybernetic socialist forms of economy have become an increasingly viable prospect to consider. Furthermore, past implementations and visions of computerized socialism can help in shaping the ways the socioeconomic alternative can flourish in the information age. Modern global companies too have shown that central planning is feasible, and is used akin of the economic development of currently socialist countries (China, Cuba, Vietnam, etc.). Additionally, machine learning algorithms have shown to be able to assist in day-to-day processes in economic central planning. And as such, society stands to benefit in the transition from a market capitalist system to a democratically, cybernetic-ally planned socialist system; as it is a merely a natural next stage of the ever-ending change of the modes of production.

Annotated Bibliography

Aamer, Ammar, et al. “Data Analytics in the Supply Chain Management: Review of Machine Learning Applications in Demand Forecasting.” *Operations and Supply Chain Management: An International Journal*, Dec. 2020, pp. 1–13. *DOI.org (Crossref)*, https://doi.org/10.31387/oscm0440281.

This article reviews the growth in use of machine learning in various sectors of the Indonesian economy. The authors scraped digital databases for articles with relevant key-words to machine learning and calculated percentages on to a table with information including the algorithm used, citations, and percentage of usage according to sectors and sub-sectors. The methodology and data presented seems accurate, however the methodology does not disclose whether or not the data scraped is relevant to the Indonesian economy.

Chen, Xiangru. “Machine Learning Approach for a Circular Economy with Waste Recycling in Smart Cities.” *Energy Reports*, vol. 8, Nov. 2022, pp. 3127–40. *DOI.org (Crossref)*, https://doi.org/10.1016/j.egyr.2022.01.193.

This article details and delves into detail the reasons and methodology for the application of machine learning and integrated Internet-of-Things (IoT) systems for a hypothetical waste management system of a city, focusing on a circular economy. The author goes into great detail and in relatively simple terms why and how a hypothetical system could function. Later on, the author explains their own experiments using existing models and goes into detail the results of the aforementioned experiments. This article is overall a strong source.

Clancey, Rose. “HERE LIES PROJECT CYBERSYN: SALVADOR ALLENDE AND STAFFORD BEER’S CYBERNETIC SYSTEM OF COORDINATION FOR CHILE’S ECONOMY (1971-1973).” *Strata University of Ottawa Graduate Student Review*, 2017.

This article details the history and politics regarding Chilean president Salvador Allende's attempt at democratizing and transition of the nation from market capitalism to a socialist planned economy. The author gives a detailed and relatively simple analysis of the attempt and implementation, and also briefly examines similar ideas and concepts from the US and Soviet governments.

Espejo, Raul. "Cybernetics of Governance: The Cybersyn Project 1971–1973." *Social Systems and Design*, edited by Gary S. Metcalf, vol. 1, Springer Japan, 2014, pp. 71–90. *DOI.org (Crossref)*, https://doi.org/10.1007/978-4-431-54478-4_3.

This section from cyberneticist Raul Espejo explains in technical detail the methodology, reasoning, and critical review of Chilean president Salvador Allende's attempt at socialism. The author does give information that requires the reader to have some context beforehand as the author does not explain what they mean. Furthermore, the author is biased towards cybernetic socialism.

Jonsson, Patrik, et al. "Centralised Supply Chain Planning at IKEA." *Supply Chain Management: An International Journal*, vol. 18, no. 3, Apr. 2013, pp. 337–50. *DOI.org (Crossref)*, https://doi.org/10.1108/SCM-05-2012-0158.

This article delves into detail the planning processes of IKEA, and also the core concepts of central supply-chain planning in regards to what is used mainstream by organizations. The author breaks concepts down into simple terms and goes into great detail the benefits and also setbacks faced by IKEA. Additionally, the author also details the previous planning system used by IKEA and gives reasons why it was replaced by the current system used by IKEA.

Paruchuri, Harish. "Conceptualization of Machine Learning in Economic Forecasting." *Asian Business Review*, vol. 11, no. 2, May 2021, pp. 51–58. *DOI.org (Crossref)*, https://doi.org/10.18034/abr.v11i2.532.

This article reviews various machine learning algorithms for forecasting the economy of Italy and details in technical terms the results of the experiments. The author gives a very detailed and technical explanation of the methodology used including the names of algorithms and the math behind it. Furthermore, charts are used to show the results of the forecasting. However, since the terms are technical, the reader has to have a related level of understanding in the math and computer science topics beforehand.

Phillips, Leigh, and Michal Rozworski. *The People's Republic of Walmart: How the World's Biggest Corporations Are Laying the Foundation for Socialism*. Verso Books, 2019.

This book reviews and argues for the implementation of socialism using present-day corporations like Walmart, Amazon, et cetera, and also reviews Chilean President Salvador Allende's attempt at cybernetic socialism. The authors explains in relatively simple terms the history and methodology of central planning by the aforementioned entities, and also gives a decent amount of examples. However, the authors are openly socialist and are biased for the implementation of socialism.