



# From Marx to Mumford: A Philosophical Examination of Machine Technology

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## Abstract

The philosophical interrogation of machine technology reveals the technological conundrums inherent in contemporary society, offering pathways to potential breakthroughs. Within this domain, Karl Marx and Lewis Mumford emerge as seminal figures whose contributions are marked by an amalgamation of engineering tradition and humanistic concern. Beginning with the machinery, they critique capitalist structures through divergent methodologies, revealing the capitalist essence, deconstructing the “alienation” phenomenon, and threading humanism throughout their discourse. They aspire to envision an ideal society that foregrounds the human as a living entity. Although Marx’s approach leans towards political economy, examining technology from a macro-social perspective, Mumford navigates the terrain of social technology via anthropology, culture, and urban planning. Nonetheless, their ideological congruence is palpable.

**Keywords:** Marx; Mumford; Machine; Alienation

## Introduction

The Industrial Revolution stands as a pivotal juncture in history, signaling a profound metamorphosis within Western societies from agrarian craft-based economies to industrialized capitalist systems. This era was characterized by mechanized production, which engendered a substantial enhancement in production efficiency, a reduction in manufacturing costs, and the capability for mass production—thereby satisfying the escalating material demands of the populace. However, the advent of mechanization also cast a spotlight on the adverse working conditions and societal challenges faced by the workforce. Laborers were often subjected to prolonged work hours within the confines of vast machine-driven factories, enduring strenuous labor and substandard living conditions, which precipitated a range of social issues. These conditions galvanized critical reflection on the role and impact of machine technology, inciting advocacy for the amelioration of workers’ rights and working conditions—thus catalyzing social reform and advancement.

Within the philosophical discourse on machine technology, Karl Marx and Lewis Mumford both espouse a “culture-first” perspective. They assert that machinery should not be viewed as an autonomous entity but rather as an integral component of the broader social fabric and a significant emblem of societal progress. It is imperative to delve into the societal core that lies beneath the mechanical surface to truly comprehend its implications. The examination of Marx and Mumford’s reflective theories on machine technology holds considerable scholarly merit and is of vital relevance to the ongoing modernization of our contemporary society and the constructive evolution of our technological landscape.

## Marx and Mumford: Navigators Through the Philosophy of Technology

The contemplation of technology has yielded a rich tapestry of thought, and Carl Mitcham, a philosopher of technology, has distilled this diverse array into two primary traditions: engineering

and humanism. These traditions stand as testament to the dual nature of technology as both a tool and a reflection of human values and aspirations [1].

Within the engineering tradition, technology is the measure and the defender of rationality, where philosophers interpret human existence through the prism of technical language. This perspective prioritizes the functionality, efficiency, and progress inherent in technological development, viewing technological advance as an end in itself. It tends to focus on the “how” of technology-how it works, how it improves tasks, and how it can be further enhanced. Mitcham describes these philosophers as always “understanding human beings in technical language [1].”

Conversely, the humanist tradition, which includes thinkers like Martin Heidegger, and Herbert Marcuse, considers technology as a human endeavor that extends beyond mere survival. It emphasizes “living well” suggesting that technology should serve not only our basic needs but also facilitate a more meaningful existence. These philosophers scrutinize the deeper implications of technology on culture, society, and our metaphysical relationship with nature and the world. Marcuse maintains that “the industrial society which makes technology and science its own is organized for the ever-more-effective utilization of its resources. It becomes irrational when the success of these efforts opens new dimensions of human realization [2].”

Heidegger contrasts traditional technology, which he believes works in harmony with nature, with modern technology, which he argues imposes a revealing upon nature, disrupting the once-harmonious relationship between humanity and the natural world. Marcuse addresses the assimilation of culture, politics, and economy into an omnipresent technological system, suggesting that while industrial society becomes irrational when its technological and scientific successes could instead be opening new dimensions of human realization.

It is true that technology has played an indelible role in the history of human development, helping human beings to understand nature, transform nature, and improve their own living environment, but we must admit that technology is not omnipotent, when it comes to social, psychological, cultural, artistic and other fields, technology appears powerless. Then, in turn, we look at the humanistic philosophy of technology, relative to the specific engineering, the object of reflection and criticism is a general, conceptual technology, not from the actual situation, in view of a specific machine to explore its origin, structure, function in an all-round way, but more to discuss the relationship between metaphysical man and technology. In fact, technology has been a complex existence since it came into being, especially machine technology since the 19th century, including politics, economy, and other social factors.

Moving beyond the dichotomy of engineering and humanism, a third path emerges, epitomized by the work of Karl Marx and Lewis Mumford. This path seeks to integrate the precise scrutiny of engineering with the broad, humanistic concerns for the impacts of technology on society.

Karl Marx places labor at the core of human existence, considering the tools, machines, and technology employed in labor as pivotal to understanding human activities. In “Das Kapital,” Marx delves into the “Machinery and Modern Industry,” exploring the genesis, historical context, and functionality of machinery. He illuminates how machinery is designed to reduce the cost of commodities and shorten the working day. Yet, under capitalism, he argues, labor becomes alienated, with workers reduced to mere cogs in a mechanical system, losing their humanity. Marx’s focus extends beyond machinery to a potent call for the reclamation and liberation of human nature, imbued with a deep humanistic concern. Marx pointed out that “Machinery is intended to cheapen commodities, and, by shortening that portion of the working-day [3].”

Lewis Mumford, while drawing on Marx’s insights, offers a fresh perspective on the philosophy of technology. Mumford posits that “The clock, not the steam-engine is the key machine of the modern industrial age”[4]. The clock’s ability to standardize timekeeping, automation, and precision marks it as the progenitor of modern machinery. Mumford connects the invention of the clock with the bourgeois valuation of time, leading to the relentless operation of machines and the extension of the working hours. Like Marx, Mumford examines the origins, historical context, and material aspects of specific machinery, such as the steam engine and spinning machine, and probes the interplay between technology and humanity. He echoes Marx in depicting the plight of the working class within the capitalist machinery era and asserts that true human redemption lies in breaking free from the machinery’s vicious cycle.

In synthesizing the engineering and humanistic views, Marx and Mumford offer a comprehensive understanding of technology as an integral component of human culture, with profound implications for society. They encourage us to look beyond the mere technical aspects of machinery and to consider the wider social, psychological, and cultural ramifications, thus providing invaluable insights for navigating the complex interrelationship between humanity and technology.

## **Critiquing Capitalist Exploitation Through Technology**

Marx and Mumford presented a nuanced view of machinery that diverged from the technological pessimism espoused by thinkers such as Martin Heidegger and Jacques Ellul. Recognizing the significant role of machines in human self-development and the transformation of society, they did not outright reject the positive contributions of machinery. Instead, their critiques focused on how these tools were employed within the capitalist system. Marx emphasized the detrimental impact of repetitive, monotonous work on both the mind and body, suggesting the dehumanizing effects of such labor were symptomatic of a decaying capitalist system. “it is clear that unendingly monotonous activity of this kind is as harmful to the mind as to the body [5].” He argued that the underlying issue of this alienation was the capitalist mode of production itself.

Mumford echoed Marx's concerns but expanded the critique to include the broader societal implications of machine-centric thinking. He observed that a long-standing preoccupation with machines led to a diminishment of diverse technological practices, shaping capitalist societies into what he termed a controlling "Megamachine". He believes that militarism and war are the driving forces of technological invention. "At every stage in its modern development it was war rather than industry and trade that showed in complete outline the main features that characterize the machine [4]." In addition to war and politics, Mumford attributed the invention of technology to profound religious reasons.

Marx conducted a thorough examination of the societal conditions of his time, contrasting the vitality and satisfaction workers derived from manual labor with the alienation they experienced in machine-dominated factories. Machines, Marx contended, transformed workers into mere appendages of the mechanized production process, leading to extended working hours and the erosion of the organic life that once energized them. This transformation fostered a profound sense of alienation toward their labor, the machines, and the capitalists who owned them. The division of labor, which prevented workers from completing a product from start to finish, further contributed to this sense of alienation, which Marx identified as a primary factor.

Mumford inherited Marx's critical lens but cast a wider net in analyzing the forces driving technological invention. He identified militarism and religion as key motivators, suggesting that the disciplined life of monks and the Protestant ethic played roles in the development of mechanized timekeeping and the pursuit of material success, respectively. Mumford also acknowledged the significant role of capitalism in encouraging technological advancements for profit.

Distinguishing between machine technology and capitalism, Mumford noted their interdependency. The production of machines required substantial capital investments, which dictated that only the wealthy could operate factories and profit from mechanization. This relationship between capital and machinery fostered a cycle of continuous investment, production, and innovation. Mumford speculated on the likelihood of such rapid technological progress without the lure of commercial profit, suggesting its improbability. Mumford says that: "Whether machines would have been invented so rapidly and pushed so zealously without the extra incentive of commercial profit, is extremely doubtful [4]." Mumford further pointed out that machines not only rule capitalist society, but also control the lives of workers. The machine firmly kidnapped them on the chain running around the clock, and the rich brain energy disappeared by the roar of the machine, losing the freedom to pursue a better life, which led to the distortion and alienation of personality.

Mumford shared Marx's depiction of the worker's plight but did not fully embrace the Marxist class struggle. While acknowledging the capitalists' thirst for power and wealth, Mumford did not view the capitalist-worker dynamic as entirely antagonistic. He recognized the complexity of these social roles and the potential for a more multifaceted relationship between the classes. Mumford

also described the tragic experiences of the workers in detail, "Physical coercion, disease, bodily injury gave mining at every step the features of a battlefield: both the landscape and the miner bore the scars of this operation, even when the latter remained alive [6]." Mumford did not blindly follow Marx mechanically. Although he described capitalists as "a strong desire for power" and "a desire for wealth", he did not accept the theory of class struggle advocated by Marx. Mumford did not regard capitalists and workers as completely hostile social forces.

From the perspective of political economy and from the social reality of big machine factories, Marx focused his attention on the sufferings of workers and the unfair distribution of social wealth, aiming at the merciless exploitation of workers by capitalists, this paper expounds the decay of the capitalist system. Mumford draws lessons from the viewpoint of Marx's class analysis, uses the method of civilization criticism, writes the history of technological civilization from the point of view of sociology and anthropology, and comprehensively discusses the advantages and disadvantages of industrial civilization in capitalist society. As well as the historical origin, the influence of capitalist society is projected to the destruction of the environment. In addition, he also integrated the influence of the political, the religious, the technical, and other factors on the machine, and formed his own theory of technological resultant force. In the process of narrating the history of technology, Mumford fully retained Marx's class view when explaining the technological development in China and the West in the two stages of "the era of old technology" and "the era of new technology".

### **Envisioning a Society Beyond Capitalist Mechanization: Marx and Mumford's Utopias**

In the wake of their critical analyses, Marx and Mumford each outlined their respective visions of an ideal society. Marx, after a rigorous critique of capitalism, contended that such a system runs counter to the true essence of human development. In *The Communist Manifesto* Marx and Engels portray a classless, non-exploitative society, that "in place of the old bourgeois society, with its classes and class antagonisms, we shall have an association, in which the free development of each is the condition for the free development of all [7]." Marx envisaged a communist society governed by a planned economy, where industry is directed by representatives of society as a whole, rather than by individual capitalists. In this society, labor transforms from mere sustenance into genuine fulfillment.

With the abolition of private capitalist ownership of production means, and the eradication of landowner rights, the exploitation of humans will cease, heralding an era of liberation from mechanistic labor, allowing individuals to become versatile enthusiasts, "whereas in communist society, where nobody has one exclusive sphere of activity but each can become accomplished in any branch he wishes, society regulates the general production and thus makes it possible for me to do one thing today and another tomorrow, to hunt in the morning, fish in the afternoon, rear cattle in the evening, criticise after dinner, just as I have a mind, without ever becoming hunter, fisherman, shepherd or critic [8]."

Mumford diverged from Marx in believing that political transformation alone is insufficient to rectify the ills of capitalist society. He stressed that issues like environmental degradation affect all societal strata and thus necessitate technological evolution. Mumford underscored the pivotal role of ideological shifts in driving societal progress. He anticipated the replacement of an older technological era with one characterized by a thrifty and conservative use of the natural environment. "It tends to replace the reckless mining habits of the earlier period with a thrifty and conservative use of the natural environment [4]." However, Mumford was acutely aware that technological and scientific advancements do not inherently yield an ideal, humane society. He suggested that our civilization is in a transitional "meso-technic period". he wrote, "As a civilization, we have not yet entered the neotechnic phase; and should a future historian use the present terminology, he would undoubtedly have to characterize the current transition as a meso-technic period: we are still living, in Matthew Arnold's words, between two worlds, one dead, the other powerless to be born." In diagnosing the societal role of machines, Mumford's thoughts began to align with Marx's socio-political concerns.

Both Marx and Mumford advocated for a restructuring of private capitalism. Mumford's concept of "basic communism" expanded on Marx's societal vision, valuing the living organism of "human" and promoting a humanistic approach amidst technological advancements. In Mumford's ideal society, humans are no longer cogs in the production line but become regulators and masters of machinery. Moreover, he emphasized valuing life as the primary human phenomenon and creativity, advocating for a harmonious coexistence with nature rather than its conquest. In the "basic communism" Mumford envisaged, alienation, pollution, and the relentless pursuit of profit are replaced with a society that cherishes living organisms, art, and emotion. Machines continue to exist but are repurposed to better serve the collective needs, with workers transitioning from mere operators to "chief mechanics" and "chief supervisors."

### **Conclusion: Synthesizing the Philosophies of Machine Technology with Humanism**

The philosophical reflection on machine technology by Marx and Mumford represents a synthesis of traditional engineering principles with a humanistic framework. Their work transcends

the narrow focus of earlier philosophical inquiries into technology, which often overlooked the societal implications and human-centric aspects of mechanization. By integrating a consideration of the origins and evolution of machines with an emphasis on the primacy of human beings at the core of society, Marx and Mumford offer a corrective to these past deviations.

As we navigate the swift currents of technological advancement, Marx and Mumford's perspectives serve as a prescient reminder. They underscore the imperative that while we delve into the intricacies and governing principles of technological progress, our society must concurrently elevate humanistic concerns to ensure that such progress remains aligned with human welfare and needs. The exploration of Marx and Mumford's reflections on the philosophy of machine technology is thus profoundly relevant. It arms us with the intellectual tools necessary to engage with our era's rapidly evolving technological landscape. Their analysis of the interplay between humanity and technology offers critical insights that resonate with the spirit of our times, emphasizing that our collective future hinges on a balanced integration of technological innovation with the enduring values of humanistic care.

### **Acknowledgement**

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### **Conflict of Interest**

There no conflict of interest.

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