



## Technics and Civilization

*Lewis Mumford*

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This is a history of the machine and a critical study of its effects on civilization. Mumford has drawn on every aspect of life to explain the machine and to trace its social results. "An extraordinarily wide-ranging, sensitive, and provocative book about a subject upon which philosophers have so far shed but little light" (Journal of Philosophy).

## Technics and Civilization Details

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## Adora says

Written in 1934, this is a great (though not complete) review of technological progress up to that point. It's a little bit fatalistic in its last couple of chapters, which is sort of ironic given the rest of the book concludes that the fear of automation replacing humans throughout time was warrantless as people are generally not imaginative enough to believe next period's great new technology will mean things, on the whole, will be alright. Indeed if you replace the word "machine" with "AI/robots" in many areas, you get a funny feeling, the author lives with us today!

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## Bruno says

First of all, this is a very good book, thought provoking and very broad and thorough in its approach. It's not perfect, I will outline below why, but nevertheless I recommend it very much.

First of all, I had to double check a couple of times if this book was really written in 1934. It speaks about our modern ills like traffic congestion, role of anti conception and sex, military-industrial complex, basic income, ... and you wouldn't notice it. This book could very well have been written yesterday. This shows two things: the problems and challenges of our current times are not new, and have been going on for a while but we aren't solving them, and also these problems might not merit a panic and urgency that is sometimes called for. I very much prefer this book with its rational approach. There are only a couple of minor points that are outdated (e.g. asbestos promotion). And of course, you know the book is from the antebellum because the speaks of "The World War" ...

The book is very good in retracing the origins of machine, technology and capitalism over the centuries. From the clock and the sounding of bells for monasteries to coal and steel industries, humans have lost touch with what is more spontaneous or organic, and there has been an external framework imposed on them that is less human. He does this with a Foucaultian genealogy, but he of course predates that famous French philosopher. Again, the book could have been written now and would be labelled as written by a pupil of Foucault. On the other hand, Mumford states and asserts a lot, but does not support it well with written sources (obscure or not, cfr Foucault). At times that really hinders the reading and appreciation of the arguments. The word use (complex!) and referencing sometimes things that we may no longer know do not help either.

Apart from Foucault, you should also take into account he is writing in the same period as Heidegger, and he shares some lines of thinking, e.g. tools/utensils that help humans versus independent machines that drive human behaviour. I do not know if Mumford was aware of Heideggerian thinking, we can stalk it up if needed to a more generic line of thinking about being and technology that started in that era.

From the geotechnic to the paleotechnic (coal and steel) to the neotechnic, Mumford hopes for a biotechnic future, where machine is integrated but subservient to human enterprise. He is completely mistaken, but that is not an issue. He lived before the advent of computers, AI and big data, and if he would write the book now, he could make the argument that we are still in the paleotechnic, where the machine still manages our human lives, making us even slaves to small handheld devices. The glimmer of hope he saw, seems in retrospect only like a glitch.

It also, and that is my main issue with the book, makes a couple of thought errors in the final chapter that outlines possible solutions. I have no problems with his Marxian approach (although at times very critical of Marx because that is for him an outdated paleotechnic thinking). I also think that his reasoning of bringing the production of energy under public control merits a lot of attention, especially in his arguments that increasing too much the available energy does not help us solving issues better, it just creates more stuff that we need to buy. But the continuation of this argument into a planned and communist approach of economy has been shown to be utterly wrong by later years and by the horribleness of the communist regimes that were in place. Don't get me wrong, I do think that the neoliberal policies since the nineties aren't necessarily better, and that counting on the profit motive to solve our problems will not help either. But instituting a centralised planning will only install more bureaucracy and lack of incentives to solve our problems. A green revolution for me will only work if there is also a profit. For that, the correct price, taking into account the depletion and destruction of natural resources (a point Mumford also talks about) must be part of the cost side, and some things might have to be limited to avoid excesses and in order to focus. Again Mumford is worth the reading, but bring a bag of salt for the last chapter.

In conclusion: wauw, historical and philosophical analysis that still hit very close to home... I liked it.

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#### **\* says**

- Considerar al hombre ante todo como un animal que usa herramientas equivale a pasar x alto los principales capítulos de la historia de la humanidad. Hombre es 1ro animal fabricante de espíritu.
- Técnica como apoyo expresión humana.
- Irracionalidad del hombre.
- Cerebro > manos. Ritos, lenguaje, organización social > herramientas.

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#### **Miloš says**

"Unutar moderne civilizacije postoji ?itava serija kompenzatorskih funkcija koje, daleko od toga da omogu?avaju bolju integraciju, služe samo da stabilizuju postoje?e stanje i napisletku same postaju deo disciplinovanog sistema protiv koga se bore. Me?u ovim institucijama su najvažniji masovni sportovi. Oni se mogu definisati kao oni oblici organizovane igre u kojima je gledalac mnogo važniji od igra?a". (339 str.)

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#### **Christy says**

From how monks invented clocks to control social order through technics that concentrated power including through industrial revolution this likely is one of the most influential books ever on this old, thoroughly sodden mind of a historian dad, philosopher wife, sociologist. Excellent for political or economic sociology or anthropology. The historical and cultural background for those of us teaching the "new" field of STS (Science, Technology, Society) or Science Studies.

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## **Bryan Kibbe says**

Writing in the early 1930's Lewis Mumford offers a sweeping viewing of technological development over the past thousand years of human history. But Mumford is far from a simple chronicler of technological achievement and failure. As Langdon Winner observes in his introduction to the book, Mumford is among the first thinkers to advance a clear philosophy of technology. Indeed, Mumford's insights into, criticisms of, and prescriptions for technological development are fascinating. While Mumford is most frequently recognized for his distinctions between various periods of technological development (i.e. eotechnic, paleotechnic, and neotechnic), I think Mumford's greatest contributions are in his insights into the fundamental ambivalence of machines for good and evil purposes. As such, Mumford is not a simple romantic (anti-technology), nor is he a thoughtless technological enthusiast. Instead, Mumford calls for a critical evaluation of technological systems and devices relative to the nature, abilities, and goals of human beings that possess a rich thought life that resists an overly simplistic regimentation. Apart from the various insights Mumford offers, he is also pleasure to read. In short, Mumford writes with a tremendous amount of candor, wit, and intelligence, which I find refreshing. Although the book was written in 1934, its insights are still relevant, and I would highly recommend this book to others looking for a thoughtful, wise, and engaging treatment of technological development.

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## **Mark Bowles says**

### **The Neotechnic Phase**

#### **A. The Beginnings of Neotechnics**

1. Began with the water-turbine of Fourneyron, Faraday's work on the electro-magnet (1800-50)
2. This led to the phone, radio, TV, in the 20th

#### **B. The importance of science**

1. Two important facts for this phase; the scientific method
2. The application of science to technics and the conduct of life

#### **C. New sources of energy**

1. This phase was designated by electricity
2. Eotechnic: water & wind

#### **3. Paleotechnic: coal and steam**

#### **D. The displacement of the proletariat**

1. The electric motor transformed the plant
2. The worker needed to be alert and intelligent, an all around mechanic instead of a specialized hand
3. Thus this phase saw an increase in the number of trained technicians and a decrease in the number of human robots

#### **E. Neotechnic materials**

1. New alloys with a high degree of conductivity
2. The chemical utilization of coal

#### **F. Power and mobility**

1. The development of the internal combustion engine
2. The Otto in 1876

#### **G. The paradox of communication**

1. Radio, TV, telephone
2. The paradox is that with the convenience of instantaneous communication we will ignore the reflective thoughts of writing and reading

H. The new permanent record

1. Camera, photograph, film

2. These serve as an extension of collective memory

I. Light and life

1. The telescope and microscope assume a new importance here

2. The spectroscope and x-ray utilize light as an important tool of exploration

J. The influence of biology

1. The belief in mechanical flight grew out of the physiological laboratory (the Wright bros?)

2. The moving picture could help study organic life

K. From destruction to conservation

1. Paleotechnic period was noted for its waste of resources

2. Neotechnic phase began to conserve materials

3. Forest destruction

L. The planning of population

1. The planning of human regions is the most important neotechnic innovations

2. Contraception is very important (baby-boom is a drastic increase)

3. A divorce between sexual and paternal functions

4. It stabilized the institution of marriage (no way)

M. The present pseudomorph

1. New discoveries have been placed inside existing structures

2. Electricity and gasoline have increased the congestion of what originally began with coal and steam

III. Compensations and Reversions

A. Characteristics of the machine civilization (summary of this chapter)

1. Regularization of time, contraction of time and space, standardization of performance, transfer of skill to the automata, increase of collective interdependence [281]

B. Summary of social reactions

1. The sum total of the 3 phases constitutes our present condition

C. The mechanical routine

1. The first characteristic of modern machine civilization is temporal regularity; the clock

2. Sexual intimacy is relegated to the fatigued hours of the day adds it the efficiency of working life with a sacrifice in organic relations

D. Purposeless materialism; Superfluous power

1. There is a disproportionate emphasis on the material side of life

E. Co-operation v. Slavery

1. The safety razor has transformed the operation from a hazardous one to one in which even the most inept male can perform

2. The machine is ambivalent; it is an instrument of liberation and repression

F. Direct attack on the machine

1. This was an unmatched struggle because the military and gov. were on the side of those who exploited the machine

G. Romantic and utilitarian

1. The utilitarian was at one with the machine

2. Romanticism was an attempt to restore human life to the way it was

3. The romantic reaction took 3 forms

a) Nationalism and the past: A revival of regionalism

b) Nature: the cultivation of nature for its own sake and the pursuit of rural modes of living

c) Primitive: return to a simpler time of the primitive

H. Sport and the “bitch-goddess”

1. The romantic movements were important correctives to what the machine left out

2. Mass-sports is also a compensatory function
3. Sports presents 3 elements: spectacle, competition, the personalities of the gladiators
4. Yet, sports have failed because of its seeking nationalistic exploit
5. This has turned out to be one of the least effective reactions against the machine

I. The cult of death

1. Only war has been less effective than sport
2. War is the supreme drama of a mechanized society

J. Resistance and adjustment

1. We must abandon our futile attempts to resist the machine
2. Also the advocates of the machine must recognize the validity of the romantic movement
3. The romantic and the utilitarian must come together

- \* Assimilation of the Machine
- \* New Cultural Values
- \* The new semi-automatic machines seem to have a reality and independent existence apart from the user
- \* The objects of the machines were assimilation and not the spirit of the machine itself
- \* The practical results may be admirable or dubious; but the method that underlies them has a permanent importance to the race
- \* The machine has added a whole new series of arts, it has disclosed new esthetic spectacles
- \* The machine is a human product and helps enlarge the provinces of culture itself.
- \* This chapter looks at the machine as an instrument of culture and ways in which we have tried to assimilate it
- \* The Neutrality of Order
- \* Before the machine order was controlled by gods and monarchs
- \* Science created the possibility of finding order in nature
- \* Science contributed through inventions and mechanization a new order for the environment
- \* The second contribution of science was a limiting one; it destroyed the mythologies of Greek gods and Christian heroes
- \* At the same time as the intellectual assimilation of the machine came the esthetic and emotional apprehension of the new environment
- \* The Esthetic Experience of the Machine
- \* At the moment when praise of industrialism was the loudest, the machine began to be regarded as inherently ugly
- \* The Cubists were the first school to overcome this
- \* In this perception of the machine as a source of art, the new painters and sculptors delivered art from the romantic prejudice against the machine
- \* Photography as Means and Symbol
- \* The history of the camera and the photograph illustrate dilemmas that have arisen in the development of the machine process and its application to objects of esthetic value
- \* As the technical problems of the camera were solved, the photographer became more conscious of the esthetic arrangements around him
- \* The motion picture was degraded a little by its commercial development and its attempt to make it the vehicle of story telling
- \* In industry the machine will replace the human, in the arts the machine will deepen his intuition
- \* The Growth of Functionalism
- \* The first stage of machine design products of the machine was the machine. The machine was the direct expression of its own function.
- \* The second stage of machine production was a compromise. One was to be designed for machine efficiency and the other was to be defined for looks
- \* The third stage the imagination is infused into the machine at every stage of development (the mind works

through the medium of the machine) CAD

\* Principle of economy: the removal of every part of the machine that is not absolutely necessary

\* The Simplification of the Environment

\* As an instrument the machine has complicated the environment

\* Thus, to reduce constant stimuli, the environment must be kept as simple as possible

\* This is the importance of the simplification

\* The Objective Personality

\* What sort of man comes out of modern technics

\* In the 10th century man was subjectively formed, today mans objectively formed

\* Objective in the sense that we are formed by the experience of machines

\* We need to further assimilate the machine to be able to go beyond it into the realm of the organic

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### **Almielag says**

An interesting book, although I got seriously bogged down in the final third or so when he discusses his own emerging technical period (the "neotechnic" as he called it)

For a book that is all about material culture it is very idealistic, Mumford is constantly talking about how the paleotechnic phase (generally the late 18th through early 20th centuries, what most people would call the industrial revolution) was dominated by the 'spirit of the miner' and so on. I was also disturbed by his seemingly approving quotation of Oswald Spengler; in particular he mentions the concept of the pseudomorph:

"Spengler points to the common fact in geology that a rock may retain its structure after certain elements have been leached out of it and been replaced by an entirely different kind of material. Since the apparent structure of the old rock remains, the new product is termed a pseudomorph. A similar metamorphosis is possible in culture: new forces, activities, institutions, instead of crystallizing independently into their own appropriate forms, may creep into the structure of an existing civilization. This perhaps is the essential fact of our present situation."

This strikes me as a very naive adopting of a very sinister concept. Elsewhere in the book Mumford seems to have at most a dignified distaste for Fascism generally, although he does end it with a call for a "basic communism" in social relations to match the new technologies, which seems to be made up primarily of a universal basic income and some sort of syndicalism.

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### **Scotty says**

If you don't want to know shit about the world you inhabit than don't read this book. If you do.... Get to it bitch!

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### **May Ling says**

I'm not sure how anyone gives this less than 5 stars. Written in 1934, it is as relevant now as it ever was. So

many quotable pieces in this book. His overall premise that people have misunderstood the idea that it's progress is not about machines, it's about how they let humans organize differently. Wow, that idea has been lost. I almost began to present it new. Now, I will simply quote it in the book I'm writing.

Pg 10: "The Essential distinction between a machine and a tool lies in the degree of independence in the operation from the skill and motive power of the operator: the tool lends itself to manipulation, the machine to automatic action." He goes onto to describe the distinction to surround the idea that we are separated from our work by the machine.

Pg 23-25 - He reminds us of what Marx has to say about the commodity money and how it's history this transformed into a series of conceptual ways in which individuals exert power. He then talks about the impact of the invention of the clock as the great coordinator of human behavior. I think a whole book could be written on the clock. Indeed, I read a book about the clock and it's contributions, but to shipping. The idea that it helped push people into a paradigm of coordinated action, now that is something! The book doesn't go into this enough IMO, likely because Mumford didn't live to see today.

P. 110 "The machine cannot be divorced from its larger social pattern; for it is this pattern that gives it meaning and purpose. Every period of civilization carries within it the insignificant refuse of past technologies and the important germs of new ones..."

p. 184 "Unlike the organic patters of movement through space and time, the cycle of growth and decay, the balanced motion of the dancer, the statement and return of the musical composition, progress was motion toward infinity, motion without completion or end, motion for motion's sake. One could not have too much progress; it could not come too rapidly; it could not spread too widely; and it could not destroy the "unprogressive" elements in society too swiftly and ruthlessly: for progress was a good in itself independent of direction or end.

p. 185 "Life was judged by the extent to which it ministered to progress, progress was not judged by the extent to which it ministered to life."

This is incorrect, but interesting nonetheless. There are many metrics that are not easily disputed, lifespan, increase in choice, inclusiveness, etc.

p. 277 "The point is that efficiency is currently confused with adaptability to large-scale factory production and marketing: that is to say with fitness for present methods of commercial exploitation. But in terms of social life, many of the most extravagant advance of the machine have proved to rest on the invention of intricate means of doing things which can be performed at a minor cost by very simple ones. "

He uses the example of comedians who - at the time it was popular - build crazy machines to do really simple things like lick a stamp. Huge in size and making no sense, except mechanization for its own sake.

P. 387 "In its crude state, industry prides itself upon gross use of power and machinery. In its advanced state, it rests upon rational organization, social control, physiological and psychological understanding.

He goes on to say that the crude state requires use of force and power to exert itself. In the advanced state, no part is not up for criticism and rational criteria. You revise the machine to fit the need, not fit the need to the machine.

It's amazing. I can't believe this was written in 1932 and here we are still trying to sort it all out. I want to read all this guy's stuff.

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## Clif says

One look at the title and most Americans, I'm afraid, would say "Whoa! That sounds heavy, no thanks"

To react that way would be a shame as Mumford is a craftsman writing beautifully to make his points clear to anyone who will open these pages. Don't be put off by anxiety that the subject matter is too deep!

\* \* \* \* \*

You have to read a book like this with an understanding of when it was written - in this case, 1930.

In 1930, the Crash had occurred and the Depression was underway but not at its depths. There was a general fear that Capitalism might have had its day and was broken beyond repair. Many people in America looked to the Soviet Union as an alternative system that distributed the goods of society more evenly across the population, avoiding the bulk of wealth moving to the top while leaving the masses out.

Lewis Mumford was one of those who felt this way and in the last chapters of this book he makes this plain.

But before he does so, he paints a detailed picture of the history of the machine and civilization that had me making notes and dog-earing many pages.

Mumford divides history into three periods. Each starts at a different point but they overlap with characteristics of earlier times extending into the later periods.

The first, the eotechnic period, Mumford equates with that during which the clock was perfected. In this period machines were simple and made with human vitality in mind, that is, what could be devised that would make things easier to do, that would improve life.

Then came the paleotechnic period when quantity was king. How much and how fast could things be turned out by machines? This was the period of gross production and giantism. Machines loomed over the men who worked them and the characteristic industry of the time was mining - where the workplace was inhuman, with lives and health readily sacrificed to keep the machinery working at full tilt. Time is money! The machine is God, the worker is His attendant.

Finally, the neotechnic period arrived. It was realized that quality was to be valued as much or more than quantity. Precision, detail, design aimed at very specific jobs became the hallmarks of technics. The human and environmental costs of the Age of Steam were finally seen as the indicators of a wholesale neglect of the living.

Mumford foresaw a new stage of biotechnics - of technics in the service of humanity - only starting to become evident.

Throughout the book, I was startled by the clarity of Mumford's analysis. His descriptions are sometimes shockingly relevant to modern times. At one point he describes the technical complexity of the modern home - all the plumbing, electrical wiring, heating and ventilation - in comparison to a 16th century cottage. He speaks of how all the complexity must be hidden and made manageable so that it doesn't take our minds off what we want to do within that house. If I may carry this further, imagine an art museum. The lighting is low except upon the artwork, the temperature and humidity are precisely controlled, there is no music and

visitors are hushed if they speak at all. This is all because we want all of our attention to be on the art. With the "noise" reduced, our sensitivities are at their height to appreciate what the artists have created for us and every nuance of texture and color can be discriminated. Mumford wishes this to be the case with all technology; that it be in the background not drawing attention to itself.

The man wrote before TV! Can you imagine his reaction to a medium that strives to make as much noise as possible - to present the outrageous as daily fare - to seek out the bizarre and offensive intentionally to assault our senses? True, the actual electronics of TV are invisible and beneath our awareness but what we know as "TV" barges in to our homes and leaves us paralyzed on the couch instead of furthering our mental and physical abilities. Far from exercising the exquisite sensitivities we have, TV puts guns in our faces, violence in our living rooms and perversity front and center - what bizarre thing happened today? Let's look at it!

And what of computers that can always stay 3 steps ahead of us in pace with tiny hand-held variations grasped avidly throughout the day and evening as we ignore our non-electronic surroundings. Time is money has not disappeared with Mumford's paleotechnic period.

So with all of his insight, what does Mumford see for the future standing as he did in 1930? Alas, it is communism...not the dogmatic communism of Marx but the general idea is the same - of the elevation of the common man and the reduction of the plutocrat. Throughout his final two chapters he speaks of rationalizing consumption so that everyone has the necessities in abundance with prices that don't grab a large fraction of income. His vision is of leisure time to allow for the enhancement of the individual mind and of society in general. He speaks of deliberately making things less efficiently than could machines simply to allow people to do work they can enjoy. This all sounds so nice but Mumford neglects to mention that behind it there must always be some group or administration giving orders and setting priorities - saying that this will be done this way and not that way.

If only he could have seen what the Soviet Union would come to! Communism in practice was a disaster. A friend of mine from Russia told me that the social relationships under the USSR were wonderful, but not because this was a goal of the system, rather it was due to the heavy oppression of the system and the dearth of goods that drove people to seek pleasure in the company of others similarly oppressed. This could not have been further from Mumford's mind.

Mumford also speaks repeatedly of the planning of projects to benefit society. I could only think of how oblivious this is to human nature. What happens when people are put in a position of power to plan? They immediately plan for themselves first. The USSR had a class of plutocrats far worse than that of the United States because it was completely closed. At least in this country a garage inventor like Steve Jobs can rise to the top.

In 1930, things looked so bad for Capitalism that prescriptions were to be had from many sources. A common thread was the betterment of the worker. But I keep the individual in mind. Consider the situation today. Is there any reason you or I can't reach for goals of personal betterment even as ordinary wage earners? With the Internet a good part of the knowledge of the world is open to everyone - but how many drink deeply of it rather than finding out the latest sports information or following Lady Gaga? Maybe this is not best from the view of what a human can be, but millions enjoy it. Would these pursuits be something some group directing society would prohibit?

Let society fend for itself as long as I have a good measure of freedom within it. I fear planning from above based on the awful examples of the efforts so far.

But you need not read the final two chapters and their content is no indictment of the author, only an indicator of his times. His analysis of the past is right on the money and provides a solid foundation for any reader who wants to understand not only how we got here from there but how powerfully our machines have made us even as we have been making them.

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### **Theresa Macphail says**

A classic study of the entanglement of technology and society. Dated, of course, but Mumford's text is still provocative for those of us thinking about the intersections of culture and new technologies today. A must-read for anyone working in tech or on tech.

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### **Maria Paula Lorgia says**

I just don't understand why I didn't read this before: the most important book about the history of technology, the history of media, the history of power, OUR history.

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### **Toby Newton says**

My, my ... simply the best book I have read in ... oh, I don't know, two or three months, but I try to read a lot of good books ... anyhow, this is a peach and a must read. The interesting point for me is reflecting on how other reviewers, here and elsewhere, have felt it necessary to suggest that Mumford's insights are "dated". Not at all! The most compelling suggestion that he makes, for me, is that, in fact, we can trace the beginnings of our love affair not just with machines and gadgets but with the cultural milieu that creates such a receptive space for their interventions right back to the C14th. The scientistic wetdream of reducing all things to their 'component parts' begins there - and the drive towards "objectivity" has its roots in the success of the materialized worldview that resulted from that vision: all the stuff that was so clearly effective and powerful and, in that respect, inarguable. This is the ideological turn that sets us on the road to the here and now - and our largely uncritical acceptance of machines and machinery that might, indeed, get shit done, but only at the expense of those who service and administer them, those who share their environment (increasingly, a global one!) and those who live in the shadow of their ruling conceits (i.e. all of us!)

But, and this is essential, as Mumford makes explicitly clear: this scientistic perspective was never 'objective' in the first place - as the 'objective' truth is that there are complex living creatures (and systems) in the world that, once you dismantle or reduce them, cease to live. That necrophiliac tendency of science, so well explored by Erich Fromm in *The Anatomy of Human Destructiveness*, is beautifully explored here by Mumford, in the clearest, most lucid and unsensational terms. In the 1930s. Genius.

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**Toon Pepermans says**

the last chapter is obviously outdated, but the main (historical) part of the book is absolutely outstanding

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