

Jean Robert

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*Filename and date:* e\_e.pdf/1999

*STATUS:*

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## Energy and the Mystery of Iniquity

**Jean Robert**

In 1973 the industrial world was shocked by the OPEC decision to drastically reduce oil exports until they could obtain better prices. Societies that had made themselves oil dependent responded by taking provisional conservation measures. A few even proscribed the weekend use of private cars.

This restriction was the occasion for another surprise. An official prohibition against which the public was expected to protest, for many became a long-sought liberation. How agreeable strolling in the streets again! City dwellers rediscovered that they could walk, and even hard-bitten car drivers began to remember that their condition as bucket-seat asses was not irremediable. Two days a week, the word "equity" recovered its immediate, concrete meaning of "endowed with equal gifts," from the Latin aequitas, an equality in basic abilities that is a foundation of law. Meditating on the word, it became clear to me why its Latin antonym is not "inaequitas," but "iniquitas," which for Saint Paul meant evil, and whose presence in creation believers faced as a mystery. In light of the recovered weekend equity on streets and squares, the confused jam of vehicles competing with each other for scarce space, encroaching on pedestrians' freedom and crippling them, appeared as a human-engineered evil. But was this intuition not an exaggeration?

The capacity to go walking where one wants is indeed people's most equitably distributed ability. It is innate, a natural right by birth. Some seem to have forgotten this truth; for others, it has been suppressed; their feet, as well as their imaginations, have been disabled; they come to feel they perpetually need to be carried along at high energy costs. But they can hardly ignore that mobility based on mechanical energy can only be classificatory, that is, discriminatory: "Tell me at what speed you are carried, and I will tell you who you are" becomes a slogan of the epoch of energy-intensive transportation. Society is inevitably layered in a worldwide class structure of speed capitalists.

Equity and mechanical energy have become conflicting categories: the second can only grow with the decay of the first. However, the recovered freedom to walk during those long-ago car-free weekends revealed that, if a society would reduce per capita mechanical power, equity would again become a practical possibility. Further, recovery of the immediate equity of near equals on foot might serve as incentive to other recoveries. This is why OPEC's decision was, for many citizens, a reason for hope — "the Arabs' gift."

Experts think otherwise. They want nothing to do with an option that would make them jobless. Instead of responding to the emerging hope, they foisted a new ghost on the world: the energy crisis. This was based on the fallacy that humans are inherently dependent on machine energy. The energy crisis shamelessly exposed the western manque for a drug Arab oil kings longed to sell at higher prices. Any eastern carpet merchant could have explained that it was a bad bargain: the oil producing countries were free to more than double their prices. Eventually, energy-intensive traffic, that is, industrial normality, was reestablished on Sabbaths and Sundays, without a single protest from Jewish or Christian authorities.

Mechanical traffic has a blinding effect on the public imagination; it cancels out other options. The louder it roars, the more it seems necessary, for why would people otherwise tolerate such a racket if it were not some imperious necessity? The noisy claim of the transportation industry to legitimacy makes it appear the only form of locomotion compatible with modernity. Further, and importantly, it contributes heavily to the economy. By contrast, walking disturbs little and, since it costs almost nothing, does not add significantly to the GNP. The energy crisis was the experts' sham to make people forget that their feet could contribute to their locomotion in more genuine ways than by filling vehicles and pushing accelerators. In the twenty years between the energy crisis and Desert Storm, the Great Persuaders shaped the rich countries' public opinion to believe that, if they wanted to secure energy supplies, they had to face harsh decisions. "Si vis petroleum, para bellum," if you want gas and oil, prepare for war. Old President Bush could not have started the 1991 war without an ideology-stimulated hunger for energy. When industrial needs become subtle messages opening into war intoxication, the devil rejoices, because man has taken over his job. No wonder it was left to a theological mind to clarify the issue.

In 1974 Ivan Illich wrote a small book to debunk the fallacies of the energy crisis and express his agreement with the few who understood that less energy can mean more freedom in equity. Yet Energy and Equity is not overtly a theology of locomotion.<sup>1</sup> If there is some theology in the argument, it is voluntarily apophatic, non-pronounced.

One of the book's beauties is the simplicity of its construction in ten short, limpid chapters. I will follow their order in my commentary.

### The Energy Crisis

"It has recently become fashionable to insist on an impending energy crisis. This euphemistic term conceals a contradiction and consecrates an illusion. It masks the contradiction implicit in the joint pursuit of equity and industrial growth." (p. 15)

These words were written at a time when it was becoming common knowledge that energy destroys the physical milieu. The causal relationship had been made public by the Club of Rome's 1972 book Limits to Growth.<sup>2</sup> Yet Illich wastes no time insisting on dismal ecological prospects. He makes only brief allusions, then moves on to argue what he sees as a more frightening form of apocalypse, namely, the possibility of a catastrophic implosion of the cultural fabric. "Rich countries like the United States, Japan or France might never reach the point of choking in their own waste, but only because their societies will

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<sup>1</sup> Ivan Illich, Energy and Equity (London: Marion Boyars, 1976), originally published by Calders & Boyars in 1974. All page numbers in the text refer to the 1976 edition. It is worth remembering that one year before the "crisis," Illich published a short version of the argument in Le Monde, in which he forecast the use of the linguistic monster "the energy crisis". A bon entendeur salut: to forecast a monster is not to foist it.

<sup>2</sup> D.L. Meadows and D.H. Meadows, Limits to Growth: A Report for the Club of Rome's Project on the Predicament of Mankind (New York: Universe Books, 1972). Recently the Wuppertal Institute for Climate, Environment and Energy, a German think tank whose director is a member of the Club, claimed that, if Germany is "to have a future" (be zukunftsfähig), it has until 2030 to curb its overall energy consumption by 95%. See Wuppertal Institut für Klima, Umwelt, Energie, Zukunftsfähiges Deutschland. Ein Beitrag zu einer global nachhaltigen Entwicklung (Basel and Berlin: Birkhäuser Verlag, 1996).

have already collapsed into a socio-cultural energy coma." (p. 21) What does this mean? Whereas the Club of Rome had highlighted the fact that, beyond certain limits, energy disrupts nature, Illich wanted to show that it also corrupts society and culture. In later works, he will argue that this corruption is narrowly associated with the growth of industrial services such as "education" and "health." In Energy and Equity he makes the point for transportation. To face the fallacy that equity and industrial growth can be achieved conjointly, and to acknowledge publicly the contradiction between equity and energy, Illich proceeded to illuminate what the language of crisis obscures: high quanta of energy degrade social relations just as inevitably as they destroy the physical milieu.

As far as I know, no one had clearly stated before that energy-intensive industrial growth corrupts society as certainly as it disrupts the physical milieu. But it is equally true that, in the quarter century since the book was written, no one has refuted this point.

There are three ways to face the energy crisis: first, by management of scarce resources for industrial production; second, by the retooling of industry itself for greater thermodynamic efficiency; and third, by the equitably limitation of human energy consumption. The first made the headlines of newspapers at that time, the second is still discussed by an ecologically-minded minority, and the third is met by a conspiracy of silence.

The possibility of the third option is barely noticed. While people have begun to accept ecological limits on maximum per capita energy use as a condition for physical survival, they do not yet think about the use of minimum feasible power as the foundation of any of various social orders that would be both modern and desirable. Yet only a ceiling on energy use can lead to social relations that are characterized by high levels of equity. The one option that is presently neglected is the only choice within the reach of all nations (pp. 16-17).

From then until today, no politician has proved willing to risk a career on this commonsense proposal.

### The Industrialization of Traffic

In the United States, Illich points out, the carrying around of persons and goods absorbs 45% of the energy budget. In poor countries that follow this example, it is more, but it benefits a smaller percentage of the citizens. The main reason for Illich's choice of transport as the paradigmatic use of energy, however, is not grounded in numbers. Mechanical conveyance of persons is the industrial substitute for the aptitude most commonly shared among humans. The way it distorts this innate ability is like an x-ray of the interaction between industrial production and native capacities. Illich proceeds by distinguishing what dominant discourses blur into a linguistic magma:

"The discussion of how energy is used to move people requires a formal distinction between transport and transit as the two components of traffic. By traffic I mean any movement of people from one place to another when they are outside of their homes. By transit I mean those movements that put human

metabolic energy to use, and by transport that mode of movement which relies on other sources of energy (p. 27).

### Speed-Stunned Imagination

Today, persons define themselves as client of the transport industry, the habitual passenger.

The habitual passenger cannot grasp the folly of traffic based overwhelmingly on transport. His inherited perceptions of space and time and of personal pace have been industrially deformed. He has lost the power to conceive of himself outside of the passenger role.... The passenger has come to identify territory with the untouchable landscape through which he is rushed. He has become impotent to establish his domain, mark it with his imprint and assert his sovereignty over it. He has lost confidence in his power to admit others into his presence and to share space consciously with them (p. 37).

This stunning of the imagination paralyzes politics. When freedom of movement is taken to mean one's claim to propulsion, the level of democratic process correlates to the power of transportation and communication systems. As a result, people lose faith in the political power of feet and tongue. What they demand is not more liberty as citizens but better service as clients. The habitual passenger no longer insists on the freedom to move and to speak to others, but on claims to be shipped and to be informed by media. This decline is the essence of what Illich calls a socio-cultural energy coma.

### Net Transfer of Lifetime

Fast transportation allows a few people to capitalize their time at an enormous rate.

Beyond a critical speed, no one can save time without forcing another to lose it. The man who claims a seat in a faster vehicle insists that his time is worth more than that of a passenger in a slower one. Beyond a certain velocity, passengers become consumers of other people's time, and accelerating vehicles become the means for effecting a net transfer of life-time.... This time-grab despoils those who are left behind, and since they are the majority, it raises ethical issues of a more general nature than kidney dialysis or organ transplants (p. 42).

But this transfer of advantages to the rich only occurs at a high cost in time for all. Beyond a critical speed limit, transport creates remoteness which it alone can shrink: the local store disappears, replaced by a remote supermarket; the hospital recedes beyond the distance a sick child can be carried; and people no longer use transportation in order to expand the horizon of their options; rather, they begin to need it because they no longer find what they want near where they live.

### The Ineffectiveness of Acceleration

There are two classes of losers in the transport zero-sum game, but only the first has been highlighted by socially concerned researchers. First, social classification by levels of speed enforces a net transfer of power: the poor pay to be left behind by the manager who races to the airport in a company car on the tax-funded highway. For the poor are generally also taxpayers: they are the innocent third toward

whom part of the costs of the transport enterprise are being exported, a phrase that meets the definition of "external costs" by economists. But there are other, non-monetary costs: loss of ability to walk, of security, of silence, of clean air, of public space, of aesthetics.

Yet the ones in between, the middle-class, suffer another sort of loss: in a society organized around the dream of high speed for all, all people spend a growing slice of their time-budget for being carried around. Even the ones who have occasional access to fast vehicles suffer the rising marginal disutility of a loss of leisure time. The transport industry hides an inefficient system beneath apparent technological sophistication that also endangers life and limb for all.

Illich invites social researchers to engage in serious time-budget studies. Even from the limited data then available, it was clear that the life-time of industrial people is cluttered with activities generated by traffic, which impair other time uses, such as being with one's children, meeting friends and rejoicing in their presence.

### The Radical Monopoly of Industry

Beyond a certain critical level of speed, vehicles inevitably compete with people for the use of public space, and often exclude them from it or make crossing a square a hazardous chore. People become harried passengers who always have to reach another destination within the next half day; their time, like their life-space, has become a scarce good. Speed being an industrial output ruled by economic laws, this is no news to economists, who know that the words, "economic" and "scarce," today mean the same thing. But the fact that space and time scarcity inevitably increases with speed is still overlooked by economists and transport theoreticians. Speed is a major indicator of scarcity, that is, of the intensity of the economic nexus. It exposes the rate at which economic values — scarce by definition — are allowed to substitute for human innate capacities. In contrast with what the habitual passenger consumes, walking is an independent enterprise of transients that produces a use value. This requires a conceptual clarification.

The total traffic of a society is the interplay or the synergy of two profoundly distinct modes of production. Beyond a certain top speed, transport hampers transit: the synergy between the two heterogenous modes becomes negative and every new increase in transport encroaches on people's freedom to get around by using the autonomous power of their feet. The monopoly exercised by transport over transit is more pervasive than any commercial monopoly, like the one Ford might win over the automobile market, or the political monopoly car manufacturers might wield against the development of trains and buses

Because of its hidden, entrenched and structuring nature, I call this a radical monopoly. Any industry exercises this kind of deep-seated monopoly when it becomes the dominant means of satisfying needs that formerly occasioned a personal response. The compulsory consumption of a high-powered commodity (motorized transport) restricts the conditions for enjoying an abundant use value (the innate capacity for transit). Traffic serves here as the paradigm of a general economic law: Any industrial product

that comes in per capita quanta beyond a given intensity exercises a radical monopoly over the satisfaction of a need (p. 58, original emphasis).

Serious economists never risk their respectability on this deep insight into the nature of industrial society; economics seems to remain a training in self-serving selective blindness.<sup>3</sup>

### The Elusive Threshold

The dissolution of the energy crisis as well as the recovery of political imagination require placing a limit on speed. Illich tentatively proposes a limit of four to six times the celerity of a healthy person on foot, insisting that any enunciation of numbers is no more than an indication. Only a concrete political process can lead to a decision: "Reasoning can identify speed as the critical factor in traffic [not] set politically feasible limits" (p. 87).

But let's be blunt and write it in plain letters: Illich thinks that coalitions of citizens should organize for an overall limitation of all forms of transport at a top speed located between fifteen and twenty-five miles per hour. I fear that many readers who have followed the argument thus far will now turn away. The image of the young rich man of the Gospel somehow comes to my mind. As Lee Hoinacki has suggested: To be a student of Illich, "to get" what he is saying, is to understand something and to do something. If Illich's proposal were taken seriously, it would mean a farewell to speed trips and magic carpets. What to do then with Japanese bullet-trains, European Intercity expresses, six-lane highways and airports? Well, close them and get rid of the hardware for the poor's benefit. Though I strongly feel that this is the logical consequence of the do side of "getting what Illich is saying," no one is required to go so far all at once. Illich's argument is that self-powered transit is the natural reference point by which to judge all traffic, and that the innate right to this autonomous activity should be legally protected. If you accept that, then do what you see should be the next step. For you, it may be leaving the car in the garage two days a week for the sake of your neighbor's right to walk; for me, it was getting rid of it for good. Several shades of personal voluntary renouncements are imaginable on the do side of "getting the point."

### Degrees of Self-Powered Mobility

At one time a certain leap was still within the reach of all poor nations: the rapid transition from insufficiency to self-limited sufficiency. Three major, but relatively simple, inventions made that shift feasible and cheap: the ball bearing, the tangent-spoked wheel, and the pneumatic tire. These three make

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<sup>3</sup> But there are exceptions: For example, an economist whose reputation put him beyond that risk, Edmond Malinvaud. In a meeting in Tokyo, the famous French economist acknowledged Illich's analysis of the negative synergy between two distinct modes of production (autonomous vs. heteronomous), characteristic of industrial societies, as a new conceptual tool, structural counterproductivity, that he admonished his colleagues to add to their tool kit, as something different from the French "théorie de l'encombrement" or "of goods whose value decrease with their quantity." But he wrongly ascribed its invention to Jean-Pierre Dupuy and Jean Robert, who had restated it in their book La trahison de l'opulence (Paris: Presses Universitaire de France, 1975). Another example is of course that alumnus of Polytechnique and the École des Mines, trained in mathematical economics, who dared to question his profession's systematic blindness to negative synergy or counterproductivity, my colleague, Jean-Pierre Dupuy. Younger and less renowned than Malinvaud, he effectively risked his career. He then ceased to be an economist and became a philosopher

the bicycle possible, "allowing the wheel — probably the last of the great neolithic inventions — finally to become useful for self-powered mobility" (p. 71).

Self-powered bicycle-like tools could have been implemented in all poor countries and helped them evolve in a very short time from "not enough" to "enough but no more." In this, Illich's proposal is close to Gandhi's, for whom the example of self-powered modern technology was the Singer sewing machine (operated by a foot peddle), and to E.F. Schumacher's idea to equip India's traditional ox carts with ball bearings.

But the same inventions that could amplify the radius of self-powered autonomy can also be aggregated into engines that hamper it. At the end of the nineteenth century, in a time span of less than fifteen years, the same basic inventions supported both bicycles and the first automobiles. It is time to disaggregate modern mechanics and to free its components for retooling society.<sup>4</sup> There exists a real option between more freedom in equity and more speed; further, this option is decidedly modern.

### Dominant vs. Subsidiary Motors

There is a common sense principle that, if followed, would allow a modern form of traffic that maintains the positive synergy of foot and wheel, that is, impeach the radical monopoly that transport exercises over traffic: the inalienable right of free movement should be protected against any abridgment. This means that the natural human capacity for transit must emerge as the only yardstick by which to measure the contribution transport may make to traffic: there should be no more transport than traffic can bear.

### Underdevelopment, Overdevelopment, and Mature Technology

We live in a time in which the apparently impossible has become feasible. The feasible is a mature technology that would avoid the confines of both dependance and abundance, that is, of underequipment and of overindustrialization.

Beyond underequipment and overindustrialization, there is a place for the world of post-industrial effectiveness, where the industrial mode of production complements other autonomous forms of production. There is a place, in other words, for a world of technological maturity. In terms of traffic, it is the world of those who have tripled the extent of their daily horizon by lifting themselves onto their bicycles. It is just as much the world marked by a variety of subsidiary motors available for the occasions when a bicycle is not enough and when an extra push will limit neither equity nor freedom. And it is, too, the world of the long voyage: a world where every place is open to every person, at his own pleasure and speed, without haste or fear, by means of vehicles that cross distances without breaking with the earth which man walked for hundreds of thousands of years on his own two feet (p. 86).

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<sup>4</sup> See Ivan Illich, Tools for Conviviality (New York: Pantheon, 1973).



## Epilogue

Energy and Equity is a radical critique of the self-defeating illusion of unlimited power and mobility generated by the industrial mode of production. The proposed alternative is marked by common sense, but had not been so clearly stated before. Where does the author of Energy and Equity stand? Where does that strangely authoritative and friendly, audacious and reasonable voice come from? Illich is a modern man who wants painstakingly to acknowledge the limits of his condition. This means that he wishes to live his life within the given boundaries of the condicio humana, the historic human condition that, with changes, but within definite parameters, has been the lot of all previous generations. As far as a modern person may do this, he acknowledges in his bodily acts that he lives within a limited horizon of space and time. For example, this means that he rejects all seductions of medical miracles, life-prolonging therapies as well as any alternative illusions of perfect health or unlimited mobility and power. For him, physical decay and death call for an art of suffering, not for therapies. Without the conscious acceptance of such limits, he sees little possibility for an ethical life.

From this place, an aspect of the mystery of iniquity would seem quite simple and no mystery at all: Modern iniquity is related to the systematic breaking of the inherited limits of the human condition, the unequivocal bondage of every individual to limit-breaking activities, the coupling of the economy to unlimited expectations of power, speed, information, and health. The decisive issue is that unless you live as a hermit, you have to come to terms with a world that has rejected all given limits and horizons. In such a world, the acceptance of those limits which bind the human condition becomes a paradox and a scandal. Renouncements can be selective, but are still a form — perhaps the only one left — of the exercise of virtue in a world dedicated to the utilitarian calculus.

Energy and Equity belongs to what some call Illich's "economic books." These include Deschooling Society, and Medical Nemesis.<sup>5</sup> Each of them addresses a specific service-producing agency of industrial society. They are complemented by essays that clarify concepts which emerged from the ensuing discussions: Shadow Work, "Useful Unemployment and Its Professional Enemies," "Disvalue."<sup>6</sup> But the word "economic" may be misleading here. None of these works situates itself within the field that economists consider their fiefdom. On the contrary, every one of them enlightens an aspect of that acquired selective blindness which defines modern economics.

From the beginning, the starting point of Illich's intuitions appear to center around an old saying: "the corruption of the best, which is the worst." If this proposition were transmogrified into a demonstration, some kind of theory, a truth that can be brandished, it would inevitably be corrupted itself. What the historian in Illich has done is to let the reader glimpse a frightful shadow falling over the maze of western

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<sup>5</sup> Ivan Illich, Deschooling Society (New York: Pantheon, 1971); Ivan Illich, Medical Nemesis: The Expropriation of Health (New York: Pantheon Books, 1976).

<sup>6</sup> Ivan Illich, "Shadow Work," in Shadow Work (London: Marion Boyars, 1981), pp 97-152; "Useful Unemployment and Its Professional Enemies," in Toward a History of Needs (New York: Pantheon, 1976), pp. 3-53; "Disvalue," in In the Mirror of the Past (New York: Marion Boyars, 1992), pp. 70-82.

history.<sup>7</sup> Here again, one gets the point, or one doesn't. This shadow can be identified as an abyss opened by the refusal of the most gratuitous of gifts, of gratuitousness itself, or of grace.<sup>8</sup> The world offers itself gratuitously to the walker, and, in a way, Energy and Equity is about the negation of that grace and the costs of this negation. Gratuitousness is negated when it is institutionalized. Non-gratuitous gift-giving began when Christianity erected closed precincts for the distribution of a gift. It appeared in late antique Christian xenodocheia ("hospitals"), in Christian Rome's matricula (list of the poor to be assisted), in medieval hospices along the camino to Santiago de Compostela. It can occur every time special members of the community are appointed for the exercise of charity. It can perhaps happen in the distribution of sacraments by professionalized clerics, when it is a distribution similar to what we now call services. It surely happens today, when industrial agencies substitute energy-intensive services for what people have the innate ability to do for themselves and for their neighbors — like opening a path by walking it — and make these services compulsive. The corruption of the best threatens every intent to institute a social order justified by the Gospel. And this repeated intent has shaped the history of the West.

As a historian, Illich often uses the past as a point of estrangement from which to see the present in an unusually sharp light. We have to try to follow him. In Latin, the word servitium designates the state of a slave. Christians used the term metaphorically, to designate the gift of oneself, almost as a slave, to one's neighbor. The Greek word diakonia has a similar origin. To early Christians, service was a gratuitous gift of oneself in humility, recording the washing of the disciples' feet by Jesus. Today, it is a keyword of economics. To shape needs for their services has become professionals' unquestioned privilege. No idea of humility is associated with modern services.

In 1972 the Club of Rome's answer to its own gloomy forecasts was to propose a shift from an energy-intensive economy of consumer goods to a more thrifty service-oriented economy. Illich then raised his voice to assert clearly that an intensive production of services could do more harm to culture than the high-energy production of consumer goods had already done to nature.

Skilled rhetoric includes the knowledge of whom you address. Illich wrote for a readership ready to embark on the Club's boat. With consummate logic he showed that, beyond certain thresholds, service institutions could not but bring about the contrary of their stated goals: to exceed rather narrow limits with their pretensions, schools degrade personal learning capacities, transportation paralyzes, the pursuit of health sickens.

The idea Illich wanted to shake in Energy and Equity was the belief that human beings are inherently dependant on doses of industrial energy. He also wanted to point out that a service-intensive economy could be even more destructive than the present energy-intensive consumer goods economy. Finally, he wanted his readers to catch a glimpse of the concrete possibility of a society based

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<sup>7</sup> See especially Ivan Illich, Gender (New York: Pantheon, 1982).

<sup>8</sup> Considerate lilia quomodo crescunt, non laborant neque nent; dico autem vobis nec Salomon in omni gloria sua vestiebatur sicut unum ex istis. Si autem faenum, quod hodie est in agro et cras in clibanum mittitur, Deus sic vestit, quanto magis vos, pusillae fidei? (Luke 12:27; Matthew 6:28).

predominantly on people's innate capacities, in which industrial production would be subsidiary. This, in the country where he then lived, Mexico, was still a feasible option.

More than a quarter century has elapsed since Illich wrote Energy and Equity. More than a simple generational shift, a deep rupture has occurred, something reminiscent of what Michel Foucault called an epistemological rupture. Ideas no longer move in the same topology. A profound change of mentality, of whose consequences we are still barely aware, has begun to take place. Three decades ago, "tools" as means to ends were still around, so that motorized vehicles could be considered as means to ends and compared with sandals or bicycles. Today, Illich claims that it is no longer the case.

However, he will not attempt to rephrase Energy and Equity for an age in which people are increasingly wired to systemic technologies that are no longer "tools" for people but imperatives to be integrated into their lives, an age in which personal action is in danger of being replaced by the notion of system-adaptative behavior. He is interested in opening other byways: ventures into the history of the body, of sensuous perceptions and what he calls "the history of stuff,"<sup>9</sup> reflections on friendship and its practice, on the necessary austerity that makes it possible, proportionality, the guarding of the senses, the celebration of the blessings that are still with us.

All these byways are perhaps able to open spaces of personal liberty and of equity toward others. It is not possible to summarize the richness of such new insights and visions. I can only offer the reader an interpretation of what is at stake. Not unlike the powered wheel and the foot, technoscience and the human senses engender two very distinct apprehensions of the world. The facts of technoscience, which are now projected on the screens of the system world as virtual realities, differ as much from the reality accessible to the naked human senses as the untouchable landscape through which the habitual passenger is rushed diverges from the world open to the power of feet and tongue, of eyes, nose and touch which was once the most gratuitous gift. There is today, at least in the affluent countries and those which imitate them, a radical monopoly on the production of "reality."

Rather than be rewritten, Energy and Equity needs to be reread with a pencil in hand.

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<sup>9</sup> Ivan Illich, H2O and the Waters of Forgetfulness (London: Marion Boyars, 1986).