

## **The Rise and the Death of the Instrumental Paradigm**

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### **'Incongruent' Transportation Behaviors**

Let's start with a seemingly silly question: for what is the transportation industry good for? What is the purpose of traffic flows? If you ask Joe Smith or Hans Müller, he will rightly say that the answer is obvious: he must commute daily to work, his wife must drive every week to the supermarket, once in a while, they want to go to the theater. Besides, every morning Joe must leave the youngest kid at the public school and his wife, who has a part time job to which she commutes in the family's second car must bring the kid back in the early afternoon. The grownup daughter commutes daily by bus to a computation school that has just opened in the neighborhood. If you ask the Smith or the Müller family what their two cars are good for, they will tell you that without them, they would simply 'not make do.' So simple as that. People have a variety of purposes, most of them not particularly 'free,' and transportation, be it private or public, is a major means to those ends. So there is seemingly nothing more to add: the answer is as trivial as the question... and I have apparently taken a false start.

So give me a second chance. Allow me now to look as it were 'obliquely' at the 'Smith family problem' and to ask a completely different kind of question. Are the ends of the Smiths originally independent of the means by which they pretend to reach them? The question may seem misleading since the ends are instrumentally dependent on the means. By 'originally independent' ends, I refer to ends that are not caused by the means, as for instance in the story about the drunkard

who drinks in order to forget that he is drinking. If you use a hammer to put a nail in the wall on which you want to hang a photograph of your wedding, you assume rightly that such a means is not going to ‘hammer’ your marriage. Intuitively, the Smiths expect the same of their automobile, a means to reach ends that, they think, have not been defined by it. What if they were wrong, in other words, what if the map of their daily and weekly destinations was shaped by the means to reach them? The evaluation of my initial question would of course have to be reconsidered too. What would now seem to be worth analyzing would precisely be this circular causality, or if you prefer, the mutual determination of means and ends.

### **Does the End Justify the Means?**

After Machiavelli, moral philosophers have repeatedly raised an old problem in new guises: “does the end justify the means”? If the means shape ends, then the paradoxical question “do the means justify the ends” becomes thinkable. It is obvious however, that the sheer possibility for such a question to be raised, completely modifies the meaning of ‘to justify,’<sup>1</sup> in a way that makes it questionable in both ways (do ends justify means? and do means justify ends?). One could say that the ‘ethical space’ in which the question “does the end justify the means” is congruent, not paradoxical, is one in which the ends are not shaped by the means. It is that original independence of ends from means that insures them a certain stability during the action and hence allows satisfaction to be effective. If means modify ends and their meaning, then a situation that we have called counterproductivity becomes the rule.<sup>2</sup> On the contrary, when the question ceases to be congruent, it can be said that the means modify or “curve” the medium in which ends can be

<sup>1</sup> Camps, Victoria, Etica, retórica, política, Madrid: Alianza Universidad, 1988.

<sup>2</sup> Dupuy, Jean-Pierre and Robert, Jean, La trahison de l’opulence, Paris: Presses Universitaires de France, 1976.

fulfilled in a satisfactory manner. Counterproductivity is a situation in which the accumulated effects of the means on the medium is such that even if the ends can be achieved, this achievement will be less meaningful because, in the new situation brought about by the modification of the medium, it will give less satisfaction. An example: If the end of the automobile was to allow people to reach their destinations more easily, the multiplication of that very means has favored a type of urbanism in which on average, everything is located farther. The end result is that Joe Smith spends more time and more money, and experiences more toil in order to reach his usual daily destinations than his father or grandfather did before the era of the automobile.

The ineptness of most official discourses on transportation is due to the fact that they do not recognize counterproductivity as a characteristic so inherent to transportation space, that it coincides with what physicists would call 'its metrics.' It could also be said, that in transportation space, a variation of the theme of Tantalus's experience becomes endemic. Tantalus was sentenced to spend his days in a luxuriant garden where the fresh water of the spring, the honey flowing from the trees, the succulent fruits toward which he stretched his hand would recede, so that he could never reach them. Not only do common destinations recede as transportation facilities expand: sometimes the loaf of bread that you expect to find at the destination has become a stone.

The period of history during which the question "does the end justify the means" was an answerable question corresponds to a period of moral philosophy which I would like to call 'the period of congruent instrumentality.' During that period of history, certain actions were considered instrumental—e.g.: means - for the realization of certain values defined independently of them — e.g: the ends. I would compare the 'moral space' of the period of congruent instrumentality with Euclidean space. I will call instrumentally congruent the moral space in which the question "does the end justify the means" can be asked in the hope of receiving an answer, recalling that 19th

century physicists called Euclidean space congruent. By this, they meant that its metrics was not modified by the intensity of bodily motion. On the contrary, non-Euclidean spaces are spaces whose metrics is locally modified by the intensity of motion. Pre-Einsteinian physicists called them non congruent spaces. Before Einstein, the possibility that physical space could be incongruent —the modern term is ‘curved’ —was held to be a mathematicians’ utopia, as Helmholtz argued in a well-known polemic against the mathematician Riemann.<sup>3</sup>

I will use congruent and congruence and their antonyms as technical terms for situations where the ends are originally independent from the means, versus the opposite situations, in which the means shape the ends. If one compares the local metrics — or the particularities —of non-Euclidean space with ends, and motion with a means to these ends, one is allowed to speak of a new type of ‘moral space’ in which the question “does the end justify the means” has no simple answer because means modify ends. This space is instrumentally incongruent (or instrumentally ‘curved’). The kind of space which is generated by mechanical transportation space is an instrumentally incongruent space: in it the ‘metrics of desires’ is curved by the means to satisfy them.

Moral thinking about transportation is today in a situation comparable to that of physics before Einstein: it does not consider seriously the possibility for the means to modify the medium’s metrics in such a way, that the meaning of satisfaction be radically modified by its means. Transportation policies today resemble Philip Lennart’s physics in that they are construed as if the medium were instrumentally congruent. Hence, the perceived counterproductivity of the transportation industry —the growing frustration of the users and the injustices committed toward those who are not users but nonetheless must suffer the destruction of their living space by aliens —

<sup>3</sup> Riemann, Bernhard, “Über die Hypothesen, welche die Geometrie zu Grunde liegen, in: Abhandlungen der Königlichen Gesellschaft der Wissenschaften zu Göttingen, Bd 13, Juni 1854, vs. Helmholtz, Hermann von, “Über die Tatsachen, welche die Geometrie zugrunde liegen.”

does not find a political expression. This unrecognized incongruence is one main reason for the demise of ethics when confronting transportation-related inequities. Where ethics has no questions to ask, economics, “the anti-ethics” formulates the answers.

### **Autopsy of a Popular Illusion**

The Smiths believe that they live in an instrumentally congruent space because the modification of the metrics of means and ends of every one of their displacements is imperceptible. What they perceive is the global effect of all displacements, yet they do not ascribe it to the law of composition of thousands of behaviors similar to theirs, but to a blind fatality, to the ‘worsening of times’ or to bad policies and bad planning. The fact is that no good transportation planning is possible as long as the instrumental incongruence of the kind of space generated by the transportation industry is not recognized. Let me illustrate it with examples taken from everyday language.

### **Are Transportation and the Economy in a ‘Means-to-end’ Relationship?**

Let’s now ask if the economy results are not the aggregation of thousands, millions of behaviors like the Smiths’ and Müllers.’

“As a ‘consequence’ of the opening of the European Economic Space, the volume of all types of traffic will double in the next ten years.”

I started hearing that prediction for the first time this year, and it came to me under several different guises. Some only forecasted a 70% increase. Others assumed that the doubling would occur in less, others in more than ten years. Still others spoke of the practical aspects of this growth: more noise and fumes, more time and more space dedicated to transportation. If we avoid hairsplitting about the

details, we can say that such an affirmation has two main characteristics:

1. It is speculation of an unknown future.
2. It admits multiple descriptions and forecasts from several different viewpoints: for instance, I can say that the noise level in my already busy street is likely to increase, that traffic jams are going to become worse or that most people will spend more time commuting.

For both reasons — its speculative or hypothetical character and the multiplicity of the ways in which it can be formulated — this affirmation easily sounds ideological. One of the purposes of this essay is to find a method to express a shared concern for the worsening ways in which traffic encroaches today upon our existences. Methodologically, the problem consists of giving a convincing expression to predicaments which have an anthropological foundation but no possible economic formulation.

Let us now consider another type of affirmation:

“The falling away of old barriers will increase the accessibility of most people to desirable locations.”

A quasi-equivalent would be:

“People’s economic opportunities will grow.”

Such a statement also allows for a multiplicity of formulations or ‘descriptions’ from several viewpoints:

“Joe Smith will be able to select his job among a larger number of opportunities.

He and his wife will buy from a larger pool of choices.”

Though they are often stated in a factual manner, such sentences have no direct factual content.

They are not descriptions of actual situations, today or tomorrow but rather expressions of some

kind of collective program, generally held to embody the ‘good.’ In official reports, they are often overtly formulated as goals of political measures:

“The equalization of opportunities and the optimization of accessibility must be priority goals for any global policy of space management within the European community.”

At the level of the application, these political goals are sometimes conflicting: For instance, the proposition

“Provided the right measures be taken, the costs of the most efficient means of transportation can still decrease, giving more opportunities to more people.” (Gaudry)

is opposed by the affirmation

“If the external costs of the transportation industry are to be internalized, transportation prices must go up.” (see Ernst von Weizsäcker).

Or:

“The capture of comparative advantages, as major benefits of peace must not be the privilege of international corporations, but must be democratized,”

versus:

“If comparative advantages are to be maintained, they must be protected by some new kind of barriers.”

### **A ‘Thought Experiment’**

To clarify my point, I invite you to consider a very simple example of an action which is instrumentally congruent and admits several descriptions<sup>4</sup>:

“I am sitting, reading in my room. The night falls. I stand up to put on the light.”

<sup>4</sup> I was inspired by: Villoro, Luis, Fines y medios, manuscript, Mexico, 1993.

This simple act can be described in different ways. On the one hand, I can say:

“I stand up, walk through the room and operate the switch,”

or:

“I turn on the light”,

or still:

“I am seen as a Chinese shadow by someone in the street, who draws the conclusion that I have turned on the light.”

On the other hand, I can also describe my action in one of the following ways:

“I want to go on reading,”

or even:

“I want to read ‘The Prince’ in order to understand Machiavelli’s ideas over means and ends.”

The statements of the first type are attempts to give a factual or ‘behavioristic’ description of an act, as it can be experienced and perceived by its agent and by observers. Statements of the second type define the action by its finality. In this simple example or ‘thought experiment,’ behavioristic and finalistic statements can be related by means of the words ‘in order to’: “I turn on the light in order to go on reading.” A characteristic of that relationship is that it is conserved when I substitute any parallel description for the one first given. For instance:

“I stand up, go to the switch and turn it on in order to go on reading ‘The Prince.’”

I will call this characteristic ‘approximate invariance of the relationship under synonymous descriptions.’ Another characteristic of this example is that it is instrumentally congruent: though one could argue that the means (electric light) induces ‘night-time reading,’ which is arguably different from ‘day-time reading,’ he would have difficulties proving that it affects the



understanding of 'The Prince' as radically as transportation transforms the space of all, be they users of transportation networks or not.

### **Paradoxical Applications**

I would like to ask you if the coexistence of statements like: "Traffic flows will double in ten years" and "The accessibility of all to all will be increased" confronts us with a situation comparable to that of our thought experiment. In the example of 'turning on the light' and 'reading,' descriptions of the first kind ('behavioristic descriptions') and of the second kind ('finalistic descriptions') relate as means to ends. The action described in behavioristic terms appears to be a condition for the situation described consequentially to occur: in order to be able to try to understand Machiavelli's ideas about means and ends after the night has fallen, I have to turn on the light. It could also be said that the situations that arise from the actions that are described in behavioristic terms are consequences of them. In the case of the situation described as 'going on reading,' we can speak of an immediate consequence. The situation described as 'understanding Machiavelli' is only a mediate consequence of the act of turning on the light: it could be that it does not realize itself even if the conditions for reading are met. 'Understanding Machiavelli' is a long-range goal that inspires not only this, but many other actions. Besides, it can be met by a great variety of other means. When a goal can be attained by several distinct routes, we can speak of equifinality.

What I would like to ask now is whether the questions that we have been called to discuss in this symposium can be approached under the assumption that there is a simple 'means to end' relationship between transportation and the economy. It is my contention that to admit it unavoidably leads to antinomies. Can I for instance say that the doubling of traffic flows is the

means to achieve a greater accessibility of all to all? If it were so, my interlocutors—following the logical sequences of our thought experiment—should not have stated:

“As a consequence of the opening.....etc a doubling of traffic of all kinds will take place”,

but rather:

“As a consequence of the doubling of traffic, a ‘European space’ for all kinds of economic activities and to which all Europeans will have an equal access will (perhaps) come into existence.”

Strictly speaking, the second proposition is only a mediate consequence of the first since something different—for instance a generalized jam of all traffic flows—could occur instead.

But does the means-ends relationship hold for the parallel or ‘synonymous’ descriptions, so for instance:

“the worsening of traffic jams is the means to equalize opportunities,”

or:

“the lengthening of commuting times is the means to democratize comparative advantages,”

or:

“the sacrifice of historical buildings, parks, streets, places to loiter and to chat on the altar of a circulation imperative will allow Joe Smith to select his job among a larger pool of opportunities”?

We are already stuck in paradoxes, so either the invariance of the instrumental relationship for (quasi) synonymous descriptions must be given up, or descriptions of actions like doubling economic flows and worsening jams are synonymous. A third possibility, not exclusive of the two first ones is that the coincidence of a causal language —"more traffic allows more intense economic

relations” and of a moral or evaluative language —“an intensification of the economic nexus is desirable, hence more traffic is good” —is collapsing.

### **Instrumental Rationality and Its Demise**

I will redefine instrumental congruence (or instrumental rationality) as a frame of action (or of reasoning) in which it is assumed that:

1. certain actions are means to achieve objective situations called ends;
2. the consequences of these actions effectively correspond to their ends (or: that these actions are the instruments to the ends);
3. the final situation (end) can justify the action (means), that is: if the end is morally good, its goodness is transmitted to the action which is its means;
4. there is no ‘feedback’ of the means upon the ends.

As already alluded in the third point, the framework of instrumental rationality is consistent thanks to the conjunction of two different types of language that are heard as one: one that speaks of the causal relationship between actions and their alleged consequences — the increase of traffic flows will cause an intensification of all economic relations —and a second one that ascribes a moral value to those actions and their consequences —economic relations and traffic are good (so more of them is better).

The frame of reasoning thus defined is what I would like to call ‘the frame of reference of instrumental rationality.’ It is more than just a twist of thought: I would like to show that, historically, it has the potentiality of a “practical reason” (Sahlins) or of an ‘episteme.’ The breakdown of this frame must be seen as something approximately akin to what Foucault called ‘an epistemic break’ or to what Tom Kuhn defined as ‘a change of paradigm.’

## **Depoliticization of the Present**

The behavioristic descriptions of a growth of traffic flows increasingly evoke an Armageddon that nobody would freely choose. As far as the finalistic descriptions are concerned, they tend to describe ever less immediate and ever more mediate and remote situations, which are justified by long range social goals. The outcome is a generalization of 'tomorrow policy-making,' that is the reinforcement of the trends toward a depoliticization of the present (Thoeny).

If we want to take seriously Gustavo Esteva's claim of: "politics as if today counted," a first step would be to reduce the confusing woodland of quasi synonymous statements to a small set of root-propositions. Most of the mediate situations described in finalistic terms come out to 'more economic relations is good.' As to the behavioristic descriptions, the root-proposition amounts to little more than '[there is going to be] more traffic.' Yet, unless we adopt an extreme form of Machiavellianism, we cannot hold any longer the stance that the goodness of the end (more economy in daily existence) is going to be transmitted to the means (more traffic which means more noise, more destruction of soil, more jams, longer commuting times).

## **Eating One's Cake and Having It Too**

The perceived antinomies of a once unquestioned rationality have elicited several answers. One consists in claiming:

"Let technology find a system in which traffic flows could double while jams, noise, fumes, 'asphalt terror' and exhausting commuting times vanish into oblivion" (which amounts to what Ellul called the "technological bluff").

Another consists in saying:

“Let’s achieve economic growth by other means than material traffic” (see the Club of Rome proposal of substituting the production of services for that of material goods.)

The first claim questions the (quasi) synonymy of the several factual or ‘behavioristic’ descriptions of a growth of traffic flows. It pretends to distinguish between the ‘causal core’ of economic growth and ‘unwanted secondary effects.’ But this is a semantic sleight of hand: synonymous descriptions of ‘there will be more traffic’ — like noise, jam, soil destruction — are declared to be undesired side effects of the means to the good end. By a magical ‘change of frame of reference’ or some still non-existing ‘smart technologies,’ the undesired secondary effects will be screened out. When it does not consider its rather narrow liminal conditions, this stance amounts to what I would like to call technosophic naiveté (Ellul is harsher). The second position questions the causal relation between traffic and economic growth and considers that there are other routes to the land of economic milk and honey.

If the equifinality reintroduced by this model must be welcomed, it must also be said that it obscures a third logical possibility of our frame of reference, the possibility, namely, to question the goodness of unhampered development both of the economy and of its alleged means.

### **Disvalue and the Paradoxical Reversal of Instrumental Rationality**

I feel obliged to mention another possibility which is included in our frame of reference. It is the possibility that the causal relationship— and its approximate invariance in synonymous statements — holds, while the once concomitant positive valuation is turned upside down. Following that conjecture, increased traffic flows, invading surfaces of circulation, time-consuming schedules and even noise and jams are effective means to intensify the encroachments of the

economic sphere upon daily, common existence. However, it is not the ‘goodness’ of the end which is transmitted to the means, but on the contrary the evil character of the means that contaminates the end. It is that possibility which Ivan Illich has termed disvalue. Following this view, the destruction of values like vernacular skills, spontaneous solidarity among neighbors, the use value of dwelling, silence and clean air is prior to the formation of economic values and is perhaps its necessary condition. As a destroyer of spontaneous relations of mutual support between neighbors, silence and the use value of dwelling spaces, traffic effectively realizes the conditions for increased ‘necessary’ encroachments of the economy on daily existence.

I would describe as *infernal* a situation in which a congruent instrumental relationship between transportation and the economy is maintained at the cost of putting the alleged relationship between instrumental causality and moral values upside down. How far are we from that Hell?

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