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RETHINKING TECHNOLOGY I: DECONSTRUCTING "TECHNOLOGY"

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It is a great honor to be the first speaker at this First International Workshop on the Theory of Mediation.... but, as my wife reminded me this morning, the honor would be perhaps somewhat greater and more meritorious if I had not myself made up the program!

It was not supposed to be like this!

At a Workshop where we hope to foster exchanges between people who are familiar with the theory of mediation and people who are not, it seemed appropriate to begin with an overview of the theory. And since the Workshop is being co-sponsored by the Ph.D. Program Technology and the Humanities at Salve Regina University (along with the Division of Liberal Arts at RISD), it also seemed appropriate to orient this overview towards "technology".

I thought this overview should be presented by one of our colleagues from Rennes – colleagues who have, for many years, been collaborators, with Jean Gagnepain, in the development of the theory of mediation and who are better able than anyone else to present an overview of the theory. I invited one of our Rennes colleagues to undertake this task. But he did not think that was a good idea. He thought I should do it. So did others. So you are stuck with me.

What I want to do, then, is to present an overview of the theory of mediation in the guise of a rethinking of "technology". There will be two parts to my presentation. In the first part, "Deconstructing Technology", I will use the example of "technology" to explain how the theory of mediation, like any science, deconstructs the phenomenon in order to construct its objects of study. In the second part, "Nature, Structure, Performance", I will briefly situate the theory with respect to its history, in particular the history of structuralism, and I will explain the dialectic of nature, structure and performance that is constitutive of those mediations we call signs, tools, persons, norms.

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Before beginning, however, I would like to acknowledge a debt. What I understand of the theory of mediation, I understand in large part thanks to a number of the people who are here. But I have learned from many others as well, one of whom it is especially fitting to invoke here: Philippe Bruneau. Along with his friend and colleague Pierre-Yves Balut, Philippe Bruneau, longtime Professor of Art and Archeological History at the University of Paris, has done more than any other to make the work of Jean Gagnepain known in France and elsewhere. Certainly no book helped me more as I struggled to comprehend Gagnepain than Bruneau and Balut's *Artistique et Archéologie*. Philippe died in May of this year after a long illness and I would like to begin this Workshop by inviting you to join in a moment of silence to honor his memory. Thank you.

In this first lecture, I will proceed as follows. First, I will take a brief look at the status questionis, i.e. some typical ways in which "technology" is talked about by leading figures in technology studies today. Second, against that background, I will briefly review some commonplace understandings of science. Thirdly, I will explain the sense in which the theory of mediation proposes a new, scientific account, not only of technology, but of all other human phenomena as well.

1 A Glance at the Status Questionis

If one samples the literature in the field of technology studies, one quickly discovers several things, some of them surprising. Writers, even the best known, tend to be both prolix and imprecise when they address the issue of how to think about technology. Typically, writers in this field, no matter where they begin their accounts of "technology", e.g. in history, sociology, philosophy, etc., quickly insist upon "the enormous complexity of the field of research", pointing out that "technology has multiple ties to other fields of research: science, society, the economy, politics". This, in turn, invariably leads to an insistence that the study of technology "is to a special degree dependent on Interdisciplinary cooperation"[1].

This kind of talk is of course commonplace in the humanities where borders between disciplines seem to be increasingly evanescent and just about everyone claims to be doing inter- or multi- or cross- disciplinary work. What is a bit surprising is that writers in the field of technology studies also tend to shy away from an effort to define just what they mean by "technology". Elizabeth Stroker, Professor of Philosophy at Cologne – who is the person I have been quoting – remarks that philosophers of technology are themselves not quite sure what their study is about: Is it about technical procedures and practices (Technik)? Or is it about technological sciences (Technology)? Or something else? In her article, "Philosophy of Technology: Problems of a Philosophical Discipline" she in fact gives herself a pat on the back for deliberately avoiding "A one-sided concern on the view of technology..., with

[1] cf. footnote #2

questionable attempts to define the term 'technology' deliberately left unconsidered"[2].

One finds very similar things in the writings of John Staudenmaier, a prominent historian of technology who is also the editor of Technology and Culture. In his article "Science and Technology: Who Gets a Say?" Staudenmaier tells us that what he calls "technological cognition" cannot be reduced to an application of science but is, rather, "its own unique form of knowledge"[3].

How characterize this unique form of knowledge? According to Staudenmaier, technological cognition is a blend of theory or know-how, on the one hand, and pragmatic decisions rooted in "an intimate knowledge of the immediate situation (often called "skill" or simply "experience")"[4] on the other. Moreover, as the author makes clear, what he calls "the situation" is not to be understood as some kind of aseptic laboratory situation abstracted from the contingencies of life but rather as the social and cultural context with all its "messy unpredictabilities"[5].

By this he means that technology is not merely applied science, nor is it only a rational adaptation of means to ends; rather, technology also involves the societal and cultural context which provides "a context of meaning", at once transcendent and anchoring[6] to the means-ends strategies of technological cognition. This insight, Staudenmaier says, lies at the heart of a contextual approach to the history of technology.

Technological cognition, then, would seem to involve not only the know-how and practical skills of a maker but also a wide range of other knowledge and affective evaluations that are, variously, the provinces of the historian, the sociologist, the moral philosopher, etc. So that technological cognition, or thinking about technology, would seem to require a kind of all-purpose interdisciplinarity that would take (and give) account of a whole series of factors considered essential to the full technological situation, that is, the technology in question and its social and cultural contexts.

Finally, how does Staudenmaier define technology? Staudenmaier authored the entry on "technology" in *A Companion to American Thought* but, as best I can tell, neither in that article, nor in his other articles, does Staudenmaier try to define "technology". The closest he

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[2] Stroker, Elizabeth, "Philosophy of Technology: Problems of a Philosophical Discipline", in Paul T. Durbin and Friedrich Rapp (eds), Philosophy and Techonology, 323-336, D. Reidel Publishing Company (1983).

[3] Staudenmaier, S.J., John, "Science and Technology: Who Gets a Say?", p. 205, in P. Kroes and M. Bäker (eds), Technological Development and Science in the Industrial Age, 205-230, Kluwer Academic Publishers (1982).

[4] *ibid*.

[5] *ibid*.

[6] *ibid*.

comes is to tell us how people at a given time period viewed 'technology' but other people at other times clearly view it differently. Stuadenmaier is content to emphasize various contextualist aspects of technology in a broadly interdisciplinary setting.

I have not done anything like full justice, of course, to either of these writers but I hope I may have shown enough to persuade you that these eminent practitioners of two key disciplines in the humanities remain peculiarly unclear both about the nature of the object "technology" that they claim to be studying and about how they and we are to think about it. The best they seem able to do is to appeal to a kind of broad-gauged interdisciplinarity that seems broad enough to encompass all possible "approaches" to technology. History is not enough, nor is philosophy, but perhaps if we add psychology and economics and sociology and ethics and so on to the mix, we will, somehow, be able to give an adequate account of "technology".

However one may choose to characterize the thinking of scholars like Stroker and Staudenmaier and many others for whom they may stand as exemplars, such thinking is surely not scientific as we usually understand that term. Moreover, as I will explain more fully in a moment, this kind of thinking and these kinds of appeals to interdisciplinary studies are subject to a fundamental intellectual vice, the same vice that characterized linguistics and the other human sciences in their pre De Saussure days.

Now the theory of mediation not only claims to think scientifically about human phenomena, it claims to do so in a way which is capable of radically renewing what we have been calling, rather loosely, "human sciences", for 150 years or so. That claim is at the same time a challenge to humanists and hermeneuts of all stripes: how do you characterize the object of your discipline/study? And how do you think about it?

Before turning to the new scientific account the theory of mediation gives of "technology" and other human phenomena, it might be useful to recall some commonplaces about what it means to do science, whether in the natural sciences or in what are usually called the sciences of man.

2 Some Commonplaces Regarding "science"[7]

Jean-Yves Urien usefully begins his own course on linguistics at Rennes with some observations about science which it will be worthwhile to recall here.

[7] The following several pages concerning science draw heavily upon the excellent discussion of these matters by Jean-Yves Urien in his introductory course in linguistics at the University of Rennes (unpublished). In many places l have either translated with slight revisions or paraphrased Urien's words.

Consider briefly some of the concepts involved when we speak of the intellectual activity we call “science” which is at work in the various sciences, whether of nature or of man.

We call “science” the knowledge, formulated linguistically (and mathematically), of the determinisms which constitute reality. Let's try to unpack the concepts used here.

Knowledge: knowledge, when it is scientific, produces explications or explanations. It does not act or make – it is not to be confused with technique; and it does not judge, that is, make decisions, in terms of rightness or wrongness – it is not normative.

To say that knowledge is formulated linguistically is to say that scientific knowledge is spoken, i.e., it explicitates itself in speech. Even when it uses mathematical formulae, drawings and graphs, in its exposition all these artifacts resume concepts and reasoning processes that are formulable in phrases.

Determinisms which constitute reality: the implication here is that there is a reality and that this reality is not simply a matter of chance or happenstance but that (thanks to science) one can conceive “necessities" or “laws”, that is, one can conceive that there are “causes” to the phenomena that one can observe. This relation to reality implies that science gives itself an object and that scientific knowledge is about that object. Science is not talk for the pleasure of talking or for impressing one's peers or for stanching one's anxiety when confronted with another; science is talk about what causes the object of science. Whether one is doing physics or biology or psychology or economics, etc., doing science is explicating or explaining the laws or necessities that determine a given scientific object.

Although the general procedure of science is the same in all the sciences, we nonetheless do not speak of 'science' in the singular but of sciences in the plural? Why so?

We speak of sciences in the plural because the different sciences are diversified in function of their objects. But here we need to pay careful attention lest we misunderstand what is meant by “objects”. The objects of science are not what we ordinarily call “objects” in everyday life. There is no science of tables or paintings or telephones or cars or airplanes or the smell of roses or the wind whispering in the trees. A science has for its object a type of determinism, a defined order of law, and not any old occurrence or circumstance or fact that is perceptible to the senses, that is, any phenomenon. Science of course takes account of phenomena, but the account it takes – and gives – is that phenomena are the effect of causes. Science attempts to discern what these causes are.

Our ordinary ways of talking reflect this. For example, you call what I am doing “talking” and not “the vibrations of air caused by the movement of the tongue that an ear can perceive as sounds”. You call what I am doing “talking” because you recognize that there is an order

of reality that we call language, that it is constituted by certain laws – laws that, very approximately, you could enunciate in terms of grammar or linguistics – and that my talk is an effect of those laws or determinisms which are internal to the reality we call “language” here.

By the same token, you also recognize that you could have given another mode of explication for the phenomenon of “my talk” in terms of sound waves and movements of air, that is, in terms not of linguistics but of physics – and it would no longer be the laws or determinisns interior to the reality we call “language” that would be the object of your science but the laws or determinisms interior to the physical reality of tongues and movements and sounds.

In a general way, then, “things” or phenomena are the field on which we project as many different sciences as we conceive types of causes. If we distinguish between sciences of language and sciences of physical reality it is because we recognize that there are different types of causes involved. We recognize that the types of causes involved in physics are different from those involved in biology, and those involved in linguistics are different still. Different objects, different types of causes, different sciences.

Now let us take this a step further. Before turning to the human sciences or what are sometimes called the sciences of culture, let us review the three types of determinisms or causes that are generally recognized today. (I am simplifying a bit but that need not concern us here.) Two of these types are well-known: the sciences of matter (physics and chemistry) and the sciences of life (biology). In one way or another you have been studying these sciences since you were in about sixth grade.

It is important to note, and to insist, that the second order of determinisms presupposes the first, and not vice versa. Matter is necessary for there to be life, but there can be matter without life. Notice too that science proceeds by “reduction” or “parsimony”: it does not elaborate a biological theory unless and until it runs into phenomena that cannot be explained in terms of physics or chemistry. It is precisely because we cannot understand an organism, an individual, the evolution of vegetable and animal species, etc., in terms atoms, electrons, protons, etc., that it is legitimate to develop a specifically biological form of reasoning, that is, a science of biology. If you understand this point you will understand what is essential to the next point.

There are in reality facts like pronouns and paintings, policies and presidential pardons, and a zillion other facts whose essential characteristic is that they are common to human beings and they cannot be explained either by physics and chemistry, or by biology. Of course, there must be matter and there must be life before there are any human phenomena, but the characteristically human phenomena cannot be 'reduced' to biological or physical-chemical causes. On the contrary, they are the result of another kind and order of determinism or law, and so, if you will, of another type of science.

To here, we have established a two points. First, the objects of science are not phenomena or data in the everyday sense of perceptible "things" or "objects"; objects of science are, rather, types of determinisms or orders of law. Secondly, there are as many sciences as there are different types of determinisms.

Let us turn now to the sciences of man, or anthropology. Just as we distinguished several sciences of nature, we will be led to distinguish several sciences of man – once again: not in function of phenomena that we usually distinguish, e.g., paintings, buildings, conversations, religions, etc., but in function of distinct types of determinisms. Anthropology is multiform.

Now, the nature of science does not change when it is human beings that are studied. The objects change of course; but not the method of studying them. Consider an example.

When aviators want to get a weather report they telephone or tune in their radios to what is called the ATIS (ATIS – Automatic Terminal Information System). Here is what they hear:

"Newport State Airport, Newport, Rhode Island. Automated Weather Observation 17:15 Zulu. Winds 220 at 14, peak gusts 19. Visibility 70. Sky condition overcast 6500. Temperature 08 Celsius. Dew point 04 Celsius. Altimeter 30.14".

Now let us reflect on what cannot be explained by physics and chemistry or by biology in the reality of this report. What is human in this weather report?

First, it is speech. There are words, phrases, numbers, times, and so on, that we can qualify as "logical", that is, typical of Homo loquens or Homo sapiens – The Greeks named this power of speech "logos", whence our "logical". It names the human capacity for speech. We have devised a specialized vocabulary to talk about speech: nouns, pronouns, verbs, and so on. Here, then, is one determinism in this weather report.

Secondly, this logical information is accessible to us thanks to several extraordinarily complex technological apparatuses. There are the devices that measure the direction and velocity of the wind, the altitude of the cloud cover, the presence or absence of atmospheric turbulence, etc., and then artificially translate those measurements into the sounds of words and phrases of an English-speaking man; there are the wires and electrical impulses and amplifiers that connect the measuring, translating, and transmitting device at the airport to the telephone system and ultimately to the telephone receiver that we have in our hand; and so on. All of these devices and apparatuses are human in that they are characteristic of man not as speaker but as "ingenious" (marked by inventive skill and imagination), characteristic not of Homo loquens but of Homo faber. "Faber" names the human capacity for making, that is, for art (skill – from Old Norse for "discernment" – in making or

doing or performing). And notice that here too we have developed a specialized vocabulary to talk about this second determinism: apparatus, antennae, recording device, transmitter, receiver, wires, electronic impulses, etc., that is, an enormously refined vocabulary that is of no use to us in speaking of speech but serves an essential purpose in speaking of technology and the things that we make. Here is a second determinism in this weather report.

The weather report is also a social/historical act in a variety of ways. To begin with, the things talked about, e.g. time, altitude, etc., are the result of contracts socially agreed to, often many centuries ago. The time, for example. Dividing the day into 24 hours dates back to Sumer; dividing hours into sixty minutes dates back to the early Egyptians; Zulu refers to Greenwich mean time which serves as a universal standard among nations, and so on. The same is true of the other measurements: velocity, compass direction, altitude: all are matters of social and historical agreement. Then there are the words used: not only do they follow the rules for English phonology, grammar, and so on, but they are pronounced in late 20th century American fashion with, let us say, a slight Midwestern tang. Here too there are social contracts and agreements. Then there are the people who actually made all these apparatuses and devices and installed them and maintain them: they are all paid according to agreed upon wage scales, agreed upon benefits, etc. All of these social agreements are a matter of history; they were made by history and they can and will be remade or unmade by history. They are characteristic of what Aristotle called Homo politicus. They name the capacity that human beings have of originating themselves as historical and social beings and contracting bonds among each other. Here is a third determinism.

Finally, the weather report is a moral act. How so? In many ways. Consider the affective tonality of the voice: calm, measured, pleasant, serious. No humor here; no joking and fooling around; rather, the voice of authority, exactitude, rigor. The "skill" here is not in making, but in moral discernment, of right and wrong, of too much, too little, just right. We may speak here not of Homo loquens, or Homo faber, or Homo politicus, but of Homo rectus. Homo rectus is characterized by the capacity human beings have of being right, and so of being wrong, that is, the capacity they have of authorizing themselves to act (speak, make, etc.) in one way and of forbidding – that is, not authorizing – themselves to act (speak, make, etc.) in another way. Here, finally, is a fourth determinism.

In short, what appeared initially as a simple fact of every day life, dialing up an automated weather report and listening to it, can be analyzed in a multiplicity of ways. In it, the logical object is distinguished from the technical object, the social-historical object, the moral object, and these in turn are distinguished from each other. These objects are the effects of four different causes, or types of determinisms, or "lawful" orders (In fact, anticipating a bit upon what follows, we may say that we have distinguished four different determinisms, and so four

different sciences of the human – or four anthropologies – which we may name glossology, ergology, sociology – or history –, and axiology).

What I am recalling here, following Urien, is of course well-known. You can find similar explanations in many authors.

Try now yourselves to carry out an analogous process of reasoning with respect to the chair you are sitting on, or your shoe, or the notes you have been taking, or any human phenomena you want, by looking at it through this refracting prism. As you do so, you may begin to understand in what sense the theory of mediation provides us with a method of analysis that insists on the specificity of different objects of study which, in turn, differentiate different human sciences.

Well: those of you who already know something about the theory of mediation will recognize in this brief recall of some basic points with respect to science and its objects, the differences between the sciences of nature and the sciences of the human, and the different sciences of the human, an introduction to the theory of mediation. I need only add a few details and we will have laid the groundwork for an approach to the problems of technology/artworks that I hope may renew your way of looking at these realities, not the way that most people do, but scientifically – though, I would hasten to add, "scientifically" in quite a new sense of that word, a sense that is, I believe, unique to the theory of mediation.

In concluding this section, let me emphasize the importance of the point I have been trying to make and its relevance to the developments to come. If you want to speak scientifically – critically – about technology or anything else, you are going to have to leave the comforting world of everyday life and the familiar ambiance of things as they are related to us. You are going to have to enter the world of theory and they way things are related, not to us, but to each other. What interests us from a theoretic or scientific point of view is not the phenomena but the laws or orderings or systems of relations that underlie the phenomena and allow us to explain them.

Moreover, it is your theory that will determine the data of your science. The "data" are not just there for anybody to see or hear or touch; the data are "given" to the theory – or, we may say, the theory informs the data.

Let me give an example to make sure this is understood. We could develop a theory of the chemical structure of the universe in terms of four elements: earth, air, fire, and water. Those elements would determine what are data for our theory and we would develop it in terms of different relations between and among those "natural" elements. For many centuries, roughly from the 5th century B.C.E. until the 17th century, this is what we did do. Lavoisier did something different. He introduced a new way of conceiving the object of chemistry and its

constituent elements (cf. Brock p. 126[8]). Later (1865) Mendeleev devised a table of elements in terms of 1. atomic number and 2. number of electrons. 109 elements. Extremely powerful: chemistry now knows over 300,000 compounds.

So: theory deconstructs the real, and in doing so it constructs an object of science which is not simply laying there close at hand. What distinguishes theory from everyday life is that theory does not stay on the level of what is evident to all. For example, instead of considering the "thing" called water, physical chemical theory analyses is in terms of oxygen and hydrogen and distinguishes all sorts of properties in it. There is no "science" of water. Chemistry, to be sure, treats of water but in doing so it is only interested in the combinations of simple elements which constitutes its object.

Earlier I mentioned a vice that characterizes so many inter-disciplinary or multi-disciplinary efforts. Here it is. They suppose that the object of their study preexists and that the different disciplines involved in the inter- or multi- disciplinary effort are all studying the "same" object. Thus our college catalogs are littered with interdisciplinary courses on Sex, Democracy, Gender, the Family, or Technology. But the assumption underlying these multi-disciplinary enterprises, namely that each of the disciplines is studying the same object, e.g. Sex, Democracy, etc., is profoundly mistaken. They are not each studying the same object. Rather, each discipline or, more exactly, each disciplinary theory, is a new observation, cuts up the world in a new manner, and thus creates a new object of study. The "sex" that is the object of psychology is not the sex that is the object of biology, and so on. The technology that is the object of the historian and the sociologist is not the "technology" that is the object of the ethicist or the tool-maker or user.

There is a critical difference, then, between "technology" as an object of scientific discourse and "technology" as an object of inter-disciplinary discourse. The theory of mediation takes seriously the necessity of deconstructing the object of one's study if one is going to do science and, because it does, it criticizes what it takes to be the naive "positivism" of most of the human sciences and the humanities as well – "positivism" in the sense that these disciplines take for granted, or posit, the existence of their objects, e.g. "man" or the "psyche" or "society" or "technology". The theory of mediation offers a new approach to the study of all such human objects: it proposes to deconstruct "man" or "the human" in the 21st century in much the same way that physicists, and later chemists and biologists, deconstructed 'nature' in the 17th century and later. As you will hear more than once these coming days, Gagnepain believes that the human sciences today are roughly at the stage that the natural sciences were at in the 17th century.

[8] For more on this, see William H. Brock, The Norton History of Chemistry, 125-126, Norton (1992).

To see better what this means, let us turn to Gagnepain.

3 The Human as an Object of Science

Gagnepain began his analysis not with the chair he was sitting on but with language. Educated as a linguist, he found himself early confronted with a need to understand people who suffered from one or other form of aphasia, i.e., people who had difficulties speaking in a normal manner. Well versed in the principal linguistic theories of the day and a follower of De Saussure, Gagnepain attempted to understand the different clinical phenomena that characterize aphasia in terms of the theoretical linguistics that he knew. But it did not work.

He was nonplussed by this. A valid linguistic theory, he thought, should be able to explain the underlying determinisms of language in such a way that it could explain both normal language and the pathologies of language. Indeed, he came to think, only a theory that could explain pathological phenomena as well as normal phenomena deserved the name "scientific".

Working closely in collaboration with neuro-psychiatrists, he set out therefore to develop a clinical linguistics, that is to say, a linguistics whose principal theoretic concepts could be "verified" in the clinic in the sense that they could be used to explain the pathological phenomena of speech as well as the normal phenomena. Indeed, he became convinced (as Freud had earlier been convinced) that clinical phenomena could serve to reveal 'underlying structures of speech in a way that normal phenomena could not. In this way was Gagnepain led to deconstruct the phenomena of "language" and to recognize that there were different causal determinisms at work in the phenomena of what we call, so imprecisely, "language". What were they?

There were, first, those determinisms that underlay our capacity to speak. Grosso modo, linguists had identified many of them even though they had not worked them out in a way satisfying to Gagnepain. Little by little, Gagnepain, studying the phenomena of aphasia, elaborated a theory of speech that could account both, for normal speech and for the deficits of speech in aphasia. He came to call this theory of speech "glossology", from the old Greek word for "speech" or "tongue", rather than "linguistics", because he had begun to realize that "language" involved other determinisms in addition to those involved in speech.

For instance, he and his colleagues began to notice that although all aphasics had some problems with reading and writing, some aphasics had more severe problems than others. Moreover, there were patients whose speech was relatively unimpaired but who had serious problems using tools. If you gave them a pen they would try to smoke it, or they would try to write with it but would hold it by the wrong end, or they would stick it in their ear. Others had similar problems with simple implements like hoes and rakes and shovels. In what was a major breakthrough at the time, they decided that the clinical evidence required that they postulate that there was another rational determinism

at work here, albeit in a pathological mode, a rational determinism that underlies, not speech, but tool-using and making, in other words, what the ancients called art (techne). They had started with patients who had trouble reading and writing – these forms of alexia had historically been understood as forms of aphasia – but now they recognized that these problems with reading and writing were not problems of speech but problems stemming from another rational capacity, a capacity to make and use tools. Writing, after all, is not speech; indeed, it renders speech mute. (Writing artificializes and preserves speech and allows us to conserve it in libraries (discotaries) much as freezing preserves food and allows us to conserve it in refrigerators). Reading is not speech either; it is rather a deciphering of the artificialization of speech accomplished by writing and is often silent. These alexias, Gagnepain and his colleagues came to realize, were a variant of a much larger class of problems, which they called atechnias, that is, problems connected with an inability to use tools and to make and utilize things in a normal fashion. If glossology was to name the study of signs and speech, ergology could name the study of tools and artworks ("Ergology" rather than "technology" because, Gagnepain felt, "technology" carries too much baggage and might lead to confusion).

Once they had broken apart the determinisms underlying speech and those underlying tool-using, they relatively quickly came to realize that there were two other orders of determinism of which "language" was the complex effect. One was the rational capacity that allows us to institute ourselves socially and historically as both individuals and as members of a set of communities. It is this capacity, for example, that allows us to historicize our speaking as, for example, Elizabethan English, or 19th century Chinese Mandarin, or late 20th century French or Spanish; or allows us to historicize our artworks as French Romanesque or Italian Gothic or Russian constructivist or 20th century American pop art. In other words, language was not only speech, and writing, it was also a form of communication (and of non-communication).

Finally, they recognized a fourth determinism at work in language which was irreducible to the other three: the capacity we have to norm our speaking, that is, to order it in terms of different standards or criteria or norms of rightness and wrongness, appropriateness or inappropriateness, noble or base, U or non-U. In other words, we can regulate our speech or any of our other activities as correct or incorrect, grammatical or ungrammatical, offensive or pleasing, and so on. We "authorize" ourselves to speak in this or that way.

Gagnepain started with the human phenomenon of language but in discovering its underlying determinisms he in fact discovered the determinisms underlying all properly human phenomena. Human rationality is one but it refracts itself in four different but analogous ways. Are there any others? Perhaps. For Gagnepain, that is an empirical matter. Up to now, however, he has not found a need to invoke any others since these four seem to adequately account for all the phenomena.

Now, you may ask, what allows Gagnepain to be so sure that he has identified the underlying determinisms or laws or orders proper to the human cultural order? Isn't he just developing another theory like so many others? What would allow us to decide whether his theory was any better, more adequate, more in keeping with the facts than, say, Heidegger's theory or Foucault's theory or Lacan's theory or Derrida's theory or Rorty's theory?

Gagnepain gives a new/old response to this question, a response that, I believe, sets the theory of mediation apart from any other theory of the human. Gagnepain claims that the test of his theory – a test he says any theory in the human sciences must be able to pass – is to be found in the clinic. If Gagnepain holds that there are four different modes of human rationality that are irreducible to one another it is because human beings suffer breakdowns in four different ways and these distinct pathologies cannot be reduced to one another as the clinic shows. He began with the different forms of aphasia and he came to distinguish different forms of atechnia. But there were also two other grand categories of human pathology that had long been recognized: those human sufferings that marked a disruption, on the one hand, in our capacity to institute ourselves socially and historically and thus to communicate with one another, and those that marked a disruption of our ability to regulate our behavior. These pathologies had long been recognized: the psychoses and the perversions on the one hand, the neuroses and the psychopathies on the other.

For Gagnepain, the clinic provides us with the breakdowns of the human that, in the physical sciences, is provided by the laboratory setting; and it also provides us a terrain of verification for our theories, just as the laboratory does in the physical sciences. For Gagnepain, unless a theory can be verified in this way, it has little to ground it. It floats free, just so much brilliant talk. He thinks that much so-called critical theory, philosophy, and similarly "literary" discourses are just that. People say pretty much anything they want, constrained only by their own originality and inventiveness. We are more plodding he says. We try to ground our theory in clinical phenomena and do not accept theoretical statements that cannot be so grounded.

Let this suffice as a first overview of the nature of science and the new science of human culture that Gagnepain calls the theory of mediation whose object is the four analogous but different ways we have of mediating our relationships to the world and to each other: in our speech, in our artworks, in our social and historical communications as persons, and in the regulations of our desires. This is not all the theory, far from it, but it is enough for us to address now more directly the topic of this lecture, namely, "Deconstructing Technology".

There is, as you know, a wide-spread and endlessly repeated claim in contemporary cultural studies to the effect that, to cite Lacan's famous dictum, all human activity is "structured like a language" or, more simply, "man is language".

This is not the place to trace in detail the genealogy of this claim and its spread to even the most somnolent regions of contemporary university life. Suffice to recall that it originates in De Saussure's Cours, takes root in Troubetskoy's and the School of Prague's development of phonology, is transmitted into France and the US via Jakobson, receives its quasi-definitive contemporary formulation in Levi-Strauss's "Structures de la parenté", which in turn decisively influences Lacan, Althussser, Barthes, Foucault and, through them, a teeming progeny just about everywhere you may look.

But the claim that man is "language" – or, for that matter, "desire" or "history" – suffers from the same vice that we denounced above in the case of inter-disciplinary studies. It assumes that "language" is language, "desire" desire, "history" history; that is, it takes for granted the object of its study and does not recognize the scientific necessity of deconstructing it. But language, that is, what we ordinarily call "language", is not one thing. It is, rather, an heteroclite mixture of things. So, pace the Lacanians, is "desire"; so, pace the Marxists, is "history".

This is something that De Saussure very clearly recognized. As he wrote at the very beginning of the *Cours*, "Taken as a whole, language is multiform and heteroclite; spread across several domains, at once physical, physiological, and psychic, it also belongs both to the individual realm and the social realm; it cannot be classified in any category of human facts because one is not able to disengage its unity."[9]. It was just this recognition that led De Saussure to deconstruct this heteroclite object and disengage what he called "la langue" as the object of linguistics. This was the epistemological rupture that De Saussure introduced between the historical and comparative linguistics as it was practiced in his day and a new science of linguistics which creates its object. Unfortunately, instead of recognizing the scientific importance of De Saussure's move, many people seized upon the Centrality of language in human life and, as we have just seen, began to understand all human phenomena as "language".

Not Gagnepain. In fact, Gagnepain has gone farther than De Saussure himself in deconstructing the object of linguistics. Gagnepain accepts De Saussure's distinction between a performative aspect of speech ("la parole") and a structural aspect ("la langue") but Gagnepain will use this distinction in a way quite different than that of De Saussure. To begin with, Gagnepain carefully distinguishes the grammatical capacity underlying our access to signs and the socio-historical capacity underlying our access to societies and histories, in this case the different languages which humans beings speak. De Saussure does not make this distinction but it is fundamental for Gagnepain.

[9] de Saussure, Ferdinand, *Cours de linguistique générale*, Edition critique préparée par Tullio de Mauro, Editions Payot (Paris), 1985. p. 25 (My translation)

Secondly, for Gagnepain, the opposition structure and performance is not only characteristic of the glossological plane of language; it also characterizes the other planes or levels of (deconstructed) language as well. He will therefore speak of oppositions, on the level of speech and signs, between grammar (structure) and rhetoric (performance); on the level of the use of tools, between technics (structure) and industry (performance); on the level of the socio-historic institutions of the person, between ethnics (structure) and politics (performance); on the level of normative behavior, between ethics (structure) and morality (performance). In other words, on each of the planes of reason, there is an opposition between an unconscious or implicit structure and a conscious or explicit performance.

I am not going to develop this aspect of the theory of mediation here – that is, the dialectical relationship between structure and nature on the one hand, structure and performance on the other. (This the subject of the next lecture.) What I have wanted to insist upon is the scientific continuity between De Saussure and Gagnepain, and the fact that both clearly recognize the necessity of deconstructing the heteroclite reality of language. As Jean-Yves Urien and Michael Herrmann will make much clearer tomorrow, Gagnepain deconstructs language differently than does De Saussure – where De Saussure discovers only one structure Gagnepain discovers four analogous but different structures; but both recognize that it is the deconstruction that creates the object(s) of their science and allows them to be clear about what it is that they are speaking about.

This lecture is already long but there is one more point that I need to make.

How, you might wonder, keep all of this straight?

Recall our earlier examples, and your effort to deconstruct what you are sitting on – the chair, not the wondrously formed and articulated anatomical surface of your body that allows you to sit on the chair. It seems to me likely that you may have wondered: how keep all of this straight? In reality, in the concretude of everyday life, these modes of rationality cut across each other and are all mixed up together. How can the theory make sense of them rather than jumble them all up in a confusing
mess the way so many contemporary theorists do?

The way the theory of mediation approaches this issue is the following. Of course, concrete reality always involves several planes of reason: though autonomous, the planes of reason criss-cross, each of them being, depending on the sector concerned, the infrastructure of the others – each of them capable of being "form" or "content". Though they are all mixed up in everyday life, a clinically based analysis allows us to distinguish them theoretically. We have already seen how this works but let us take another look at it.

Take, for example, language. The fact that my speech is grammatical does not mean that it is not also (if I were writing this lecture) writing; the fact that if is grammatical and technical, does not mean that it is not also a certain style of late-twentieth century English; and the fact that it is grammatical, technical, and socio-historical, does not mean that it is not also axiological, that is, authorized in various ways: I have chosen to speak, not to remain silent; I have carefully avoided using swear words lest I offend your sensibilities; I have tried to be scrupulously correct about "him" and "her" – and so on. In my linguistic performance, all these determinisms are in play at once; but, in my analysis, I must distinguish them if I want to speak clearly about the phenomenon of "language". It is because language is all those "things" at once that, in deconstructing it, in breaking it apart, our scientific analysis, corroborated and verified by clinical observation, can dissociate four different processes at work in language: glossological insofar as it is grammar, ergological insofar as it is writing and requires tooling, sociological (or socio-historic) insofar as language is ethnicized in the idioms and cadences of English, and axiological insofar as my desire to speak is regulated in a host of ways as we have just seen.

Take another example: any object of human making, any artwork, any object of techne. Just as speech cannot be reduced solely to grammatical processes, products of technique – of our making – cannot be reduced solely to ergological processes but are also involved with the other processes. The house, for example, is the product of the carpenter/electrician/plumber/builder but is is also, socio-historically, constructed in a Newport shingle style, or late – 19th century German baronial, or what have you. And, at the same time, it is also, axiologically, in conformity with local building ordinances, conforms also to various national standards for materials (electrical, insulating, etc.), witnesses to certain moral and political values, e.g. of simplicity, or pompous grandiosity, and so on.

The garment you are wearing is the product of the tailor and the seamstress but it is also, socio-historically, a U.S. army uniform, or retro-Nazi, or the "habit" of the Dominicans or the Franciscans; and, axiologically, it is a "regulation" uniform, or habit, or acceptable contemporary academic wear, that is, the rip in the jeans is strategically placed... It is, in short, "in order", "the way it is supposed to be", according to a given norm.

The theory of mediation calls this process whereby the different planes of reason intersect in the concrete reality: cross-cutting.

But this cross-cutting does not happen just in any old fashion. Depending on the cultural phenomenon being considered, one plane or level is always more important than the others. Take, for example, language. Without access to the rational capacity for grammar, we would be unable to speak and language would simply disappear and there would be no possibility of its being tooled in writing, idomatized as late-20th century English, regulated into different discourses. Hence, the grammatical or glossological capacity is fundamental to it and the

other three rational capacities are subordinate to it. The theory of mediation will say that, here, the glossological plane is the infrastructure, and the other planes are "incidental" to it.

If, however, we pass to the plane of art, it is evident that the socio-historical level of the author or artist, or the axiological level of the psychoanalysis of art (i.e. the analysis of the various regulations of desire incarnate in the artwork), or the glossological level of verbalizing the artistic procedures in maxims or recipes or directions for use, are all subordinate to the existence of the artwork which only the technological or ergological capacity makes possible. The ergological capacity is here the infrastructure and if somehow it were to disappear because of a pathological condition or a refusal to exercise it, the artworks/products would cease to be made. The other three capacities are subordinate to the ergological capacity here, including the glossological capacity which in the previous example was the infrastructure.

The result of this criss-crossing of several planes of rationality, language is a complex phenomenon which is more than its grammar (grammatical structure). In an analogous fashion, art/making is more than its technics (technical structure), society more than its ethnics (ethnical structure), and rights (conformity with or conformable to what ls moral) more than its ethics (ethical structure).

Whence this epistemological consequence: we cannot confound glossology, which treats solely of the grammatical infrastructure of language, and "linguistics" which treats of all its diverse aspects; nor ergology, which treats solely of the technical infrastructure of artworks, with "artistics" which treats of all its diverse aspects; nor sociology/ history, which treats solely of the ethnical infrastructure of society with "cenotics" which treats all of its diverse aspects; nor, finally, axiology, which treats solely of the ethical infrastructure of normative behavior, with "critics" which treats of all of its diverse aspects.

In this way, the theory of mediation differs profoundly from Marxism from which nonetheless it borrows an essential notion. When it is a question of language, the glossological capacity which grounds it is infrastructure. But in the case of artworks, or society, or right, each of the other planes becomes successively infrastructure. In other words, in the theory of mediation planes of rationality are not divided into infrastructure and superstructure once and for all. On the contrary, depending on the area involved, each becomes in its turn infrastructure and the others superstructure. Or, to put it another way, each becomes form, for which the others provide the content.

One final point. This criss-crossing consists in two processes, one the converse of the other.

Take any artwork/technological creation. The ergological mechanisms underlying art function identically no matter what the means being used or the ends being envisaged. But the means and the ends that art technicizes can be from any of the four levels or planes of

human rationality. So: the tool can just as well technicize consciousness in producing representations – natural representations by making images, or linguistic representations by making writing; or our activities (tool-using, art-making activities) in producing power – shovels and picks add to our natural powers as do arrows and slingshots and the latter become even more powerful when technicized as bullets and mortar shells and bombs; or our conditions in producing "being" – again, naturally, in producing shelters and coverings and food for our bodies or culturally in producing lodging, clothing, and cuisine for our persons; or, finally, our decisions (of right and wrong) in producing switches and measuring instruments and stop signs and speed bumps and calculators and computers and so on. These are the four great industrial sectors the theory of mediation names deictic (from deictos, that which shows or points) industries, dynamic industries (from dunamis, power), schematic industries (from skema, that which gives contours, or manners of being, to the natural subject and to the person), and cybernetic (from gubernos, rules or governs) industries.

The important point here is that in this example the ergological rationality is the form or the empty mold for which the other modes of our rationality provide the content (including, by a kind of doubling on itself, the ergological mode itself).

But, as you know, artworks need not be envisaged as being fundamentally products of technique, of art-making. Artworks can also be envisaged as being a part of society like any other cultural reality. From this point of view, it is no longer the technique that serves to write the language, clothe and house the body, make the decisions. No, here it is the ethnological capacity which singularizes artworks and organizes them socially and historically into styles (Romanesque, Gothic, Cubist), just as it organizes speech into languages (German, French, Japanese), or rights into particular legal codes (Babylonian, Roman, English common law, Napoleonic, American).

In the same way, our grammatical capacity can serve to speak of art as of anything else, and our ethical capacity to regulate art like it regulates speech, sexual and other modes of being together, decisions themselves. Here, contrary to what was the case a moment ago, it is the sociological, glossological and axiological capacities which are, one after the other, the form or empty mold to which artworks furnish the content.

And for the theory of mediation there is no hierarchy among these different ways of considering the phenomenon of artworks. They are every bit as much the result of the glossological, sociological, and axiological determinisms as they are of the ergological determinism. Because the theory of mediation distinguishes four objects in any human phenomenon, it will offer four different accounts of "the same" phenomenon – but notice, though the phenomenon may be the same, the underlying structures are not. Unlike Marxism, the theory of mediation recognizes four causal orders, not one, and so there will be four explanations, not only one. The four explanations are systematically

inter-related but they cannot be reduced to one another: if one order of determinism serves as infra structure, the others are said to be "incidental" to it. If one is form, the others are content. In principle at least, it is always possible to know who is on first, and who on second… and this is a great help to one's clarity in explaining what is going on.

Let me conclude, not now with respect to what we saw earlier with respect to the nature of science and the deconstruction of the object of science but with respect to "technology" as an object of inter-disciplinary discourse. From the standpoint of the theory of mediation, there is no preexistent "object" called "technology" which it is the business of different disciplines to study and which would furnish the "inter" of those studies. To hold that there is such an "object" is a form of positivism. In fact, it is just the refusal of this kind of positivism with respect to "language" that allowed the inaugural gesture whereby De Saussure instituted the contemporary human sciences. Gagnepain has retrieved and repeated in our own time this gesture of De Saussure and he has done so in a more complete and more radical way than the master of Geneva ever envisaged. What Gagnepain offers us is a new, clinically based, method for studying human phenomena scientifically. In the last part of my presentation, I attempted to sketch out the way in which "technology" functions as an object of the human sciences as Gagnepain understands them.

In the next lecture we will examine the dialectic of nature, structure and performance that the theory of mediation sees as central to all human rationality, review the aims of reason, and try to clarify the meanings "art" and "aesthetics".