Friday Night Lecture

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# What, then, is Time?

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When our dean asked me to lecture this September it was because he had heard that I'd just completed a book on time, and he thought I might like to talk about it. He was right, and here are three possible kinds of profit that, on thinking it over, I figured might come to you and to me if I gave what I guess one might call a book report.

First, even if the writing of books is a few decades off for most of you here tonight, it turns out that writing papers and annual essays is not so different from writing books, and I thought I might be able to tell you something useful. In fact I'll do it right now. When the time comes to write, whether it's a small paper or a long annual essay, never think: "I've got to write this thing! Help! I need a paper!" Instead search your soul for a question you have nursed for quite a while, whether articulately or inarticulately, something that bothered and puzzled you, something that might be very intimate but is capable of public expression. Then flip mentally through the books you've studied, or the music you've sung, or the theorems you've proved, or the experiments you've re-enacted, and ask yourself which have a bearing, taken in the largest sense, on your issue. What will happen next is the result of a mixture of concentration and luck: some paradox or analogy or some other significant array will jump out at you. Seize that and slowly pummel, stroke, and shape it into an articulate order. Of course, none of that can happen at

the last minute. For looking into yourself, for calling on your studies, for finding a crystallizing moment, for working all of it into a well-shaped whole, time is of the essence.

My second thought was that time is one subject concerning which it does not matter whether one is a freshman finishing the second week at the college or a senior beginning the fourth year, or even a tutor who has taught most of the program. Stormy love is not a pressing issue to all ages, nor is looming death, but there is, I think, no one, at any time of life, for whom time does not become a problem in some way or other. I know this from experience. Of the things that have urgently interested me from time to time, the mention of Being and Non-being, for example, provokes mostly stupefied non-interest, the mention of the Imagination elicits an account of people's favorite fantasy series, but the mention of Time gives rise to intelligently companionable puzzlement. People have a different relation to the question concerning time than to other deep matters, which they are either willing to bypass as too obscure for their taste or to treat with the most unreflective but familiar particularity.

The title of this lecture -- and of my book -- is "What, then, is Time?" It is a quotation from the most famous sentence ever written on time by the man who was most deeply immersed in its elusive familiarity, Augustine. It comes from the eleventh book of his *Confessions*, which we read in the sophomore year. Here is the whole sentence:

> What, then, is time? If no one asks me, I know; if I want to explain it to the questioner, I do not know.

My own concern with time started from two ends at once, intellectual puzzlement and deep-felt irritation, and it developed, as really good questions do, from annoyed fascination to serious interest. The intellectual puzzlement was just that expressed by Augustine: What sort of a being, if it was a being, could be so handily familiar in daily usage and so fugitive to the grasp of thought? Here I did as all my fellow humans do: I make time, kill time, manage my time, waste time. To be sure, I've never "done" time, though but for the grace of God I might have. I know that time heals all wounds and ravages all the beauties of the world. But if I ask myself what it is that does this, I

see and touch nothing and think of less. That is at first just a puzzling and then an engaging state of affairs.

The irritation I experienced had a superficially different source. In all the departments of life people talk of time as a force or a power, not just in the sort of dead metaphor that makes up the unconscious poetry of popular usage, as in all the phrases cited above. No, they mean it literally, especially when they are talking of the so-called "phases" of time. "Phase" will be the most important word in this lecture. It is my word -- different authors use different words -- for the three parts of time, past, present, future. Perhaps I should have said the three parts of human time, for I will argue that only human, or human-like, beings have pasts and presents and futures.

It is the future with which these people mostly play infuriating havoc. They say and they mean that there is a future coming and our business is to form a reception committee for it. Some see this Future with a capital F as a doom, as in Yeats's great poem, "The Second Coming":

> And what rough beast, its hour come round at last,
> Slouches towards Bethlehem to be born?

Far more of our contemporaries see it cheerfully as a benefactor, though a totally manipulative one: It is the Information Age or the Global Age or the Age of Megacorporations, you name it, and our duty is to be ready or to be run over by time. They engage in what I call to myself proactive passivity. This time-mode -- the adjective, incidentally, is "temporal," so I will say, this temporal mode -- strikes me as paralyzing the human will, and that is one form of immorality.

So besides the intellectual desire to understand the nature of time and whether it is a being or a nothing, I also began to think about time in its human effects. Almost everyone who has lived for some time has neat observations about these effects. For example, I have been at this college forty-one years or almost fifteen thousand days. Sometimes it seems like forever and sometimes it seems like a day. What accounts for this mad elasticity of time? But besides these time-ruminations there is also that sense I have of the important moral consequences of not thinking about the nature of time, about accepting what seem to be abuses of our phase-nature. In fact, a new hero of mine, Octavio Paz (whom I did not in fact discover for myself but through one of our

Mexican alumni, Juan Villaseñor) put my thought much more expansively than I would have had the courage to do. He says in his book on India:

> I believe that the reformation of our civilization must begin with a reflection on time.

Recall that I am still laying out the possible profit of telling you about my book, and here is the last one, chiefly to myself. Imagine what a pleasure it will be to come on campus and to be able to fall easily into a conversation about this magical subject with some proportion of the people that live and learn here -- with the more virtuous part, I might add, those who come to Friday night lectures.

Now let me tell you of two discoveries or devices -- it's always hard to tell whether it's one or the other -- about which the book crystallized. One was the discovery -- and I became persuaded that it was a discovery, was really there to be *found* -- that writers on time who lived millennia apart in time and who were worlds apart in thought were at crucial moments driven into the same understanding, or at least the same problem. Once I had discovered one such pair of time-twins I came on three others. And finally I came to believe that amongst them they pretty well established the perennial possibilities and the pertinent problems concerning time. In a moment I will tell who these writers are and what deep notion each pair shares. But let me say here that it was a blessing to find such a principle of selection. For it is hard for most of us to think about these enigmas without help. The trouble is, there is too much help on offer. I own a bibliography of time which tells of nearly two hundred thousand books and articles written between 1900 and now. Of course, much of it is piffling, but much of it is, I am sure, thoughtful. I chose four great writers, and they paired quite naturally with four more, and by good luck these *are* the eight among the ancient and modern writers generally agreed to have the deepest theories. The pairs, then, are Plato and Einstein, Aristotle and Kant, Plotinus and Heidegger, Augustine and Husserl. Since many of you will not have read them, though all but Husserl are on the Program (and he ought to be), I'll present their time-theories as simply and as unencumbered by terminology as possible. But I'll omit completely telling you about one pair, Plotinus and Heidegger, because it is too tricky

to do, although their similarity on the point of time is most spectacular in view of their diametric opposition on everything else that matters.

The other discovery was that a human effect which never ceases to enchant me, namely the images that arise before the mind's eye in our imagination, had a certain remarkable similarity with our sense of time, a formal sort of similarity. Images are absent presences or present absences; they are not what they are, they are made of Being and Non-being. What I mean is that any image, but particularly a mental image, presents someone or something not actually present. To imagine an absent friend is to have him there, but not really. Time as well, it turns out, has this curious character of being and not-being, of being there but not really, of being present only in its absence. My all-time favorite time-saying is by the priceless Yogi Berra. When someone asked him: "What time is it?" he replied: "You mean now?" It is the wisest of answers, because you can't tell time, and yet we do. It is always and never Now.

So the book began to have two parts. One part was a study of these eight philosophers for the purpose of seeing what kinds of answers could be given to the question "What is time?" and what problems were inherent in the answers. But studying, while a help to thinking, and for most of us an indispensable help, is not thinking, since to understand what others think is simply a different activity from the thinking that goes directly, without intermediary, to the question. So in a second part I tried to go directly to the question, having absorbed all the help I could.

Therefore in this lecture, too, after telling what some of the best writers I could find have thought about time, I will try to tell what I think. I should say right now, lest you be disappointed, that what I conclude first and last is that it is a true mystery. I mean a potent effect whose characteristics are poignantly clear but whose nature is finally unfathomable. You can specify a mystery but you can't resolve it.

If you have a huge field of apparently possible answers to a question, it clears the decks somewhat to begin by removing the answers that are simply unacceptable. In thinking about the ways time is spoken of, it seemed to me that whatever else is said, time is spoken of either as

occurring in nature or as being within the human being. Time is either external or internal, or perhaps both.

External time has attracted by far the greater interest. Time is written of in religion, where it is a great question how an eternal God acts in created time. Time is treated in history, where it is a great question whether the times make history or people do. But above all time is a great subject in physics, where the best-grounded and most remarkable theories of time are developed.

Without question, the physicist who has done most to make other physicists and people in general think about time is Einstein. The work I chose to examine is his 1905 paper on what came to be known as the Special Theory of Relativity. What struck me first was that every mention of time was in quotation marks. This habit conveyed to me that I was dealing with the most careful and thoughtful of writers, one who knew that time in physics is a most problematic notion. Einstein says right away:

> It might appear possible to overcome all the difficulties attending the definition of "time" by substituting "the position of the small hand of my watch" for "time." And in fact such a definition is satisfactory ....

At least it is satisfactory when we are talking only of time here and now. Before Einstein, physicists had believed what everyone believes: that it is the same time throughout the world, that every other Here simply has the same Now as my Here. This situation was called simultaneity and was regarded as a chief feature of external, I mean natural, time. Einstein goes on to show that for any stationary Here far away from my own, it takes some calculating to synchronize our watches. And when we are moving relative to each other one of our most entrenched senses about time is overthrown, namely that what time it is is independent of our state of rest or motion. Einstein's theory turns out to have to do entirely with the measurement of time -- what my local clock and your local clock tell under different physical conditions. That is why Einstein puts "time" in quotations: He is warning us that not the nature of time but its measurement is at issue.

Now I'll jump back two and a half millennia and quote to you what is the most famous, most often cited definition of time. It comes from Plato's dialogue called *Timaeus*. Timaeus is a

made-up character, a visiting physicist. He and some of Socrates' friends have planned an amusement for him. On the day before Socrates had produced for them a picture in words of the ideal political community -- some people think it is the one set out in the dialogue called *The Republic* . Now Timaeus will reciprocate by painting for Socrates' entertainment the cosmos, the ordered world within which such an ideal city might fit. In the course of giving a mathematical account of such a cosmos, Timaeus says this about the way the maker of the world introduced time into it:

> He planned to make a movable image of eternity, and as he ordered heaven into a cosmos, he made an image of that eternity which stays one and the same, an eternal image moving according to number. And that is what we call time.

What Timaeus is saying is that the heavens move like a great cosmic dial and that this motion allows us to tell time.

So the mythical early physicist and the greatest of modern physicists are saying the same thing: Time is what the clock tells, in one case the cosmic clock, in the other a local watch. And so say all working physicists in between. It is a working, a so-called operational definition of time, and it works just fine -- until you begin to think about it. That time is what the clock tells is what one might call a dispositive definition. It disposes of time as an issue. But if you turn it around and try to say that the clock tells time you're in trouble. Time never appears on the face of a clock. Nor does it appear anywhere else in nature, ever. All other natural phenomena appear somehow to sight or hearing or touch. Of time not a trace.

What does appear is motion. An analog clock is a standard cyclical motion. A digital clock is a standard progressive motion. Clocks are calibrated motions. There is no time actually used in physics and none that actually appears in nature. There is much more to be said about this shocking claim, and I'm sure you'll want to argue it out in the question period.

Among other points then to be made, the seniors, who have read Newton, might want to point out that Newton, at least, does stipulate true natural time, an equable flux that comes before motion. And I would answer that it is not only as physicist but also as theologian that Newton

puts time into nature. For this so-called absolute time, which has no observable features, is probably not so much in nature as in God's mind, in that part of God's mind, called his "sensorium," with which he is receptive to all of nature, its infinite spaces, its primary forces, its ultimate bodies. My point at the moment is, however, only to reinforce a conclusion I came to: Wherever time is seriously considered, mind, soul, consciousness and sensibility come on the scene. Time can only be internal, meaning within a mind, possibly God's mind.

So I disposed to my own satisfaction of the vast majority of theories of time. Intricate and interesting as they are, they are really theories of motion, not of time, and they don't tell what time *is*. But time is the sort of subject for which every settling of the mind in one respect is punished by a complementary problem popping up in another. You can, and I think you have to, take time out of nature, but I am not so perverse as to claim that the outside world isn't full of variations: locomotions, processes, alterations. The mystery that has now popped up is that we have no idea what is really going on in this time-deprived world. Let me show you what I mean.

Human time, internal time, will be distinguished by its phases, past, present, future. But nothing in nature, except perhaps the near-human mammals, apes and dolphins, has a past or a present or a future. Edwin Muir says in a poem called "The Animals":

> But these have never trod
> Twice the familiar track,
> Never turned back
> Into the memoried day.
> All is new and near
> In the unchanging Here ....

Animals and sticks and stones do not have a past, though they might be said to *be* their past. But I, for one, just cannot imagine what it is like to live in the unchanging Here and not the have memory, how such a being gets itself into and out of existence, in short how anything can change without having phases of time. But then again the effort is love's labor lost: How *could* I have empathy with, feel my way into, that which has no inside? So the outer world becomes in this respect opaque, and this is the price to be paid for making a philosophical choice. In coming to conclusions in philosophical inquiries, I want to say as an aside, it is always a matter of what we

can best live with for the time being -- which is why all philosophy as carried on by human beings is ultimately moral philosophy.

There is perhaps a solution to the timelessness of nature. It is a commonplace for writers on time that there are two kinds of time. They might be called succession-time and phase-time. Phase-time is dynamic in the sense that the human present, about which time breaks into past and future, continually shifts -- as Yogi Berra's counter-question, "You mean now?" makes clear in its unavoidable absurdity. Succession-time, on the other hand, is static. It is merely the endless chain of before-and-after, established once and for all. It is time all by itself, no one's time, the time of all events taken only with relation to their succession and to nothing and nobody else. Perhaps nature does have its time, succession-time. But even the successions of nature turn out to be more intelligible as causal than as temporal sequences.

This is the moment to introduce Aristotle, who produced the first extensive treatment of time ever, in Book Four of his *Physics*. Here is what he says time is:

> Time, then, is not motion but that by which motion has number.

Aristotle seems to be making spectacularly short shrift of that mysterious power, time. It is nothing but an attribute of motion. Then he says what sort of attribute:

> Time ... is the number of motion with respect to before and after.

What the deep meaning of all this is can't come out unless we follow up what Aristotle means by motion, number, before-and-after. But we might guess at two problematic elements of this understanding of time.

The first, which is by far the less deep of the two but is endlessly discussed, is this. If time is the number of motion as a progression in which the parts come before and after, if it is in fact the succession-time I just introduced, it must somehow share in a chief feature of motion, namely continuity. Physical motion borrows this feature from the fact that it takes place over distance. Distances are representable as mathematical lines, and these lines, as the freshmen have just begun to see, must be continuous -- no elements can be missing. So time, as Aristotle himself

emphasizes, is continuous, like a line. Wherever you cut the line you get a point that belongs to both parts of the cut. This point is the Now. Time is in every way like a line of geometry: It lies upon its points, each of which is a Now. The only difference is that the geometric points are static, whereas the Now moves forward, ever the same in its features, ever different in temporal location. But as you know by now, a point is that which has no parts, so the Now has no parts. Therefore it has no extent, no bulk, no force, no presence. Therefore the point-Now of the mathematical model of time is as far removed as anything can be from the humanly experienced present, which is vivid, full, and altogether the most impressive phase of time. Insofar as time is continuous it is not very human.

But then Aristotle has also said that which will make time totally discontinuous. For time is a *number* by which motion is counted, and a number is a collection of completely discontinuous units -- there is no way one unit can be tangent to another. Motion, locomotion at least, is bound to distance and borrows from that fact its continuity. But number is bound to something else which reinforces its discontinuity. Many things in the world are collections of items. Aristotle mentions herds of horses and flocks of sheep. Other things, such as distances of all sorts, can be marked off into artificial units. All these things have a number that belongs to them. But nothing in nature gets its number unless someone is counting. Aristotle says that it is the soul that counts. So time, in order to be the number of motion, requires a wide-awake counting soul. Now I shall say a sentence, or rather a question, which is underlined in my typescript: <u>When the soul is counting, does it take time to do it?</u> Does it get its numbering from some motion? What distance does that psychic motion cover?

Aristotle is in big -- and I must say unacknowledged -- trouble. Time in nature is only the number of motion, but what is the counting that announces that number? I don't think he knew, but perhaps in the question period someone will make his case.

Now let me leap two thousand plus years ahead. For Aristotle time originates with the counting soul. To my mind, Aristotle's true modern successor, the one who takes Aristotle's

thought and turns it thoroughly and precisely upside down, is Kant. Here is an aside: This kind of inversion of thought, so that it is the same in name but utterly different in significance, is the chief moving force of the philosophical tradition we study at this college. By "force" I don't mean some magical attribute of the passage of time, but the way of proceeding that is congenial to those immersed in this tradition. At any rate, whatever time is, if it has power it has it only as an aspect of human consciousness.

Back to Kant. You will be relieved to hear that I do not plan to tell you what is in the *Critique of Pure Reason*, Kant's founding book, although everything in there is sooner or later related to time. In any case, the Juniors will be studying it in spring, and it is that which makes February a month of delights. Instead I will focus on a few sentences which show what it is that brings Kant so very close to Aristotle in the letter, though he is worlds apart in meaning.

Kant regards time as a constitutional part of our receptive capacity, our ability to take in what is given to us. Such a capacity is called "sensibility," and we are so made that whatever comes to us, the world of nature especially, comes in the form of temporal sensibility. The *Critique* is a great work of philosophical art, and I omit the many factors that feed beautifully into rounding this notion out, in order to concentrate on just one thing: When we ask what it means that nature comes to us in the form of time, the answer is that whenever we think about nature we begin by noticing quantities, and we do that first of all by numbering -- not top-of-the-head counting, but a deeply interior kind of beating out of units that add up into a number. Here is Kant's word on what is happening in this counting: "I generate time itself ...."

So Aristotle and Kant agree that time is a kind of psychic beating or counting. It does not save Kant from the question I asked of Aristotle that he calls time a *form* of the sensibility. Is this form, I now ask, itself static or is it fluid? If it is static, how does it produce the psychic flow of pulses? If it is fluid, is there yet another time behind Kant's deep constitutional time? Let me say right now that all the authors who put time *within* the soul run into this trouble. And those who put the origin or ground of time outside of the soul run into other and worse troubles.

Both Aristotle and Kant have been primarily interested in what I have called succession-time, the steady chain of before-and-afters found in nature, though apprehended by our counting. Now is the time to speak of human time, phase-time.

To my mind, Augustine is the greatest writer on time -- and the most beautiful one. Here's another aside: Very broadly speaking, philosophers come in two kinds, those who inquire serenely and hopefully into a subject they long to know and believe they can approach and those who question severely and disenchantedly a matter they think is ultimately hopeless. Augustine certainly has travails of the soul, and I would not be unfair to call Husserl, who takes up two millennia later exactly where Augustine had left off, a fusspot. But both are not so much driven as led by faith in their subject, and I want to say that these are the philosophers I trust and prefer to be with.

Augustine wants to know what time is because it is the human counterpart of God's eternity, the eternity of the God he has just found and acknowledged. But there is nothing exalted about his questioning -- it is very down-to-earth. He loves to sing hymns, and the question is: How do I measure times, the long and short syllables, the lengths of the stanzas? Distances are easy to measure. They stay put while you lay a measuring stick alongside them. But the moment slips away, the past is no longer, the future not yet, and there is no way to lay a time-stick along an elapsed time. Lengths measure lengths, motions measure motions -- what measures time? Here is his answer, as I said, to my mind the most illuminating thing ever uttered about time, a new discovery, as he himself says:

> Time is nothing else but a stretching out, though of what I do not know. Yet I marvel if it be not of the mind itself.

Our mind or soul is distended and that makes it capable of holding time, so to speak. How distended, how stretched? Here is Augustine again:

> This then is clear and plain, that neither things to come nor things past *are*, nor should we properly say: "There are three times, past, present, and future." But probably we should say: "There are three times, a present of things past, a present of things present, and a present of things future" .... The present of things past is memory,

> the present of things present is sight [or perception], the present of things future is expectation.

So we can measure times gone by and times to come because they are now present to us. But the solution of the measuring problem is the least of it. What Augustine has done is to tell what makes a human being temporal, how time is *in* us.

To be human is to be present and to have things present before or within. Yet another aside: Certain so-called postmodern writers, taking their departure from Heidegger, think that this is a very derivative way of approaching human Being and that to think of human beings as containing presences within and confronting things present without demeans the originality of existence. But Augustine does think that to exist is both to be in the present and to be in the presence of things.

Augustine's book on time in the *Confessions* is preceded by a book on memory, and this book is the indispensable preparation for his understanding of time. For there he shows how we can also be in the presence of absent things: We have the whole spacious world, its fields and palaces, within us, not, however, the things themselves but their images. Here you can see how the imagination, as a power for making the absent present, is essential to our inner sense of time. For with it we can have memory of past times and also expectation of future things, since expectation is a forward-directed imagination. And since much of what has happened to us is now present to us or is now recoverable, we can not only measure time somewhat as we do space, which is all there simultaneously. We can also see how our mind is a temporal image of God's mind, who holds all creation together there at once, in the eternal Now.

To be human, then, is to have a mind so stretched that it encompasses in its present both memory and foresight. One way to depict that condition is in a diagram like a coordinate system. The horizontal axis is the time of the world, of Creation; it is succession-time. God knows how it works; we don't. Astride of this horizontal coordinate sits a vertical stretch of line, our mind. Where the two intersect is the moment of sight, of perception, our point of intake for the world. The segment below represents remembered events, dropped out of sight but not out of mind. The

part above represents the dreams and plans we now have for the future -- and that is all the future that actually exists. As the world passes by, our memory line grows longer and our expectation line shortens. Then one day it ends.

Husserl, who actually draws diagrams of this sort, in fact marks one of his lines as the "tug towards death." It is not, however, one of the axes he is marking in this way, but one of the oblique lines with which he connects the horizontal axis of succession-time and the vertical axis of phase-time. These oblique lines show how each perception offered by the horizontal succession-line sinks away into vertical memory in an orderly and continuous manner, without any scrambling or dislocation. Husserl's time-diagrams are clever and complex, and I had a lot of fun -- fun bordering on agony, that is -- working them out. But I didn't give you any handouts, because then you'd be trying to figure them out now instead of listening; I should know.

Many of you will not have heard of Husserl, and I'll say just enough for my purpose. He is the founder of a way of inquiry called Phenomenology. Its chief feature is that is excludes all questions of existence and reality, such as whether time is real. Instead a Phenomenologist pays attention to the appearances within consciousness, articulating and ordering them. Our sense of time is a perfect subject for Phenomenology and Husserl's lecture-series known as *The Phenomenology of Internal Time-Consciousness* is the great first-fruit of his method.

Husserl makes hundreds of acute observations, but his main advance on Augustine is to puzzle seriously over the extent of the present. Recall that the point-Now of mathematics is too skimpy to live in, but consider also that an extended present is going to be part past, part future. Husserl finds a way, fairly technical, to show that there is a discernible immediate past and an immediate future that are so bound in with the present as to give room, so to speak, for perception, so that there is time for a time-sequence, say a melody, to be taken in. He shows how the present has time for the world to impress itself on us.

One last word about Husserl. The horizontal axis, which represented the world's time for Augustine, represents an internal time-flux, a continuous sort of subjective succession-time, for

Husserl. For he is withholding all claims about the reality of the world and its time, and attending only to our inner experience, to our internal time-consciousness. In trying to understand this internal flow Husserl is drawn into questions beyond Phenomenology. The question that finally preoccupies him is the familiar one: How can this flux, which is one aspect of our sense of time and for him the deepest, be spoken of? Are we fluid through and through, or is this flux grounded in a stable form? But how can a fixed form be the source of a flow? Husserl, a man who is willing to admit ultimate perplexity without losing faith in the worth of his problem, says:

> For these things we have no names.

Now is the time for me to say what I think time is -- maybe it would be more sensible to say "how time works."

I think that phase-time is the fountain and origin of all time. Every phenomenon of time is derivative from the fact that we have past, present and future. To me the most astounding circumstance of our temporal life, surpassingly strange but apparently unavoidable, is the crux and center of the three phases: the present. All that is ever real for us, all that is really there, really present, occurs in these point-by-point moments of presence. This is the instant of perception when we see and hear and touch the world. The rest, the long stretches behind and before, is absence -- what has gone by and what is yet to come.

Human life would therefore be very pointillistic and poor if present existence were all we had. Happily there are ways of being that are even more potent than present reality and momentary existence. There is the actuality of imaginative memory and of imaginative expectation. The present of perception is the point of intake for the novelties that the world offers to our senses, but the past and the future are also present to us as images, as memories of things past and plans for things to come. These are the present actualities, the powerfully present absences that give coherence and resonance and significance to the moment. They also make it possible for us to measure time directly, not by observing external motions as of the hands of the clock which never displays time at all, but by the thickness of the image-pictures we flip through or leap over to get to

moment from which we want to estimate a stretch of time. Our memory is like a laminate of transparencies or a carousel of slides, and my claim is that this accumulation we call the past and this projection we call the future *is* what produces our inner sense of time. And this thickening of the present by past and future is what Augustine calls "the stretching of the mind."

Now note that I have described the present as punctual, instantaneous, momentary. And this description seems to be supported by the observations of all kinds of people, perhaps poets above all. The Nows that matter are somewhat isolated -- instants of recognition, moments of meaning. In his book *The Labyrinth of Solitude* Octavio Paz calls the Now "explosive and orgiastic" and wonders how it fits into ordinary historical passage.

But much of the time of our lives passes in seeming continuity, and this sort of time, the time that seems like a continuous passage, usually called duration, has to be accounted for as well. I think it works as follows.

Our present appears punctuated by the ever-varying world and our perception of it. Now we see our friends, now they've disappeared around the corner; now we hear one note, now another. But there is another time experience that we become conscious of when we are deprived of most external sensation or when our inner images are pushed out of sight by fear and anxiety. Or we can deliberately close off our senses and empty our minds to concentrate simply on our inner duration. What then comes to the fore is a sort of inner pulsing, the very beat of our mere consciousness, empty life itself. I am trying to describe the soul's aboriginal counting that both Aristotle and Kant discovered. This inner beat then is the origin of that succession-time that is mirrored in the before-and-after of physical motion and that plays so large a role in our practical life.

Now most of the time we are not taking note of this pulse, or paying much attention to our inner life at all. The beats recede and merge as in a long perspective; time's passage appears continuous and acquires all the characteristics and problems of a line in space. Then,

retrospectively, time is thought of -- not felt -- as a continuum that is continuously cut by a point-like Now, the kind of Now in which nothing can happen.

So my description of time, which leaves time as what I call "a well-specified mystery," ends with the point-Now. And that is where a review of the various pathologies people attach to the phases of time begins. I'll give the sketchiest summary of our time-troubles, partly because time is short, partly because every one of us has a lot of personal experience with this aspect of time, and it will make a good subject for the question period.

One way, then, to think of the way people wreak havoc with the perceptual present is that they treat it as a mere, point-like Now, monotonously empty and featureless, while racing unrestrainably forward. To try to live in this Now is to long to fill it with strong stimulation and increasing novelty. Now-life is the pathological counterpart of present-life.

Similarly some people deprive themselves of the image-filled memory that gives the present its anchor of significance by rushing to keep up with novelty and trashing not only their own past but that past which their communities have in common, their external memories.

And finally, some people are so dominated by a future that is supposedly coming at them that they give up what they really care about to make themselves into ready servants of this oncoming power. But according to my understanding the future is nothing but the dreams and plans *we* currently have, and as far as the humanly-made world is concerned, nothing is coming but what we actively or passively agree to. It is that passivity which is, to my mind, the greatest time-pathology.

And now time's up.