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THE INHERITORS OF INDUSTRY

ECODYNAMICS

OF

A MECHANIZED WORLD

by

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Lowell Lectures

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## PREFACE

Society in the machine age cries out for a faith and an ideology of its own. It has not found them yet. Pseudo-Gothic still covers its new skeleton of steel and plumbing; or, it lives from hand to mouth on the passing sensations of war and revolution. Two provisional solutions have already proved failures. One is the way of simple prolongation, the other that of boundless simplification. By the first I mean the way of theology and the humanities: to go on with the reverend values of the classics and to speak of this our modern society in the manner of the classics, as though nothing had happened and social policy and individual standards could simply be derived from Thomas Aquinas or Plato. The other mode of thought, the way of oversimplification, has been the way of the natural scientists. They approached man in modern society not as the inheritor of Christianity and humanism, but as the descendant of albumin and of the ape. They replaced the secrets of the soul by the internal secretion of the glands, and that was that. In both cases, all attempts to master social problems were frustrated by the narrow presumption that the classical libraries or the chemical laboratories were self-supporting homesteads for the modern mind, were in fact its only sanctuaries; whereas they are only a section of the whole environment in which we have to live and the holy ground on which our existence is based.

Of course we read the classics and our glands secrete-- but there are other things between heaven and earth, as for example capital and labor, electricity and steam, death and birth control and law and politics.

In these lectures we have condensed a quarter of a century of experience in church and State, factory and army, adult and student education, law and economy. It was our intention to show that a new body of human questions and social rules can well be derived from our modern ecodynamic system, which takes its definite departure neither from God nor from nature, but from man and society.

There is, of course, no reason for a childish idolizing of man or society in themselves. But both can claim to be treated neither as theological "admissibles" of a somewhat objectionable character nor as physical and chemical molecules of no character whatever, but as the cheerful and mourning, bold and trembling inheritors of all the life known to us.

## THE BLACK MAGIC OF THE TWENTY-FOUR HOUR DAY

Ladies and Gentlemen,

Let me begin with two little incidents. The other day I had to look for a man to revise the typewritten copies of a manuscript. I asked for somebody in the students' service at Harvard. They gave me an address and informed me that the regular pay was such and such an hour. The same evening I was with an old and famous colleague who happened to be talking about his student days. He had had to work his way through college, and so one day he was asked to use his mastery of German to read Luther's version of the Bible to a professor who wished to restore his knowledge of the language. The professor was William James. Things were arranged, and the reading went on through the winter. I asked him how he was remunerated. He replied: "I was paid monthly, of course. Any other form of payment would have seemed shocking in those days." The amount of money happened to be about the same for both students; the only difference was the way in which it was computed.

These two stories do not seem much in point for the problem of our lectures: ecodynamics of a mechanized world. And yet I think they illustrate better than anything more ponderous could do the aim of this attempt. Both stories involve money and economic problems. But they do not deal with money as money. They deal with money as a social symbol. Salaries can be paid by the hour or the month. This is a social, not an economic question. This side of industrialism was long regarded as of minor importance and left to the consideration of economists and technicians. Little literature exists on the social framework of an industrial society.

The social implications of industry have only recently become

definite and inescapable for all and everybody, including poets, clergymen, and professors of the fine arts. Europe is no longer producing pre-industrial men, America is no longer producing pioneers. The pre-capitalistic forms of society which were capable of reproducing their values and regenerating their types of character are disappearing. Puritans, gentlemen, citizens no longer come from Quincy or Salem in the old fashion. These types did not cease to exist when the industrial revolution came. The industrial revolution invaded a pre-industrial humanity; but for that very reason it relied on the people produced by this pre-capitalistic world for another hundred years. It is because these hundred years are now over that we ask ourselves how to regenerate values and men within the industrialized world which surrounds us; for in the future nothing can enter it from outside.

The first maxim of this world is its uniformity. Its problems are uniform. Its confusion is uniform. Its time and space are of a special type. The change of time and space resulting from industry can best be described in little things. Comparing the modern wage-system with the forms of income in the past, we can perhaps learn how to wield the powers of time and space which surround our society like a magic circle.

A worker's day was, in former times, a day of his life. Honorary work lasted a year. Longer periods of work had no objective purpose, but served to give a man's personality a status of its own. The monthly salary signified one fraction of a life-time income. It trained people for life-time purposes.

The new calendar is quite different. Even where salaries are still paid by the month or the quarter, the old significance no longer holds. The differences of day and night, of seasons and generations and ages, have been abolished. This day has 24 hours, 365 days make a year, and 100 years make a century in the course of the stars. The new

calendar is the symbol of an economic revolution. Such a calendar never existed before; never before was the earth thought of as a tiny satellite of the sun. It is the calendar of costing, of anticipating the time for work. As soon as we work in shifts, work is no longer calculated ~~by~~ <sup>on</sup> the services of known persons, but by the multiplication of hours of labor performed by interchangeable labor-forces. The system of work in shifts has only invaded all social life in the last thirty years.

The calendar of the costing department disconnects the working time from the man who does the job and relates it exclusively to the piece of work. The hours of man's labor are now without relation to each other. The future is transformed into an anticipated time for work. The new solar calendar makes no allowance for discriminating between past and future. The nervous breakdowns of our present industrialized society result from the appointment book, and from a past which is encroaching more and more on the future. Working time is explored territory. Man needs a balance between the explored and the virgin territory of time. But science has scorned the power which emboldens us to clear our calendar: faith.

I am going to speak of the social effects of the modern economic system. Since the word "social" has become rather pale, we can perhaps describe the term "social effects" by saying that the modern economy causes certain changes in government, art, science, family, municipal administration, friendship, and finally in the individual member of society.

For our purpose we shall deal with the world of industry and trade, but not as economists or technicians or salesmen. We shall not discuss the business cycle, except perhaps for the question of how superstitious scientists can be. We shall not discuss high or low wages, nor cheap prices for raw material. I have no solution to offer for the depression. Around this corner there is no prosperity awaiting you.

I warn you from the very beginning that I have nothing to say about investments or interest rates. I am bold enough to see things as bad as they are; but I am not bold enough to give any medical prescriptions. The secret of society is that hundreds of speakers must have raised the same question and made the same remarks before you can expect a real change.

Nevertheless, I am passionately interested in the economic system and in modern technique because it affects men, myself and everybody else, in their daily life.

It is my conviction that we are only beginning to realize the repercussions of an industrialized world on man. This may seem a ridiculously belated remark. The first and last thing I hear in this country is that Americans know all about industrialism, that you went through all these experiences at least thirty years ago, and that in a country of skyscrapers and Ford cars society knows everything about industry. But this will be just my point and my question in these lectures: How can a society live and exist in which everybody knows everything? We shall see that industrialization has done precisely what my friends tried to convince me of: they are people who know everything and who have no secrets. Can such a society survive? But I wish to defend my thesis that the <sup>effect</sup> ~~reaction~~ of industry on mankind was really never studied during the nineteenth century. Here is my defense. So far as I know, no attention has been paid to the evolution reflected in my two stories about the students. I know of no book which describes the invasion of the lives of students, professors, secretaries, parsons, medical assistants, etc., by the system of wages per hour. I find no handbook on economics which tells that the first coal-miners' strike in Germany on a large scale broke out because the old type of collier and pitman was not willing to accept the degrading label of "worker" or "miner". It was not a strike for higher wages which began the series of strikes! But the textbooks mistake all strikes for strikes over wages. This lack is

in itself an indication that the economist and the people in engineering have had the field pretty much to themselves.

Second: it is only in the last twenty years that the governing class and those who ought to do the thinking for the governing class have faced a situation in which they could not draw on a pre-industrial humanity and its established values. Up to that time, the leaders of the community could so to speak alternate between the fruits and products of the new order and the products and goods of an older age. A regular stream of highly trained craftsmen went into the factories from the small artisan's workshop, and a regular stream of skilled European workers migrated to this country from the Old World. Even today, I am told, in special American industries, the problem persists of recruiting masters or foremen from Europe because their kind is not reproduced in this country. A pianoforte worker, for example, may find a good living here. But when he dies or retires, the next man again has to come from an old tradition. Each time, the chain is broken when this specific worker drops out. Here the industrialized world is still based on a civilization of the non-industrial type--in this case on a civilization with real apprenticeship and guild traditions of masterhood. In Europe, up to 1908, two-thirds of all skilled workers in factories had still been brought up and trained in a non-factory environment.

Now this held good not only for the factories and the crafts, but for the liberal professions as well. Seventy years ago two-thirds of the students in a college would come from farms. That is to say, they would have been educated in a pre-urban and pre-capitalistic environment. This environment had a strictly local character, with a concretely visible local government of selectmen. Nothing was abstract in the economy of such a place, whereas one of the outstanding features of modern economy, even in the village, is that the economic relations of the First National store, the bus company, the Western Union, which the children see at work in their community, are trans-local and cannot be judged or understood by glancing at the men and buildings in the village.



It is only today that the colleges have begun to be filled with students who in overwhelming majority come, not from homes and farms, but from schools and apartment houses, and who have been surrounded not by a local economic unit but by a nation-wide, abstract economy. In spite of this fact, colleges go on teaching as if their pupils were still villagers who must be equipped with a knowledge of the world outside.

Not only are factory and college faced with a different type of man today, but in an emergency or for a specific task they can no longer draw on any older type of personality. We are the first generation which can rely on nothing but an industrialized world.

Throughout the last century two civilizations co-existed. The so-called industrial revolution was no revolution, because it merely added something new to the still subsisting old values of society. Thus an escape from the technical world was still possible. The poets could still talk in the language of an older age. It was remarkable during the World War how contemporary style was incapable of describing the reality of the technical war, with its abstractness, its "emptiness of the battlefield", its big scale. So much for poetry. To return: For the adventurous spirit of the youngster, enough virgin territory used to be left to satisfy the imagination. Finally, Americans could go to Europe. All this will no longer work as a safety valve. We are definitely living in an industrialized. A professor of education in Teachers' College, Columbia, published a book in 1931 which says of this world:

"If from a car window you see only waste land, forests, and swamps, you see nothing.

Waste lands are clay, sand and stone.

Forests are beams, rafters and ties.

Peat swamps are electric current."

And the book goes on to say: "We need factories not

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only to refine iron and steel. We also need factories to refine people.

This quotation helps us to recognize our real situation. The refining of people, now, has to be done within an industrialized world, in something like factories, <sup>educational</sup> the institutions ~~for education~~ will have to be contemporaneous, in their basic elements <sup>with</sup> the industrial environment. Their values will have to stand the test of being understood and tolerated by the masses of the people who live under the factory system. Henceforth no interesting Carusos or Einsteins or James Bryces are to be expected from <sup>the</sup> exhausted old civilisations of Europe. The uniformity of industrialisation has uprooted the folk-traditions of the Old World across the Atlantic. Perhaps for some decades certain interesting types, craftsmen, painters, etc. can still be imported. But they will be exceptions only.

Up to the World War the industrial society was invading the territory of a preindustrial humanity, and using the moral safeguards and inhibitions, the physical instincts and talents of the pre-capitalistic age. This exploitation of the past has reached its <sup>and</sup> ~~peak~~. Everything, even cooking and washing, writing and calculating is going to be done by machinery. All Romanticism is useless in present-day Europe, and all romantic Europeanism is becoming useless in America. The uniformity of industrialization was not complete before 1914. Man himself still had many standards of quite a different origin and type. I suppose <sup>that</sup> an American of my generation was still brought up in the ideology of Alexander Hamilton and Jefferson: for his personal aims and for his personal ideals he would, like Theodor Roosevelt, look to the self made man <sup>of a</sup> hundred years ago.

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In the uniform modern civilisation the ideal of a self-made man already seems rather destitute of meaning. Men are made by circumstances and constellations, by the mill of crisis or prosperity. The masses no longer share the notion of being self-made. They expect to be made by the industrial civilisation around them.

For the first time, man ~~is~~ himself is alone with industry and nothing but industry. All the rest is a great memory, but one which is unable to provide us with the men for the future.

That is I suppose why we all are beginning to reflect on the social framework of an industrialized world.

In these lectures we leave behind us any assurance of poetry and romance, of glamour and adventure in an undiscovered or a new mechanized part of the world. Neither the peasant songs of Bavaria nor the potentialities of Mount Everest shall distract us from our question. We overlook the few white spots on the map of the Sahara and the Arctic Zone, and the little oasis of folk-dancing in Croatia. We anticipate the final industrialization and organization and ask ourselves what such a world is going to make out of man and society.

We have all embarked on this common civilisation. We shall neither deplore it nor try to desert it. We wish to share its responsibilities. But on the other hand, as we can not rely on old beauty, old values, old ways of regeneration in bygone worlds, we ask for beauty, values and ways of regeneration from this new world. We are ready to give up the old forms of the evening spent in the family, the divine service and the complete quietness of a Sunday, the genius of the undisciplined child of nature, the adventures of Melville in the South Seas. But we wish to discover equivalents for all these losses.

lents for all these losses in one way or the other. If as we know, there is little in the world which cannot be discovered and has not been discovered, we will shift our curiosity from the world to society and try to discover its potentialities for existence on an industrialized globe.

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The very uniformity of this industrialized world all over the earth is what may baffle us most. And it is by this uniformity that society is so deeply influenced and confused today. The uniformity of Russian, Italian, German, British and American problems need not be stressed. It is obvious. Some hundred years ago, there was a great variety of situations according to climate, fertility, religious dissent, war, famine, diseases etc. Today unemployment is one ~~with~~ <sup>problem</sup> great situation, distribution is the other. The Russians for example are in no wise in a different situation from the other nations in regard to these two problems. They are their problems also. The attempts to solve them differ in the different countries. But the confusion is everywhere. Everywhere people are groping to solve it. Everywhere people are jealous of other nations' solutions. The uniformity in envy, jealousy and confusion is tremendous.

It is a uniformity in time and in space, In both <sup>spects</sup> ~~regards~~, modern man lives in a new world compared to the world of the past. That is why my lectures will mainly ~~try~~ have to deal with the new time and the new space created and needed by the world of industry.

By describing the new time and the new space we will build up a kind of diagnosis for the case of society, under the domination and in the era of industrialization.

The methods of an industrialized world are pretty

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well known. Thus it may seem mere prating if I take several hours to remind you what this modern world does to man. Nobody of course is safe against talking solemn nonsense. And I think a civil engineer might be rather bored by the idea that I am going to tell him what the schedule in his factory really means and what kind of a place he really works in. All I can say is that I have lived for more than ten years in closest contact with technicians from the worker to the managing director, that later on I <sup>was</sup> ~~have been~~ the colleague of leading engineers at three different Technical Institutes. <sup>Furthermore,</sup> I have shared the life of coal miners <sup>lumber-men</sup> and stone masons; we have carried out quite a lot of different <sup>enterprises</sup> ~~jobs~~ together. And not one of them was conscious of the specific character of the time and the space in which they worked and lived.

At least they were incapable of expressing it. If I fail therefore, I have at least ~~tried~~ the comfort of having attempted what they have not even tried. I know that it will take a whole new generation to develop fully the power and capacity of men to conceive and to express the secrets of the world into which we are bewitched by the modern form of production.

It is the small things which betray most clearly the influence of an order of things on man. You remember the two students one paid by the hour and the other by the month. These two trivial cases may reveal to us the new kind of time in which we are living today. At first glance the difference seems very unimportant. The ~~in~~ two boys got the same amount of money; in one case it was arrived at by adding 50 cents to 50 cents ~~for~~ twenty five times, in the other ~~same~~ a monthly salary was fixed which covered twelve to fourteen evenings of two hours each.

It takes, perhaps, some closer consideration to perceive

the full meaning of the evidence. The month of the one and the hour of the other belong to completely different conceptions of time.

I must ask you to follow me into the world of which this monthly pay was only a last remnant, the pre-capitalistic world. I am not going to idealise it in the least. Let us look at the poorest devil among the free men of the past, the day labourer. He was on the lowest rung of the social ladder. When Odysseus visited the famous hero Achilles in the land of the shades, Achilles was so outraged at being dead, that he was ready to change with a day-labourer if he only could live again. Thus, man's pride would not be deeper depressed than by ~~pay~~ being paid by the day. He would receive pay for a day which lasted from sunrise to darkness. A full day's work was customarily counted as including four breaks <sup>for</sup> ~~meals~~ and rest. The man would work in harmony with the day of his environment. ~~It would rather than a day and it is which~~ A day was the smallest unit of his natural life. He got up when everybody was expected to get up. He went home when the evening bell rang. Sundays or ~~the~~ days of a funeral or a wedding in the village were not days for work. Saturday afternoons and evenings from 2 o'clock on were excepted also. The social environment had organised the time for work, ~~we~~ we may say in a rather inefficient and subjective way as a part of the life of man. Many things were not done in time because there ~~could happen~~ <sup>could occur</sup> to many weddings or holidays. The worker's day might be a sixteen hour day in summer or a seven hour day in winter. However, <sup>even half</sup> a day was called ~~it~~ a day. Any subdivision of the day, even for a humble laborer was meaningless. For man's personal life does not reach under one day. From sleep to sleep, one day is the shortest conscious and waking unit. It is, by virtue of

this continuity of consciousness, ~~a~~ natural unit. But the word "natural" means here : in relation to man's nature; <sup>Whatever point</sup> of view we may take toward man's nature whether we <sup>look at</sup> regard his frailty and weariness or his vigour and strength, the fact remains that his consciousness from morning to evening made a day a day and transformed the day into the smallest possible unit for any scale of wage-fixing.

In general, a man who had no property, was not paid by days. ~~but~~ He got a salary by the month or the year, Parsons, state officials would be paid <sup>in</sup> this way. Practically even the salary for one ~~year~~ was by no means a payment for this year. It was something very different. The <sup>least</sup> phase of a year was used for two special purposes. First of all, it was used as a period for probation. A contract for one year meant a contract for a first year. After a year people would know if they ought to collaborate permanently. <sup>Secondly,</sup> ~~the~~ one year was the favourite term for honorary services to be rendered to the community. A years <sup>Service</sup> ~~appointment~~, as a mayor, a ~~member~~ of a jury or a committee was a <sup>gentleman's</sup> contribution ~~made by~~ ~~a gentleman~~ to the general cause. A gentleman would not accept pay for one year's work. A one years period is still used in many institutions for such a purpose.

Regularly, month, quarter and full year payments were meant as subdivisions of larger units of time. For the unmarried fellow, three, five and seven years were <sup>(a</sup> normal <sup>term)</sup>. We shall reconsider their social value of these time-spans in the second half of our lectures. For an adult, <sup>a husband</sup> the year was meant as a subdivision of his life. When Hawthorne was made a consul in Liverpool or when Herman Mel-

ville became Inspector of Customs in the Port of New York, their monthly pay was a link in a chain, a drop in one stream of income which they could anticipate to get <sup>thus</sup> for the rest of their natural lives. This natural life might last ~~an~~ other ten or twenty or forty years. In those days, man's ~~health~~ <sup>life</sup> was much more exposed to dangers and the duration of a man's ~~life~~ <sup>life</sup> was utterly fortuitous. Thus the appointment was clearly related not to any objective scheme of production but to this specific personality whom a responsible politician wished to insure against further troubles. A life-time appointment expresses clearly the personal character of a job. To appoint anybody for so long a time may seem frivolous if we regard only the objective work which this man is to perform. Therefore the life-time appointment obviously neglects the objective side of the world's production and centers around a man's personality.

But by doing so, it gives a peculiar significance to the monthly income. This monthly income is looked upon by the man who receives it regularly, as a payment on an instalment plan. A 100 dollars a month ceases to be a 100 dollars if I know that I am getting it for twelve months. The German schoolmaster and all the other German civil servants were famous for the miracles which they achieved on their ridiculously small emoluments. The thrift of such an official has always been astounding. Being the husbandman of his whole life-time, he ~~can~~ <sup>could</sup> carry income and outgo backward or forward over many years. He would set aside on the first of each month or each ~~year~~ quarter, the larger sums which were the key to the larger aims of his life. And no temptation of the present moment could lead him to cut <sup>tr</sup>ail amounts on which depended, not his daily life,



but his whole life-time. Out of 1500 marks, 600 dollars a year, a German teacher would cheerfully save two hundred, in spite of the fact that he was underpaid. For to him, thanks to the way in which he was engaged, these two hundred marks did not represent a daily or monthly wage, not even a bonus for Christmas, but were there to make possible the dream of his life--say that his son should have an education and go to Heidelberg. It pays to look at every penny twice just now, when one can count on the dollars year in and year out for twenty or thirty years. A man is encouraged to save for far-distant goals: his son's education, his daughter's dowry, or his own silver wedding-trip to Italy. The years being only sub-entries in the record of this lifelong annuity, the salary payments of the public official were really a biographical thing which made his life, economically speaking, a single unit. Through this system the highest type in the wage-earning class, the life-time official, in spite of the smallness of his reward, could rival with the gentry and the wealthy citizen. He could really feel like a free man, since to a certain extent he surveyed and disposed of his life-time.

To conclude this side of the picture: Fifty years ago, the student at Harvard who was paid by the month was treated as a candidate for a lifetime appointment.

The other student, the one who came to me, was handled in a more modern way. Modernity has a calendar of its own, completely detached from the old day in the life of a laborer or from the lifetime of a man like Herman Melville. This calendar, which is recommended by the American Chambers of Commerce and which they are trying,

to extend over all the parts of our life  
 by a subversive and revolutionary propaganda, contains a 24 hours day, a 365 days year and, sometimes, periods of five or ten or thirty years, the latter only for a re-balancing of the budget or for <sup>the</sup> planning or the amortization of loans. All these periods are taken from the solar ~~year~~ <sup>from</sup> calendar, in a nature in which man no longer has a voice. The day, the year and the thirty years of this new industrial calendar are something quite new. Man does not have any special knowledge of an equality between the 24 hours of a day. His watch does. By our watches we are harnessed to the triumphal car of the new calendar. Night and day do not exist for this calendar. The interest on the capital invested mounts up incessantly, steam, electricity, light, and coal serve day and night with perfect equanimity. The principle of modern industry is the twenty <sup>four</sup> hour day. The system of shifts is the true expression of this calendar. It is not my time, but nature's production time, a thing foreign to me, which governs the industrialized world. Day and night have no meaning for the railroad, the telegraph, the smelting furnace or the taxi business. Even astronomy is no definite limitation on this new calendar. One of the great European banks charges interest for the 29th and <sup>30th</sup> ~~thirtieth~~ of February, for the sake of simplicity in book-keeping. Therefore, this new solar calendar has little to do with the earthly calendar of former days and should not be mistaken for it. Its 365 days are all equal. They know of no holidays. The 365 days go right on, as a sum of interchangeable units.

And the greater periods again have nothing to do with the life of man or real generations. The term of the war debts originally extended to the year 1987. So it is not that the modern calendar is unable to look out for long periods. Only, these periods are completely separated from their significance for man. They take no account of the sequence of generations, fathers and sons and grandsons.

This solar calendar is a calendar which is indifferent to man. Its "nature", its solar system, treats man as dust on one of the smallest planets. It is a calendar of Copernican scope, destroying or neglecting man's week and sabbath, man's Christmas and Easter, man's natural divisions of 3, 5, 7 or 30 years. That is why the Peace did not come in 1919. It was a mere superstition to believe that peace could return, after five years, by the stroke of the pen. People looked at the abstract calendar and used <sup>s</sup> speed laudable in car-driving but fatal in human affairs. Every thing was done too early at Versailles.

This is no accident. The new calendar is the symbol of an economic revolution. Perhaps you assume that I exaggerate. One may point to the old rural calendar of the farmer. Was the solar calendar not an old institution? <sup>Since</sup> ~~As~~ much depends upon an agreement between us on the novelty of the present <sup>calendar</sup> character, we <sup>had</sup> better analyze the allegedly solar calendar of the peasantry. It is true, the farmer had <sup>his</sup> special chronology. The years regulated the harvests and therewith the most important sources of income for the year. And man himself, as <sup>a</sup> body and a soul, was touched and changed by summer and winter, cold and heat, like the rest of the surface of the soil. Humus, = the soil, and human being are interrelated. Soil and man are alike caught in the same calendar of the seasons, differing in

every zone and and varying every year. And so humanity lived within this environment as a part of it, not as its entrepreneur. The harvest home was not a festival at which the peasant looked proudly upon what he had done with nature; it was a festival of thanks for the harvest, because peasant and wheatfield had both longed and prayed for fertility, had both thriven and been richly provided for. <sup>farmer</sup> This year was therefore economically not a general year for the whole earth. It was in its specific dates for harvest and planting the normal time -span for a local group of people. The simple man lived the year of the earth, not of the sun of Copernicus. He was happy when the harvest was finally realized again. He had hoped for it; but he had not anticipated it.

Our analysis has gone far enough to define the difference between the old year and the new calendar. The old calendar anticipated man's future life, but it could only hope for the life of nature outside. Modern economy anticipates the work of outside nature and hopes of man that he will be all right even without any anticipation of his future.

The ~~max~~ modern world does not employ labour an hour longer than it is needed. The liberties of the French revolution gave ~~the~~ the entrepreneur the liberty of engaging and discharging labour by the hour. Only in this way is calculation of costs per unit of product possible. On the basis of the single piece the "productive" wage is calculated, namely

that which must be paid for the hand labor on the production of this piece. And there one arrives at fractions of the older unit of daily wages: at hours, minutes, and eventually seconds. <sup>in the Taylor system</sup> But that is not all. It seems impossible, at first sight, to split up the labor of management in a factory in such a way. How can one tell, with 1000 pieces of goods coming off the looms in a day, how much of the engineer's, the draughtsman's, or the salesman's salary is to be assigned to each piece? especially when two hundred of this thousand may demand the most loving care of the factory management, while the other eight hundred run through mechanically, without any special effort on the part of the directing force? Cost-accounting proceeds, nevertheless, by adding these "general" expenses to the productive wages as extra charges, at the rate of 100, 200, or 300 per cent. Granting that this is only a way of figuring, still it is the ideology of factory cost-accounting. It is clear: the laborers who work with their hands carry the whole structure, and the gentlemen of the pen, the white-collar proletariat, are looked upon by the entrepreneur himself as a superstructure, the cost of which is reckoned on the basis of the productive wages. The ultimate unit of pay is the working hour of the man at the loom.

This man receives his pay-envelope at the end of the week-- in other words, a combined wage made up of piece-wages and hourly wages. The manufacturer makes his own calculations per piece, but he pays in terms of contract or hourly wages. This makes no difference, however, for the principle ~~at~~ which rules this wage-system, and which was unknown to pre-capitalist economy. This principle runs: wages may be paid to labor only insofar as it produces per piece and per hour. Now both these units reach below the day, the smallest natural unit in the wage-earner's life, to an infinitesimal

standard unit of work, which is quite meaningless in a human sense and was only invented for purposes of cost-accounting. A year is the minimum unit of life; only beyond it does a man become conscious of himself. "Only what outlasts a year within us is true and genuine." <sup>Comins</sup> A natural period of life encompasses from three to seven years.

From these higher time-units the worker is excluded by the fact of the wage-system. The present moment, with its fleeting form, is pressed upon him as the essence of his work. The world will appear to him in consequence as a sum-total of such moments--and as an incalculable sum. His 2400 hours of labor a year, from first to last, are disconnected. His whole attention, then, ought to be concentrated on bringing them together. But it is asking too much to expect him to see from 1 to 2400. And this has a practical consequence. It means that all concern for the distant future, sickness, accident, old age, must inevitably be taken from the worker step by step. For the years beyond the present, and for his lifetime, he is placed under guardianship. Only the concerns of daily life are left to his responsibility. He is only half of age. Expenses of less than a year's duration he still has to meet out of his wages. For the rest, unions, social workers, charity and social policy take care of him. And as soon as such a paternal socialism is established, the worker gives up all ambition and enters the Lilliputian calendar of hours. He breaks down. In 1918 the workers marched through the streets of Berlin with a placard: "Eight hours work, eight hours leisure, eight hours sleep". They had capitulated to the new calendar. They had become real proletarians. They now measured their own future life by the methods of the costing office, which has nothing to

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do with the life of man but only with the anticipation of hours for the achievement of a piece of work.

Let us take an example. We are planning a bridge. The bridge requires 715,000 units of work, which we call hours. These hours can theoretically be distributed among 715,000 men, in which case each man would work one hour, or among 71,500 workers, or among a thousand; in the latter form of production a man would find at least three or four months of work. But the hours for which he gets paid during these three or four months are not portions of his personal three months. On the other hand, they have equally little to do with the life of the man for whom he works. They are 715 fractions, each one makes sense only in relation to 715,000; fraction 300 and fraction 533 have the same significance as fraction 1 or 715. They do not get a new quality from their large quantity. They are an imaginary scheme which can be realized in many diverse ways, in three months or ten years.

The walls of a medieval city were built more or less in ignorance of the time it would take to erect them. The objectivity of the modern process of production allows us to handle work like an accordion: we can compress it or protract it lengthways. But we always remain in the abstract world of anticipation. The time is always just a means to an end that dwells beyond this space of time which we divide by the hour. In calculating by the hour, we treat time as a means to an end. The man who is paid by the month lives his full life during his month of work. There is nothing outside or beyond it. The man who is paid by the hour lives in a time which is treated as previous to the fulness of time. By the very fact that it is a time anticipated in relation to a result, it has no meaning in itself. We are all well acquainted with these fragments of time

which are endurable only because we are aiming at an achievement, say an examination. The hours spent in typing these lectures have no meaning in themselves; they are serving an objective result. The difficulty begins if I begin to type, not my own lectures, but those of somebody else, if I begin to devote my hours to aims far beyond my understanding or approval, and if I remain spellbound by the calendar of the costing-office.

Whenever a man is forced into this way of thinking by hours, he ceases to be a citizen and becomes a proletarian. Year and day are a citizen's interest. Lifetime and eternity are a Christian's interest. ~~To take~~ <sup>Taking</sup> an interest in hours makes a man into something new. Do not think that we can reenter the larger home of the city or the church by piling ten thousand hours one upon the other. I have shown that the calculation is always related to an external piece of work, a house, a wall, a sewage system. Nowhere does it meet man's life except for the single hour by which his work is calculated.

In the Russian primer for the Five-Year Plan Mr. Ilin, a Bolshevik engineer, says: " We need machines in order that we may work less and accomplish more. By the end of the Five-Year Plan the working day in a factory will be reduced by fifty minutes. If we assume that the working year consists of 273 hours (not counting rest days and holidays)



the worker will labor 227 hours a year less than he did at the beginning of the plan ".

The new solar calendar trains man to think of the future not as something new but as something that can be calculated in advance.

Future, in this world of economy and technique, is ~~not~~ the prolongation of the past. ~~not~~ If the former civilisations had dared to think of the future as an annex to what we know about the past, a special grammatical form for the future would probably never have been invented. Real future in its proper meaning implies a change in quality, a surprise and a promise. To live in the future means to be indifferent to present hardships.

In America the future was such a deity because it meant an unknown life. The solar calendar of commerce is pedantic. A witty banker in Berlin <sup>(once)</sup> made fun of it in the following <sup>incident</sup> ~~story~~. He had a conference with the president of the largest German electric Company, and after two hours they saw that they could have to meet again. The industrialist was rather self-conceited and explained how terribly <sup>busy</sup> he was. Every day he was completely booked up. Every hour was <sup>practically</sup> taken by meetings, consultations, committees and journeys. It was now January and not before April the 16th could he find a free day in his appointment book. Yes, the 16th of April, would ~~that~~ suit him. Would it suit the banker too? Bored by this pompousness, the banker said calmly: "I am sorry. On the 16th of April I have a funeral!"

The abolition of the real future is the price we pay for over-leaping the calendar as though the days to come were as much our ~~as~~ days as the ~~days~~ of the past. He who treats the future as his private property, never gets the full benefit out of its character of regeneration. ~~It~~

Now an adult cannot help treating his future as a logical result of his past. He cannot help borrowing on his past for half a year or more ahead. But by that he shows that he has little real future left over. For the time he is booked up in advance, no real future can enter his life. For by being booked up we prevent the book of his life from ever being completely rewritten. Once in a while we must cancel all engagements, clear the whole calendar. If we do not do it, something will happen. Under the pressure of too much anticipated time, modern men have found a way out. Our soul, overloaded with so much past, replies by a nervous breakdown. In minor cases, the providential attack of flu which we always catch at the right moment helps us to clear our calendar. By these devices we resist the invasion of the future by the past. But the important thing is that we should realize how much poison gets into our life from this invasion of pre-calculated time. It is like upsetting the sound equilibrium between an organized time and the free space of our unexplored future. This poison of too highly organized time has been felt to be fatal in every age of history. St. Francis of Assisi tried, therefore, to live his days as fioretti, as little flowers. The Fioretti of St. Francis are very often quoted today: people think they are a pious booklet. But "fioretti" is no sentimental metaphor. Francis was perfectly serious. Like a modern psychiatrist, he knew very well the ruinous results of a situation in which the past encroaches upon the future. Each day must be freed and lived like a new present, unknown, unheard-of, incalculable, virgin territory. Each day Francis lived was a new flower.

The modern variation of time which we call working time is explored territory. It is an anticipated time, the time necessary for production. It is reckoned backwards from a certain point which

which we have fixed in the future. He who is caught in its schedule belongs to a framework of thought which was arranged in the past. The framework of an industrialized world leaves the cog in the machine in the precincts or antechamber of real life, in a pre-arranged world without a future. The question arises: where is he going to find his future?

## Second Lecture

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### MODERN TECHNIQUE A RESTITUTION OF NATURE

Ladies and Gentlemen,

Let me begin with a confession of sins. After the last lecture one of our friends here came to me to ask what I had had in mind. I said: "I hope we shall find that out in the following lectures." Of course that did not satisfy him. He insisted on knowing on the spot what I had meant, and asked: "You are, I take it, against planning?" Laziness of mind and the wish to get away betrayed me. I sighed, "Yes, I am against planning."

I should not have said so. I did not really mean it. To-day I even wish to show the grandeur of planning. It is too early to judge the situation by terms like "good" or "bad", as my friend wished me to. You remember that we discovered a magic calendar in the bewitched world of today, an objective solar calendar related to objective ends. We stated that in this scheme the hour is a fraction of the imaginary plan evolved in the costing office. The hour for which a man is paid is not a part of his life, but a part of a hundred thousand hours necessary for the building of a bridge. I am told by a friend that the English language reflects this situation. A worker will say, "That's nothing in my life." And he is right, because in his life the important fact is the biological and psychological unit of day and year. His first and his hundredth and his thousandth hour are completely different. In the calendar of production they are not different, because they all entered the production plan at one and the same moment of anticipation. The hours of production are treated as though they were lying in a storehouse, piled up, millions and billions of hours. The hours of men are anticipated like natural forces of which society can dispose at any given moment.

It is at this point that we can leave behind us the new calendar which has bewitched us and enter the no less magic circle of modern space.

We are surrounded by this space when we pass the green lights that regulate <sup>traffic</sup>. We are accustomed to forget it in the lecture hall; but I was reminded of it recently at a large conference in Washington. A thousand people had occupied the hotel for three days. They had installed their registration office in the lobby. The hotel staff seemed to be devoted heart and soul to this conference. Yet at half-past nine in the morning the officer presiding at the breakfast-table rose and announced that at ten o'clock this room had to serve for another meeting. When I made my address in the evening we had the big hall from eight to ten. The floor was mine from nine to nine-thirty, the next speaker came from nine-thirty to ten. But the chairman was agonized because my predecessor did not finish until ten after nine. The situation seemed especially awkward because we were in evening dress. A man in his dinner-jacket always has the feeling that he is the last and ultimate actor on the stage of that day; and to be put behind the bars of the schedule, even in our long tail-coats made us three think of the three men in the fiery furnace. We did at least feel like loaves in the oven.

In the radio station this cruelty is concentrated. Any man who is invited to speak there would like to think of himself as a kind of star. The broadcasting program is, so to speak, a collection of stars, of people in dinner-jackets and evening dress. Each of them is a personality. With this feeling of being prominent, the speaker arrives at the broadcasting building. He is ushered into

a room where he can listen while his predecessor speaks on poultry. He himself is going to speak on poetry. He has 22 minutes. When he finishes he ~~yaks~~ gasps for a living soul who may have listened and can echo his remarks in a sympathetic way. Alas he has spoken into an abstract space, with anonymous listeners, a space which for 22 minutes connects him with the whole world and in the 23<sup>d</sup> minute disconnects him from the whole world. You feel as though a giant's paw <sup>suddenly</sup> has closed an iron door in your face. Instead of a friendly echo an employee praises you for having finished at the right minute. While you sign a receipt for your check, poultry and poetry are forgotten and a third man has begun to talk on popery.

You have been almighty for 22 minutes in a space arranged for you and your will, mightier than ~~exxxx~~ any man at any time in the past. The condition of this almightiness is that it must remain sterile. It can have no results. The next minute, the same space is at the disposal of somebody else. Modern space is re - a r r a n g e d of things and men every minute. Myriads of atoms and waves are combined and mixed at one moment and separated and regrouped in the next.

<sup>d)</sup>  
In the landscape of the past such a space was not to be found. The constitution of a country was outlined by the distribution of public space and private property. Men made law : trespassing prohibited. When you go to Europe you find in the plan of a city a great cathedral, a high castle, a vast market place, the craftsmen's quarter, the walls, the city hall or guild hall. The arrangement in space is the symbol of a permanent organisation of society. The different layers of government, religion wealth and populace are clearly incorporated into the map of the city. The earth expresses the social organisation. It was rigid, this system, no doubt about

that. Property meant everything. To own land meant to be somebody in the country. The earth was the mirror of society. From the king's throne to the carpenter's bench, from the bishop's pulpit to the low seat of a beginner in school, every seat expressed its owner's social place and <sup>property</sup> possession. Social order was order in space. The things occupied and owned by man received a social stamp of differentiation. The cow which gave the fussy king a little bit of butter on his bread, was a royal cow, and a royal cow was something better than a farmer's cow. Earth was tainted with the social prejudices of man.

We have freed the soil from this servitude. Our laws no longer treat the earth as our footstool. ~~We~~ --serve-- Today we serve nature. Modern technique summons us to perform our own duties according to the laws of nature. The contrast of the two forms of behaviour of man in space was once made visible to me suddenly by two incidents in ~~the same~~ <sup>a</sup> street-car. An elderly lady dropped her umbrella and a gentleman bowed, lifted it from the ground and gave it back to her with really charming politeness and in the grand style. She and he exchanged compliments of 'thank you' and 'Don't mention it.' A long social story might have grown out of that moment's occurrence. In the old world, this act of courtesy might have led to a friendship, to a courtship, even to an inheritance. Men discovered themselves and each other in such acts of decency and good behaviour. ~~the~~

Five minutes later, in the same car, a young boy was trying to lift a heavy rucksack which was lying before him on the floor and hang it over his shoulder. I managed by a chance movement to help him so ~~that~~ <sup>as if it were</sup> that the bag was lifted ~~like~~ nothing and described the best possible arch over the contour of his breast and neck. He did not look back. I did not look at him. We had synchronized our movements with as great precision as if it were an acquired knack.

No words of thanks were spoken. He left the car. In the case of the <sup>lady's</sup> ~~lady's~~ umbrella there had been two distinct personalities. Both had unfolded all their personal charm and good breeding. And both expected a corresponding reward from such an effort of their whole beings. It was a maximum of effort which both had made. And they were rewarded in the realm of friendship and personal relations. My situation towards the lad was different: in fact, I dare say it was the opposite. With a minimum of thought or personal effort, I ~~had~~ had lifted my hand at the right moment to join in a process of technical management. Neither the boy <sup>myself was</sup> ~~were~~ involved in that process as subjects. It had to be done objectively. Probably, the lifting of the bag could have been achieved in many different ways; we had both concentrated on finding the best way. The best way was not the kindest or the most amiable. It was a technical performance. This settled the question of our personal relations. We met in nature, not in society. We interposed our brains and arms with the intention of sending this bag to its natural destination. We dropped our connotation of I and you and acted like moving parts of a ~~luxurious~~ <sup>hoisting</sup> machine.

I shall never forget the specific feeling I had after this technical cooperation. I had submerged in an element as if I were swimming in a stream. I had been made a part of something wonderfully pure and simple. It would have broken the spell of the circles which had subrounded us, the boy and myself, for ten seconds, if one of us had spoken. Man helping nature to follow its course technically is not in society. He is, therefore, not allowed and not able, to ~~man~~ speak. Words are odious and luxurious where man is interposing his arm or brain to bridge the ~~gap~~ <sup>gap</sup> between two or more natural forces.



If we turn from the little experience in the street car to the modern factory we suddenly realize that a factory has this function of leading and guiding natural forces and of bridging the gulph between two or more natural elements. The factory is the first human building which is not a house in the old ~~house~~ sense of the word. In travelling through the Balkans I visited the Bulgarian centre of the cotton industry. It was so to speak the city of Lowell set down in Bulgaria. It was hardly a city in our sense of the word. It was really a scattered settlement. Industry knows neither cities nor villages. We climbed to a sort of bank in the midst of a torrential stream, on which a small hut had been erected. When we entered we found a family of five people in the single room of the house.

A smell of food pervaded the room; but what was more noticeable, the brook made the foundations of the hut tremble. Its waters gushed over a wheel in the room itself which moved two scores of slender steel rods. It was not the regular modern spinning machine, but a special system adapted to this hut. The machine had to be spread over the floor, since the roof was so low that a man could touch it with his <sup>head</sup> ~~hand~~. We knelt down, to look at the process closely. At several places the floor opened into the dangerous gorge beneath. The walls were only one plank thick, likewise the floor; and many a plank was missing. An indescribable noise deafened our ears. As we could not speak, we communicated with each other by signs. From the noise I kept a singing in my ears for hours that day.

Here we can study the transition from the old house to the factory. A house is a place where people are conceived, born, fed, entertained and protected. They can sleep, work and die <sup>there</sup>. A house is

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a place where people can, on all occasions, react by laughing and crying, singing and speaking. This Bulgarian hut was a house because it still lodged a family though in rags. On the other hand, the water power invaded this minimum of a house with its noise and shock at day and night. It could not be turned off as in a normal mill. The mill-stream or the shaft of a wind mill can ordinarily be stopped. In this hut the natural power had to be <sup>unceasing</sup> ~~be~~. The family was perched on the edge of this indefatigable wheel. Since they could not sing or dance or cry or laugh together without being deafened by nature's Niagara-like voice, they had no house in the full sense of the word.

A house had always been a place where man's voice could be made audible, at least at times, and looked upon as setting the tune.

The factory with its 24 hour day is the first building on the surface of the earth which has no desire to give man the chief rôle. A factory gathers an orchestra of voices, but man has no voice in it. He enters the place as a noiseless figure. A worker in a factory is <sup>if I may say so</sup> hired sermone abstracto, minus his power of individual speech. A factory is a place where nature is intensified and restored to its proper aim and where man tries to behave as I did in the street car.

A factory is not a house of man. It is a hothouse for production at all times, all seasons. It is nature's first home with walls. Water and electricity, steam and gas, all the great energies of nature are housed in the modern power-plant. Nature has the right of

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the first - born and nature is not going to sell her birthright to man for nothing in this her first home. For any being, the home is its second nature, its truer and better nature. Technique is <sup>the</sup> world's second nature !

There have been many attempts to define modern technique as it stands between science and daily life. People have called it applied science. This is the teachers and theoreticians' point of view. He thinks of pure science first as it dwells on the high mountains of ideas and in the ivory tower of scholarship. When it descends to earth and common life it gets more materialized. The formulas of pure mathematics or physics suddenly become useful for calculation about turbines and cranes.

When technique is called applied science it is being looked at from the point of view of reason. In this series pure reason precedes ~~the~~ the reason which is responsible for particular local interests. Let me come at technique from the opposite direction.

I know nothing of the existence of science. I am a layman. ~~xxx~~ I live ~~as~~ <sup>in</sup> part of the soil. What do I see? The woods in their second growth encroaching on my house. The water washing the shores and tearing away precious land. I see men trying to carry loads and gravity chaining them to the ground. In this world everything goes down hill, labitur et <sup>2</sup>ruit <sup>1</sup>mole/sua. Newton's laws of gravity rule apple and iron, water and smoke. In nature, in space, everything goes down hill, down stream. Man is the only being <sup>who</sup> ~~that~~ by his iron will and ~~his~~ by mutual help can overcome the laws of gravity. He can push water up- stream, he can bridge a gorge in the mountains, he can pull the carload out of the mire, he can dyke the shore and the house which overlooks the sea.

Man can not stop the course of nature. Not in the least. Waves of all kinds encircle the earth. How, then, could we stop electricity or sounds or light? But we can persuade every power on earth not to waste itself. Every effort of the technicians has taken the direction of keeping nature from the useless spilling of its energies. The mill-stream is the simplest way of deflecting water. A pair of bellows counteracts the loss of oxygen in a fire. These helps were all incidental. These little restorations or deviations of nature were pre-industrial because they picked out one or the other particular feature of the earth.

Modern technique is something different. It is universal by establishment. Modern technique is not the local invention of an individual genius. ~~We~~ have organized the inventions of mankind. The last 150 years is not a century of inventions, in the plural. It is a century of the <sup>great</sup> invention <sup>of</sup> how to invent. ~~We~~ have discovered what has to be done in order to invent regularly and continuously. ~~Man~~ Modern technique deliberately secures the permanent improvement by the detour through science. When technique is called applied science, the expression is even truer these those who use it, generally suspect.

The administration of mankind has, so to speak, cancelled all man's local engagements in his struggle for life. It has summoned man to deal with nature by first consulting science. The local administrator of a mill, an electric plant, a skyscraper, a fire-engine, depends on a general staff of scientists, an united body of knowledge and thought incorporated in the group of ~~observers~~ <sup>whom</sup> we call scientists. They differ - and Mr. Einstein's theory of the observer is in fact a sociological remark about the body politic of science- they differ from the old practitioner, because they treat space as a single unit. In its study the whole body of obser-

vers can be treated as one man. ~~ria~~

To the scientist, nature does not constitute different worlds in America, Ethiopia or Finland. It is all one nature; the miller in Lowell and the electrician in Tokio ~~are~~ living under the same constitution because the laws of nature are observed both here and there. The brain of man embraces the powers of the earth as one interrelated network and tries to organize its interplay. Science ignores social borderlines, political frontiers, national jealousy. Science unifies nature and interrelates all the inventions of the individuals. The technique taught in an Institute of Technology is applied science in the sense that it relates universal rules to local places. But on the other hand it can be called ~~the~~ nature raised to <sup>its</sup> square.

For by taking the circuitous route of science and by postponing local solutions until the scientist has explained the general principle involved, it unifies nature and heals the fragmentary character of its parts. The private property, the social differences which had split up the surface of our globe vanish before the bird's eye view of the scientist. There is no white Elephant belonging to the king of Siam, no sacred cow of India, no royal steed or sacred precinct, no place of religious asylum and no mortmain. Even cemetery are losing their solemnity. It is all one nature which can be measured and weighed, and counted and handled as a quantity. As soon as it has been translated into quantity, everything in this nature can be interchanged. Money is the simplest ~~thingy~~ means of exchanging everything. If ~~xxx~~ everything has its price, everything can take the place of everything. If, as Bernard Shaw says, every man has his price, every man can be exchanged for every other man. But the price index of eco-

nomy is accompanied by a technical index which permits a more complete transformation and mutual permeation of matter. Chemistry transforms one material into another. It proposes to invade even the world of simple elements and change gold and iron and osmium into each other. No wonder that we begin to look upon man too as an interchangeable element. Of man's degree of interchangeability we shall have to speak in our next lecture. Here we are concerned with the new unified space of applied science. If everything can become everything, the permanent decay of nature can be changed into a permanent process of circulation. In the new space everything is moveable and interchangeable in one way or the other, and the single factory is a subdivision of the wholesale restoration of our united nature.

In a factory, man stems the rush of mere, disorganized nature, be it air, steam, man's own force, or the energy of electricity, and it transforms a meaningless waste of energy into deliberate work.

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Lest the work be limited by the exhaustion of energies, modern technique has related all energies and made one the supplement and the auxiliary of the other. It converts all energy into a recurrent stream which is available at every given place and at every given moment.

Let us concentrate our attention on this peculiar aspect of modern technique. Re-creating nature, restoring it from continuous decay to regular repetitive work, the technician is the guardian of nature. As long as the elements which are his protégés are scarce in number or lacking at any period of time, he has not solved his problem.

The other day I went through the turnstile in the subway and looked at the boxes into which we drop our dimes. They look very massive, and at first I thought they must be opened and emptied on the spot every night. Later I found out that this was not so. They are interchanged like the rest of the employees of the Elevated Railway. Three sets of boxes exist for every station. After eleven o'clock at night the boxes go home, into a safe. Beginning at five in the morning, a second set is put out to replace them. The old set now goes to the central building to be emptied and checked over and labelled afresh. On the third day it returns to its post. During this three-day cycle, the individual box is sometimes not placed on exactly the same station. Like soldiers, the boxes can be used to fill gaps in other rows. But usually they return to their former company.

These important economic animals, with their tiny and yet voracious slot, are leading a restless life of perpetual movement. They are a model of modern technique. In the old days there would have been an interval in their service at the station. A man would



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have opened the box, emptied it, counted the six or seven hundred dimes which come into it during one period, and thus interrupted the permanent representation of the Elevated Railway before its customers. Real technique provides a box everywhere at every moment by moving three boxes in a circle. In doing so, it provides new dimes for the girls who must have fresh change. The boxes do not enter the Park Square Building for nothing. A machine wraps fifty dimes into an <sup>endless</sup> roll of ~~the~~ green paper, which is sent out to the cashiers. Thus the circulation can start afresh. Both ends meet. The money issued to us by the lady at the entrance and the money dropped into the box becomes parts of one continuous stream of coins. This is what technique is always longing for: to close the gaps in a process, to create a circuit, lest nature exhaust her resources. A special staff of 79 people is appointed to keep the dimes in permanent circulation. The restoration of nature includes the idea of an inexhaustible nature, the products of which are available in endless succession.

How definitely our technique aims at a permanent circulation can be illustrated by comparing the system which is used by the Elevated Railway in its motor-coach department. The motorman in one of the busses in Boston has, as you know, a little purse containing change; from this instrument, which he calls a "change-maker", he pulls the necessary dimes for the fare of a passenger who gives him larger pieces of money or two nickels. This operation is not technicalized. Instead, the men are obliged to provide themselves with five dollars in change every morning. Each of them must see to his five dollars himself. He may get the coins from a drug-store, or from a friend, or he may ask his wife to arrange things in time. This is no real technique; it is an improvisation. The incoming



and outgoing coins are not replacing each other. The circuit is not closed. Modern technique reaches its height when it is able to use the waste, rubbish, and offal of things. The exploitation of by-products is the great achievement of the coal industry. In the metal industry the price of steel and iron scraps has always been regarded by the stock market as holding a key position for the entire business. When the price for scrap goes up, conditions are improving. The sewage system of the big cities meant their first great step towards mechanization. To use a better system of drains, and to keep American rivers clear of pollution, will be in the future, so I am told, a task of importance.

As soon as production takes an equal interest in the dregs and offal and in the main product, it becomes really scientific; because then it reaches the level on which a perpetual recurrence becomes possible.

A self-supporting farmer grew apples and potatoes and vegetables, and had his turkey on Thanksgiving. An industrialized agriculture offers us grapefruit, oranges, bananas, vegetables and flowers nearly the whole year. Man's highest duty toward nature is fulfilled if he protects her against mere decay. And the most radical evidence of this fulfilment is the permanent presence of a thing <sup>being assured</sup> secured by the technical skill of industry. The omnipresence of things means their being classified as members of nature restored. The application of the laws of nature has naturalized these energies and materials as permanent citizens of the technical commonwealth. They have ceased to make a haphazard appearance in our world, like a bumper wheat-crop or the finding of gold in California. They are now incorporated into the <sup>second</sup> ~~real~~ nature of the world. Ubiquity is the goal of natural science. The speed of

the new means of transportation and communication has made space narrow, and permits us to be present wherever we like. We go to Florida in the winter to get sun-kissed, to Canada in the summer to keep cool. We turn on the radio for music from Yokohama, for a sermon from Rome, for propaganda from Berlin, for a lecture from Paris. Ubiquity is the great result of mechanization. Therefore the movie star, the poet, the musician must become interchangeable. Like the three change-boxes in the subway, the next one must always be ready to take the place of its predecessor.

This does away with periods of mourning, great breaks for funerals or chages among men. Doumergue had to remind his colleagues that the death of Poincaré and Barthou would have made it shocking for him to retire before the official funeral. I remember the disgust of old-fashioned people in Germany when the head of The Gefman railroad system died on a Tuesday and his successor was appointed on Wednesday, though the dead body was still above ground. But the abolition of protracted mourning and elaborate funerals is inevitable in a society where every function is constantly represented. In England an association was founded for the abolition of expensive funerals. The funeral is the greatest evidence of a real break in continuity. An elaborate funeral is the recognition of a gap. And industry denies the existence of gaps, and educates men to defy traditions which pay attention to gaps. Industry makes men believe that the wheel turns round like a perpetuum mobile. The bitterness of Hamlet's remark that "the funeral bak'd meats did coldly furnish forth the marriage tables" is out of date.

Man serves nature best by restoring its perpetual recurrence. That is the unwritten consitution and the code of honor for science and the technical world. In the existence of an armament

industry, therefore, two worlds are in conflict. One is the old world of unscientific production, the inventions and workshops of which were local, haphazard, and incomplete. The other is the world of engineering as the application of universal science. A scientist who works to invent poison gas or bombs is betraying his creed; for the abolition of war is intimately connected with the real creed of science. As it symbolizes the restoration and the omnipresence of nature, its high priests and ~~clergyman~~ commit high treason when they support the armament industry. They are destroying the roots of their own existence. They will lose the support and the interest of the masses as soon as their <sup>high</sup> treason is exposed. The revolt of the masses, forecast so eloquently by Mr. Ortega y Gasset, will destroy the machines and desert the engineers who have deserted the common cause of universal science as a restoration of nature.

The century of progress is threatened by this moral treason of its leaders. And perhaps the industrial system itself is doomed if the institutes of technology and the departments of science do not delve deep enough into the premises of their existence. As a hodge-podge of local and national groups, the army engaged in engineering loses its raison d'être. I am not sure that this is not going to happen. The founder of the Nobel Prize was fully aware of this paradoxical situation. ~~No. He~~ had invented dynamite, an explosive which can work both as a blessing and as a curse. He faced the possibility of its being used for the assassination of rulers and for the piercing of mountains. And he exclaimed, when he gave the funds for the Nobel Prize for peace: "We, the men in applied science, must invent such atrocious and ruinous tools that in the future every nation <sup>(which goes to war)</sup> will have to anticipate its own destruction, even in case of vic-

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tory." Nobel did not believe in the success of the pacifists; he believed in the consequences of technical ubiquity and universality. I share his faith in the mission of science. But I am aware of the fact that in thirty years' time the Peace Prize has not once been given to a scientist or to a technician. Nobel's idea still waits to be applied and understood.

I think this is a great symbol of the unconsciousness and moral helplessness of the people in the factory. May I recall the experience with the rucksack in the street-car? There we had to act without words. In a factory language is starved. In a factory men begin to dream. A young friend of mine complained bitterly that after three years at his job he had lost the talent and the power of talking to his men about their private affairs. This talking is often delegated to a special personnel officer or a nurse or a doctor, because it spoils the atmosphere of the workshop if employer and employees insist on sharing their private lives. The delegation of real speech to external powers is one great sacrifice made by the clerical staff of industry.

I know, of course, that they do speak. But they feel in no way entitled to lead by virtue of their speech. They are not heads, not teachers, not patriarchs of their people. It would turn out badly if they tried to embody human values for the workers whom they pay by the hour. There are no mutual obligations between them. Obligations are always personal. A factory is impersonal. Its members do not create values, they create things. A factory is the house of nature. In such a house the songs, jokes, talk and arguments of men are not essential or meaningful. A factory church would simply be comical—how comical can only become clear in our next lecture. But a chapel in a castle, a service on a

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farm, a prayer in Congress, are not at all ridiculous. They are quite natural, because they happen in a department of society, in a home where men are still thought of as <sup>as</sup> being-unique and irreplaceable. The factory, being the home of the world as transformed into nature by the laws of science and technique, nobody in it seems unique or irreplaceable any longer. Man finds himself in the midst of speechless elements which at best can only groan and travail. That is why men who come in contact with the factory system in one way or the other sacrifice their capacity for prayer.

An employer has a thousand workers--all replaceable; he has ~~x~~ perhaps one secretary--and this girl is the only irreplaceable person in the whole office ~~or~~ and factory. She is its good angel. But because she is a woman, science has not yet discovered her uniqueness. Science tries as you know to ignore the difference between the sexes as best it can. We should have done better not to mention the girl's existence. Something social, something not merely natural, is left over <sup>in</sup> ~~by~~ the very fact of her presence. When the director understands and begins to believe that his nearest collaborator represents something different from the rest of his labor-forces, he--or his wife--will probably be afraid and try to abolish the secretary's privilege. And then he will very soon have to close his factory.

Here we have reached the point where the situation of man in the new space can be explored. Wherever one man, one engineer, one scientist, directs a mechanized process of production, be it in a laboratory or in a factory, the position of man is clear. The factory is, in this case of management by a single man, clearly engaged in restoring the forces of creation. Without man's interposition, nature would not go upstream. It is clearly he who stems

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the downward course of natural energies, insofar as he is the employer, the technician, or the civil engineer. The manager is not a part of the arrangement in the factory. He comes from a social world outside this new home of nature.

In a factory where there is a small staff of scientists or experienced engineers, the minds of these men will be pretty much the same as that of the single manager. For the staff is unified by its effort to prop up nature and to prevent a waste of nature's energies.

As soon as we need more hands, and have people paid by the hour, as soon as capital employs labor, the labor-forces are inevitably arrayed on the side of the natural forces. They are themselves drops in the reservoir of energy. Are not their hours, as we said before, piled up like watts of electromotive force, like a collection of Leyden jars? They are themselves nature discovered and manipulated by science. Lest we mistake the factory for a part of a human settlement, factories today lie far from the homes of the workers. The houses of men have dwindled into "machines for dwelling", as the French architect Corbusier would like to call them. The factory is the home of man nature, and man, the worker, is one furrow in nature's field. This is even man's honor in the factory system. Being paid by the hour, he can breathe only because he is not asked to behave like a personality. He is a quantity of energy as shrewd, as subversive, as obstinate as any other material used by the employer. He will protect himself against exploitation as instinctively as any animal or plant which is summoned to share the life of an artificial environment. A tree in a hothouse, a horse in a stable, a lion in a zoo, necessarily change their habits. A man in a factory completely changes his aggregate status. He is not in his field, like a farmer; he is not at his bench like a carpenter. He



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himself is lumber or tin, wheat or electricity. Everybody agrees that water can take different aggregate statuses: there is ice, steam, and water in liquid form. But it seems incredible that man can do the same thing, and be revealed as moving through different forms of aggregate. But is not man more than water? Why should he not be much more transformable than mere water? Modern technique has demonstrated that man lives on both sides of creation. He is both creating and created: though he is self-made like God, he is also made by his environment like matter. In a factory, the worker is on the side of matter, the staff tries to keep itself on the side of the gods. The borderline is very delicate; but it exists. In a factory I was once in, the directors tried hard to address all the men as collaborators. It did not work. People disliked it; they felt it to be a canvassing for popularity.

And how could it be otherwise? We can only redeem and restore those realms of life with which we are willing to identify ourselves. If a physician is not willing to listen to his patient and sympathize with his aches and sufferings, he will only hurt the patient and never cure him. If science is man's greatest <sup>achievement</sup> ~~achievement~~ with nature, some of our brothers must identify themselves with this outside, material world, must act so to speak as nature's foremen and leaders. If we look at man himself as energy, we shall probably begin to understand energy better than before. If this sounds obscure, I may remind you how much more human nature has become since Darwin applied to it the idea of a real history. Darwin humanized nature. Up to his time the external world was a world without experience, destiny, or tragedy. Darwin assimilated nature, plants and animals, to history as we know it from our own experience. He loved the world so much that he gave it a share in the survival of

the fittest, the struggle for life, the evolution of kinds--things which up to his time had been known only of man. The results of deliberate breeding done by man himself for his own kind and for his domestic animals were applied by Darwin to outside nature.

Maybe the equality of the labor-forces with power and steam is sufficient to heal the decay of the creatures which according to St. Paul expect their salvation from us. America proclaimed the equality of the colonies with Europe in 1776. It fought for equality between men in the Civil War. But some of its poets have spoken of a third and even more mysterious equality. Did not Walt Whitman sing of the equality of man with the rest of creation. Industry has taken the full risk of this equality equation. It has marched far into a space where production uses men and things on equal terms.

I hint at this equality to make us conscious of the colossal potentialities involved in the modern factory system, where ~~man~~ labor-forces are used like younger brothers of the other forms of energy.

But for the time being this juxtaposition of the worker with the rest of nature has, of course, destroyed most of the human traditions of the cog in the machine. The omnipresence of nature is constantly depriving him of his real presence. The full presence of a person is always bought at the price of his being rare. He can be present at a certain time, but not at all times. The new world of space has degraded time to such an extent that nobody knows when to act. The rhythm of time <sup>(is breaking down)</sup> now that man eats, drinks, sees, hears, smells, everything all the year round. The rhythm of time is gone when everything is available at any time. Movies, museums, books, dancing and sermons, work and love--anything can happen to you



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at any time because it is always at your disposal. Technique, as a second, recurrent nature, is identical with the abolition of the rhythm in man's life. We can marry, divorce, travel, learn, rest, eat whenever or whatever we choose. We, therefore no longer know anything about the rhythm of our lives. The man who is paid by the hour pays for his system with the loss of his larger time-spans.

Time has been degraded into the fourth dimension of space. Only by this imprisonment of time in space can the mechanized, second nature yield its perpetual fruits.

The man who leaves the factory and its perfectly arranged space knows nothing about his march through time. He is jogging along without rhyme or rhythm. Is he going to be reproduced like the bananas, like the vegetables, like electric lamps? In a too well organized space the omnipresence of labor-forces stands in the way of the real presence of man.

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### Third Lecture

#### FACTORY FORCE AND LEGAL PERSONALITY

Ladies and Gentlemen,

In our first two lectures we discussed the new calendar and the new space of industry. We found banks charging interest for the 30th of February, and a fund of a million working hours set aside for the construction of a new bridge. Workers were paid by the hour because the hour was related to an anticipated astronomical scheme of work. In the second lecture we tried to understand the kaleidoscope of the new space. Instead of a solid organization of the soil, with permanent fences around public and private property lasting for centuries, we found a technical commonwealth in perpetual revolution. Space was incessantly re-arranged and all its elements set into continuous circulation. In this space no human values of good and bad, no traditional connotations of main product and waste, remained untouched. Everything, including man, sewage, or rubbish, was used and transformed in perpetuity. Things which if left alone would decay and get lost were combined by science so that they might go on forever.

Omnipresence in space and anticipation of time were the two properties of this world. To the student of philosophy it hardly needs saying that we have been describing the practical results of a vision of space and time which first took possession of René Descartes, the great French thinker on space, in the seventeenth century. Before going into the problems of human relations in industry today, it is perhaps not superfluous to be somewhat more explicit about the intellectual authors of our present technical and economic conditions.

It is Cartesianism, it is Descartes and Leibnitz and Newton and Einstein who have deprived the world of its traditional freedom toward space. Any representative book on modern philosophy is ear-

marked by its naiveté in regard to time and space. They all deal with space first, even when the title happens to be "Time and Space". They never try to make space grow out of time. That is the difference between Revelation and all so-called metaphysics or philosophies, that the Bible sets out with time and lets space be created. Philosophy, though it may start with a primeval fog, still takes space for granted, before time gets a chance to work. This space is divided into three dimensions, and not until the philosopher has established space as the scene of the world's comedy does he begin to look after time! Some thinkers make time a fourth dimension of space, some use another expedient for giving time a place in their spatial world. But they all think--like the Greeks--in terms of space and degrade time into a secondary force. Time as it appears in science, and all the determinations of time used in the textbooks on philosophy, have nothing to do with man's time as we experience it in our lives. For a man, the three dimensions of space are only external appurtenances of his inner sense of time. Time is the first dimension of which we have any knowledge, and length, width, and height--that is, space--are projections of man's sense of time into Creation. To think that man's dominion over the world, his godlike power of establishing continuity and rest, Sabbath peace and workday struggle, that his patience and hope could ever be compared to a third of the properties of space, would have seemed absurd three centuries ago. What an idea, to compare time and width, or time and height! All three dimensions of space taken together cannot hold the balance with the power of time.

This is so familiar to common sense that every building on earth takes a different form according to the length of time man intends to spend in it. Under a certain aspect we may treat space as though it were established forever. In others it bears a merely provisional character. A man looks at the earth very differently when

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he thinks of himself as a fugitive from heaven and when he thinks of himself as a settler forever, or finally if he believes with science that he is a bit of dust on a small planet. First the time-span must be clear for which we wish to organize or judge a part of space; then we will make a very different decision on the needs and properties of this space. When Descartes and his successors in physics began to think of space as the first three dimensions they were using man's power over time. They killed time and thereby estranged space from its anthropomorphic root in man's sense for time; and they invited or condemned man to live exclusively as a part of the external nature created by their thought. They summoned us to become things, their creatures. They outlawed real time and kept only a mutilated stump, a kind of time which could be anticipated by planning and calculation. Real future is not involved in this debased and falsified concept of time as a sub-case of space. The notorious spiritualists, with their idea of a fourth dimension, funny as their theories were, still represent a desperate effort of despondent sons of man who wished to keep a spaceless world alive. But with their poor idea of a fourth dimension they made too great a concession to science. As a fourth dimension, human time cannot get back its liberty. Man's life is not convertible; the hours of production in a factory are. Man's time is irreversible. It goes onward and forward. No minute can be repeated; no hour can change its place. When the children of the age of science began to think of this irreversibility of time, they simply got frightened to death. Henry Adams and many others were haunted by the second thermodynamic law. The permanent loss of energy seemed to doom all human efforts. The glory of man, his right of conquest over death, was simply ignored. In a world of space, death means only waste and loss.

Science between 1600 and 1900 made the real spans of time into

spaces of time. These spaces of time differ from real time in that they can be interchanged. The great idea of modern science was to put everything into space. Any thing in space can be transferred to another point in the system. It can be placed now first, now last. Things in space are reversible. When Jesus said, "The last shall be first", he was alluding to the eternal desire of men to free from any final regulation. It would really mean a great freedom for us if we could change places, and after having played the part of the forgotten man for seventy years could still become, in a second life, President of the United States. This would abolish the irreversibility of time. As soon as man can live his life twice or thrice, time ceases to be unalterable and begins to be interchangeable. It can be treated as a thing in space: today we place it in one corner, tomorrow we put it in the middle of the room. Whenever we speak of a space of time, we are dealing with dead time. Dead time includes all kinds of working time and of past time, and can for that reason be interchanged with another phase or period of the same external length. The hundred years 300 to 200 B. C. can be compared with the hundred years 1600 to 1700 A. D. because both are bygone times. The past allows us to play freely with spaces of time. And working hours jog along somehow like the hours of the historical past. They are an anticipated time, an artificial future anticipated by planning. The employee who enters the factory on Monday expects no sensations during the week; he expects them over the week-end! Time in a factory looks like a thing in space; working hours look like material things.

In the real future, which is new and surprising and where nothing is treated as a means to an end, where all men and creatures are ends in themselves, space vanishes completely. A time-span of real virgin and future time cannot be considered as a space of time, since it cannot be looked at both backward and forward. It still has the

living quality of being irreversible. Since it opens into the unknown, such a time-span does not suffer from anticipation; it is not imprisoned in space.

Modern industry organizes the world as space. Space first and last is the great idea of the modern world. The noun "world" itself was turned into a term for space during the last three centuries. To pre-technical mankind, "world" had meant changeability without control. The phrase "world without end" in the old prayers still keeps a remnant of the idea formerly expressed by the word. It meant the veil of Maya: Dame World was the kaleidoscope of incessant change and temptation presented to the frightened and baffled eyes of man. "Worldly" meant something that passed quickly and faded away.

Modern nature has become controllable. The sudden changes of the world, like earthquakes, thunderstorms, famines or the plague, are less exciting than the changes in society: depression, crisis, revolutions in society are taking the place formerly occupied by natural changes. Nature is no longer surprising; society is. But industry, since it deals with us as parts of nature, does an injustice to our equilibrium. It forces upon us a wrong balance between time and space. In its victory over the world's changeability it mistook its own dead time, the time of external things, for the whole of time.

From the scientific variety of time all those qualities are excluded which make time human: remembrance of the past, faith in the unknown future, the pricelessness of an experience, the uniqueness of a destiny. Promise and fulfilment, prophecy and tradition are meaningless in a time which is measured as a space of time instead of as a perpetual surprise to man.

The great progress of science in our government of space is closely connected with the real superstition which it betrays in its attitude toward time. The men of science and technique, of banking

and finance, are destitute of any philosophy for the creation of forces like imagination, confidence, faith, courage, tradition, decency, credit. Yet they live on the credit granted them by the laymen, they live on the confidence of the public, on the liberal tradition of Christianity, on the courage of the natural man; and finally, the work of bankers or technicians depends on the imagination of the dreamer and the decency of their own adherents.

Not one of these forces is accessible to the science of space. Yet with the greatest arrogance all kinds of ambassadors from science visit the fields where mankind tries to grow these virtues, ambassadors who boldly announce that there is no longer to be any use for these human qualities. Since they cannot be found in the vocabulary of the magicians of space, they cannot exist. That is why the virtues of real time have gone out of this sad corpse of time left by science. The victorious engineers of the locomotive of space trail it behind them as Achilles dragged the dead body of Hector behind his war chariot.

Yet we may hope that we have not exaggerated. We had firm ground under our feet. Did we not get our information from the two main departments of industry itself? First we walked right into the costing office, the chambers of commerce, the banks, the government budget office and the municipal planning board. We dealt with the very buildings in which modern economists are doing their hard work, from the professor of theoretical economics to the little man who pays the wages to the bricklayers on a new building. We were informed by the authorities on finance. Second we visited the people in science and technology. We walked into the factory to interview the civil engineer and the foreman, the inventor and the time-study man with his stop-watch. If we now look back at our first two lectures, we can call them two interviews, one in the costing and one in the engineering department of modern business. We have tried to reproduce the essence of the speechless activities which are going on in every factory and bank of the industrialized globe. In this second nature of technical recurrence the work is done by which we earn our daily bread.



With these two visions in mind, you are <sup>now</sup> invited <sup>one</sup> today to visit a third important department of this society, which I may call, in a broad sense, its political department. The trade unions, the lawyers, the government, the social workers, the relief committees, and Miss Perkins work in this department. Let us talk to them and find out whether they share our vision, or if not, why not.

They are certainly trying to understand the situation of capital and labor. And since they are devoted to their social and political protégés, some to capital, some to labor, and some to both, we might expect, under normal circumstances, to find the industrial society armed to the teeth with the most suitable legislation and administration.

Yet the Achilles' heel in this armor was already stated in our last lecture. The factory hires men sermons abstracto, minus the power of individual speech. The question arises, therefore, whose speech takes the place of this cog in the machine, since he is not accustomed to express himself. Is it the business man's mentality, is it a scientific theory, or is it the pre-industrial philosophy of the fathers of the constitution which formulates the laws and statutes for the organization and protection of our industrialized world?

Modern society is in a very interesting state of confusion as to the sources of justice for the worker. Capitalism, socialism, and the natural law cooperate in the framework of modern legislation. What I am going to show today is this confusion in modern politics. In the next lecture we shall visit the fourth and last department of the brave new world. This fourth department is, <sup>the formation of power</sup> of course, education. There we shall take a look about us in the schools and in education. <sup>The origin and maintenance of power will be our subject.</sup> Neither in the law school and the courts nor in the teach-



er's college and the prep school are things so uniform and so clear as they seemed to be in the costing-office and the laboratory for production. <sup>Besides,</sup> Lawyers and teachers live in a less impressive environment. When we walk into a lawyer's office, we often get a certain dirt, smell of dust and uncleanness. And police-stations, polling-places, court-rooms, are still worse. Thus this lecture and the next cannot be so colorful as the first two, and you must not be disappointed if, instead of the songs of storms and waters, the sounds of reasonable and intelligent <sup>speech</sup> ring in your ears.

Let us visit, among the many people in social work and politics, the man who is better equipped than anybody else to know the situation: our third interview shall be with a corporation lawyer. We walk into his office, near Wall Street, and after some minutes of conversation we are delighted to find in him a thoroughly understanding mind. He does not think that very much is wrong with the world. People are stupid--they always were. But that is why lawyers must help them.

Let us listen <sup>now</sup> to his ideas. "In the fight between liberals and Socialists, the prevailing system of production is often discussed, its merits are questioned, and it is stigmatized as inefficient. Let it be clear that to me capitalism is perfect insofar as its aim of production is concerned. The Russian scheme accomplishes with more noise and less efficiency what Americans have achieved by their Industrial Revolution. The conquest of nature during the last century has wrought miracles: no Socialism will ever be able to keep the spirit of invention and technical progress at the level of the nineteenth century. The Russians, of the Fascists, simply depend on science as it was developed under the rule of liberalism. The lives of the masses depend on the goods produced by the scientific system

of the capitalistic age. As soon as the necessary conditions for liberty and free thought are impaired, human dreams about the laws of nature will cease to bear fruit.

"The bourgeois society is unrivalled in its capacity for the production of goods. For only here has every element, every sort of matter and force in nature, found a self-appointed guardian. This technical man has sacrificed himself to its upbringing, its emancipation from ignorance, in perfect self-forgetfulness.

"The unemployed <sup>and sometimes unemployed</sup> writers in New York," he continued, pointing to a copy of the New Republic, "who praise Socialism, whether sincerely or insincerely, think they can quench capitalism by making the capitalist's profits odious and contemptible. These people who are devoted to Communism overlook the real body-guard of the productive society of the past: the scientists and the liberal professions. Without the absolute freedom of <sup>our</sup> ~~their~~ visions, the new production and this second natural commonwealth of modern technique breaks down immediately."

And he began to develop his real faith: "Scientists and engineers are the monks and hermits of our society. Capitalism will not be <sup>done away with</sup> ~~removed~~ as long as people attack profits, because a civilization is not refuted by its abuses. Every civilization has its grafters. The Roman Church in the Middle Ages was not dethroned by people who attacked the bribery that was rife in Rome. These cheap attacks of would-be Communists went on during the whole Middle Ages; but <sup>they</sup> ~~it~~ did as little harm to the Church as the barking of the dogs. Barking dogs do not bite. The real devotion of the monks, the hermits, the painters of Madonnas, the stone-masons of the cathedrals, was the real glory of the time; and the genuine faith of these unselfish workers saved the old world from collapse in spite

of the many grievances against the clergy. Who did change the Church? Who did transform the world? Not a man who attacked the abuses of the Papal court, but a man who challenged the <sup>deepest</sup> faith of the monks and painters of the Renaissance. Luther attacked the faith of the medieval saint; he attacked the visible beauty of the Church.

"Modern Communists attacking abuses are like the radicals of the Middle Ages, murmuring against popery but sharing its real faith. The modern Communist is the reverse of the modern capitalist. He is, therefore, not able to change the world created by the real believers of the capitalistic era: the scientists. As long as the withers of the technician are unwrung by the imputations of Communists against capitalism, we remain in the same world. Communism means no radical change, because it does not depose the real religious leaders of our era: the great organizers of invention. On the contrary, Communists, and likewise Fascists, after their first outburst against liberalism, hurry to honor science afresh, and to rebuild its laboratories and fields for experimentation. They need it badly. They have not attacked the core of our civilization; they actually take over its values."

"You see," he went on, "I am not looking at things along party lines. The Communists, with their concentrated State planning, have the same religion as the capitalists, with their private planning. Both rely on a general staff sent out to conquer all primary nature by technicalizing its waste. Both rely on an army of technicians willing to carry out the orders of science in each factory. Both rely on the faith and devotion of a man who considers himself absolutely free in his thoughts about the universe."

"The existing society is simply marvellous in its technical production of goods. The liberal society is more efficient

than any government in providing buttons and radios and cars and textiles. The Germans are famous for their worship of the State; yet even in Germany the efficiency of capitalism is much too obvious to allow the nationalization of the factory. Private industry was able to produce the necessary goods even during the World War. Such an experience is unforgettable, and protects German industry against nationalization. That was not tried by the German Socialists after the War, and it is not being tried by the German Nazis now. This is a great lesson how in history the real experiences of a great period cannot be <sup>wiped</sup> ~~stricken~~ out by mere intellectual propaganda. The production of goods is the masterpiece of our acquisitive society. It is based, not on greed but on devotion, not on capitalistic profits but on the liberal professions, not on usurpation of power over men but <sup>on</sup> ~~the~~ discovery of the powers of nature.

"It is true, Capital and Labor struggle over the distribution of the profits. In one country Capital exploits Labor, in the other Labor exploits Capital, and in a third both Labor and Capital together exploit the old societies of countries like China. I cannot take sides in this struggle, because both Capital and Labor are only groups in one and the same world, which we must understand as a unity. We can only state that in a world of permanent production this struggle is inevitable. Nature quarrels with man over how much it must yield. The steam engine yields 8% of its possible efficiency. The degree of efficiency in a Diesel engine is much higher. Nature is always bargaining with man over what per cent it shall yield in return for his efforts.

"The bargaining of the labor-forces on the labor market is, therefore, only the radical application of natural law to man. Production makes no distinction between horse-power and man-power.

Modern mass production takes up every new technical device to shorten a process, or to refine a circuit, because it is free in its thoughts about nature. There is no moral obligation to go on using steam when gas is cheaper. When electricity proves better, and when concrete proves bigger, gas and bricks will have to go. The constitution of nature knows of no vested interest or permanent privilege for any member of the family of creation. Bigger and better is the only test of production. This is the <sup>dark side,</sup> ~~shadow of the light,~~ the reverse of our great achievement in the production of new goods; but it is the conditio sine qua non of the whole process."

Here he grew nervous. "If we force upon the technical world forces and materials which it cannot use, this technical commonwealth will no longer function. If we command a manufacturer to use ten tons of cotton per day, when he has chosen to use artificial silk, we introduce a new sovereign into society. This sovereign, whatever it is, bases its judgment on prejudices, not on the laws of nature and technique. It must, therefore, fail. In the same way, it will be disastrous if an employer is forced to employ more people than he can pay. Nobody can buy more goods than he can consume. A worker sells his labor exactly as anybody else sells his goods. If the buyer is not going to pay him enough, he can withhold his goods..."

It was at this point that I could <sup>not</sup> listen any more. This was not the first time I had heard the story of bargaining, and of buying and selling labor. My students at the Academy of Labor, my co-workers in the factory, my colleagues at the Technical Institute, had all spoken to me of this contract between employer and employee as a contract for buying and selling labor. I had heard it explained in many, many law schools. And so I may be pardoned if after hearing

this talk of selling and buying labor some thousand times I was afraid I should soon be unable to keep awake in my low arm-chair in the gloom of a gray November afternoon. Fortunately, the telephone rang. "Pardon me," said my friend, and took off the receiver. I listened. "What do you mean? Unemployment insurance is going to come? -- What form do we prefer? Well of course, the individual form, the democratic form, the personal form. Each worker must contribute to the insurance, he must feel the burden; and each employer must contribute according to the number of his employees. We are a democracy. Is that your program? No? I'm sorry: I don't think there's any chance of our coming to terms."

He hung up and turned round to me angrily. "Look here, these boys are annoying. Unemployment insurance is bound to come; we have no objections. But these people of the Brain Trust don't know Americans. They don't understand us. It's the simplest thing in the world. We have an old-age pension system, Europe has sickness insurance. It's always the same sound democratic principle. The employer pays, the employee contributes. And the rates can easily be assessed according to the number of individuals and the risk involved. We supported a corresponding scheme for ~~the~~ unemployment insurance. We are generous, and we are Americans. It's a good scheme. Now they object to it. They are thinking of running it by a federal organization, and think they must run it on taxes. What do you say?"

I felt very small; but I pulled myself together and said: "I don't see how you can do it on either basis. It seems to me that unemployment insurance is a good case to explode your whole theory of capital and labor, of buying and selling. Your insurance scheme is based on the old idea that the worker and the employer are both

Factory A

occupies

10,000 men + 100 HP

at

10 \$

6% of 10,000 = 600

600 \$ weekly

Factory B

occupies

100 men + 100,000 HP

at

10

6% of 100,000 = 6,000

6,000 \$ weekly

go to the Unemployment Insurance Fund.



parties to a contract, and insure each other against certain risks inherent in the contract. It's the old democratic principle. The <sup>present</sup> government feels there is something wrong about that, and sees no other way out than through the social policy of a paternal state. That's what we have done in Germany. It makes every worker a pensioner of the State; he is paid by the public. Let me try to explain to you the real difficulty. As long as we treat the worker in the factory as a partner <sup>to</sup> in a sale, we shall never be able to explain either collective bargaining or the great strikes or the principles of unemployment insurance. I begin with the insurance.

"Take two factories. The one employs ten thousand men and uses horse-power to the amount of let us say one thousand. The other employs a hundred men and a hundred thousand horse-power. Both are taken <sup>being</sup> as engaged in the same industry and as paying the same wage to their men: let us call it ten. We introduce unemployment insurance per capita: I assume it will have to be six per cent, three to be paid by the worker, three by the employer. But since all the money earned by the worker comes from his employer, we can assume roughly that the whole six per cent is a charge on the funds of the factory.

"Thus, employer A is paying 10,000 times 6% of 10; employer B is paying 100 times 6% of 10. One spends, therefore, 6% of 100,000, that is, 6000; the other 60, in addition to their former expenses. A is frightened by his weekly loss of 6000. Before, he had seen no advantage in mechanization, because he had arranged things so that he could keep his independence from the banks, though he was earning a little less than B. Now he is forced into rationalization. He dismisses 5000 men and installs machines. <sup>you</sup> ~~The~~ unemployment insurance is not insuring against unemployment; it in-



sure the increase of unemployment by 5000 men. What is the cause of that disastrous effect? Our own intellectual cowardice. We, the lawyers, do not like to think of the real state of affairs in under the factory system. In a factory there are no individual men holding offices. Hands, or labor-forces, are used like other forms of energy, and they are constantly replacing other forms of energy or else being replaced themselves by other natural forces. If you cannot put the burden on the whole industry according to its use of energy in general, you pay a premium to the automatic factory. You have subsidized rationalization by a legal subsidy, for fear of being unfair to the individual citizen. I can well understand the inhibitions against taking such an unpopular step. But the situation will get out of your hands, as it did in Germany, if you hold to an ideology which dates from before the Civil War. You have established the impersonal powers of the corporation. Modern industry is not run by individuals. Great powers use the forces of nature, and man is but one of them."

The lawyer walked about the room in some excitement. Finally he said: "I can see your point. But this is too unpopular. Look at all the implications. We shall have to go a step further. If we begin to treat men as forces of energy, and try elaborate a scheme of equality between man-power and horse-power, we break up the foundations of our legal system."

"You have done that already," I replied. "Let us say a man is willing to work for eight dollars instead of ten. He says so and gets the job. His declaration, made with full knowledge of the established schedule, is void. The schedule nullifies the man's promise. Thus he is protected against his own terms. Will you still speak of him as selling his labor?"

Didn't you say that collective bargaining is no longer denied to the workers? Analyze the meaning of collective bargaining under present conditions. Let us say a man is willing to work for eight dollars instead of ten. He says so and gets the job. His declaration, made with full knowledge of the established schedule, is void. The schedule nullifies the man's promise. Thus he is protected against his own terms. Will you still speak of him as selling his labor? What an artificial assumption, to call it a sale of goods when a man enters a factory! Where is this labor which he allegedly sells? He himself goes into the system. Nothing but himself is at the disposal of the administration. He sells himself minus his quality of being an individual, and minus his future, his real future, for an hour, or at least by the hour. The union acts as his guardian. It looks out for the real future of the man. The free will is not in the worker, but in the union. *He volunteers in an army? Does it make sense to call the volunteers of 1914 people who sold their labor as they look to the nation? They sold nothing. They went there.*

*entry, he (factory) himself* "How can you explain the fact that a worker is done at 40; that a man in middle life is doomed under modern conditions? He cannot compete with the 25-year-old man. Twenty-five years of work have not secured him an advantage over younger men. He has agreed to sell himself into the aggregate status of a labor-force for twenty-five years. He emerges without the average success of a salesman. A salesman, after twenty-five years of even moderate business, is in a better situation than ~~when~~ <sup>at the</sup> he started. He has gathered experience and credit, good will and a standing in the community. He is not to be so quickly uprooted by a crisis as when he began. The worker is. The longer he has worked, the more dangerous is his situation. Most of the 900 employees in Baton Rouge who were laid off by the oil company in its fight with Huey Long are too old to find other jobs. What use is it to treat the salesman and the workers

as if they were doing the same thing? One handles goods, the other gives himself over to a specific aggregate status. For fifty years legal fictions have prevented you from accepting collective bargaining. In every strike you have decried the violence of labor. But what is a strike, when we are not blinded by the glasses of the Common Law? Has there ever been a one-man strike? A strike is a short circuit in a collective force. This force is anonymous, because it is thought of as anonymous by the costing office. The conditions under which the men stream into the field of force in the factory repel them. They react like water before a stopped-up pipe, or like electricity when a fuse has burnt out. The strikers are not citizens when they strike, and for a very simple reason: a strike makes no sense unless the factory is going to open again. On the last day of an enterprise a strike would be meaningless. The strike is in itself the best evidence of the faith of the strikers in their membership within the factory.

"I had never thought of that," said the lawyer; "but we are experiencing the truth of it at Southbridge. The workers simply cannot believe that the factory will remain closed forever."

This courtesy encouraged me. "These workers are not free agents coming in from outside and refusing to sell their labor to a stranger; they are the working force in the planned system of this factory. They walk out feeling that they should be in. The strike is not a reasoned refusal to enter into a contract. It is passive resistance exerted by elements that belong to the process of production. They themselves will often give you the wrong cause for their reaction. They have no fundamental grievances, like the Commons of the English Parliament. The reality behind the formulas of a strike is often deeply hidden. The strike is a negative symptom, not a positive program. The working force braces itself to resist a technical mistreatment, very often without knowing what the cause of its bad feeling really is. The clerical error of industry and of public opinion consists in seeing nothing

but the obstruction and the slogans of the strikers. The strikes of last winter impressed me as being apparently misunderstood by public opinion. The explosive force of criticism, which a free citizen would express in public meetings or in letters to the Times, is discharged by labor in the form of a strike. That is probably the explanation for the fears of the middle classes. They gasp with terror, for they do not understand this instinctive reaction of a factory force, and think the world is coming to an end. In fact, nothing abnormal has happened. We should despair of human nature and man's freedom if there were no strikes at all. *They are reactions of people who have grievances not as persons but as a force.*

"To find their way back into the factory, the working force must be able to rely on brains, eyes, a voice: not that of the individual worker, but that of his organization. A labor union is not a corporation which assembles independent, free citizens, shareholders or owners of property. A labor union supplies the character of citizenship which is lacking to the individual ~~labor force~~ <sup>laborer</sup>. All the workers together are just able to represent one man for purposes of the labor contract. The employer is first and foremost the manager of his own business; in addition he <sup>may</sup> be a member of the board of his industry. The worker may be a citizen in all other respects; but in respect to the conditions that prevail during his working-time he is unable to look after himself. You <sup>are</sup> confound <sup>ing</sup> the old world of farmers, in 1787, and the new world created by the corporations if you insist on treating a man as a man in the labor-contract. It is, of course, the easiest thing to do, for a lawyer, to stick to his ideas of natural law and common law as long as possible.

"You treat a labor union as an association of free men. You have extended the Fourteenth Amendment to include the big corporations: capitalistic powers of unknown size are treated as persons,

to whom the pursuit of life, liberty, and happiness is guaranteed under the Constitution. Are corporations natural men? They certainly are not. They are more than individual men, much more. Is it <sup>so</sup> far-fetched to assume that the admission of these great powers into the industrialized community has changed the forms of existence of the individual man also? The law takes cognizance of physical persons and of non-physical persons. The non-physical persons have taken from ~~the~~ millions of physical persons the property of being full personalities. The corporations have made them replaceable cogs in the machine, decaying at forty, when the life of other men is just beginning to become really personal. What the corporations have gained as powers, the workers have lost. There can be no gain *Mr. Social* without a loss. And yet the law and society insist on treating the factory workers as persons instead of as a working force. Social unrest <sup>cannot help ing</sup> must result from your desperate effort to ignore the new reality."

The lawyer interrupted me. "You are mistaken. *6* It is the workers themselves who would object more than anybody else to such a discrimination. They are not decadent enough to accept the facts which you mention. We are in a country where man still has the courage to think of himself as a person. And think," he added, "how is it possible to discriminate? Common Law cannot make exceptions for an employer's working force. We cannot make one law for his force and another for the man who owns the means of production. The farmer, the small business man, and the man in the factory must live under one law. That is why the fictions of the law of contracts must treat the trade union like any other corporation. Unity is a great thing. As to the other side of the question, I am sorry, but I think a man over forty is a left-over under the factory system."

I repeated his remark: "Yes, unity is a great thing. Yet the army of unemployed is <sup>constantly</sup> ~~destroying~~ this unity ~~all the time~~. I share your conviction that man cannot live in the same nation under two different constitutions. But unemployment insurance makes it unmistakably evident that the old law suffers from over-simplification. It knows of nothing but man; whereas powers, persons, and forces are the three aggregate statuses of man in an industrialized world. You, as a lawyer, are a person; the managing director of a trust is a power like a king or the governor of a State; and a worker is in a third state of aggregate, because he is the brother of nature's energies. The question arises, where the farmer is going to take his stand in the future. Farmers and workers must live in one society. The social framework of an industrialized world must be one and the same. Unity in work is a great thing. But unity in <sup>law</sup> ~~theory~~, in defiance of a diversity in facts--"

"--is no ideal," said the lawyer, finishing my sentence for me and bringing our interview to an end. And I walked home with the impression that on my trip around the industrial world I had met a real person. How odd that he was a lawyer!

## Fourth Lowell Lecture

## THE WASTE OF POWER IN INDUSTRY

The "<sup>secret</sup> ~~waste~~ of power in industry" is the <sup>theme</sup> ~~title~~ of our fourth lecture. Today we take the bus as announced to go to the country. We are booked for the department of education. We wish to see how power is educated. We do not mean the electric power in the power-plant--we mean power in society. Those in power are after all human beings like the factory working force and the people in the liberal professions. How then are those in power produced?

The laborer is caught by money. He gets wages and is supposed to go where wages are highest. <sup>The lawyer</sup> ~~The physician~~ and the artist become <sup>(lawyer)</sup> physicians and artists for the satisfaction of an inner calling. But what makes a president? What makes a general in command? <sup>Such men</sup> They are able to dispose of the future of thousands; they abolish whole professions, like brewing or the export industries, by the stroke of the pen <sup>when they</sup> that introduces prohibition or high tariffs. They bar the movement of men over the earth by fixing an immigration quota or by confiscating an emigrant's property. They are the lords of war and peace, of the shipping of gold and goods and people; they regulate movement through space by interstate laws, by controlling the railroads, by censoring the mail. <sup>During</sup> ~~In~~ the tie between Hayes and Tilden, Tilden's mail was opened by those in power.

But before we go on, we had better explain where our bus is going this morning. We are driving to a center of education ~~which is~~ outside the city, in a lovely hilly region. The place contains a number of schools: a kindergarten, a grammar school, a college, a technical institute, a business school, a school of architecture, a medical faculty, a law school, special schools for gardening, housekeeping, bookkeeping, cooking, decoration, painting,



and drama. The most recent foundations were of schools for advertising, journalism, and propaganda, a bureau for civil-service organization, and institutes for city planning and international relations.

On our way we may just as well stop a minute at the electric power-plant and have a look at its new dam and buildings. The civil engineer is kind enough to show us around. Some of his bits of information are fascinating, since he explains the new methods of producing power.

"We have," says he, "considerably changed our methods of handling natural energies. We are no longer afraid of them like our ancestors, who forced nature into a slavery based on man's fear that nature might escape him. In Versailles, with its famous gardens and fountains, the trees, the grass, the brooks and wells were tyrannized, so to speak, by man's pumps and pruning-shears. Nature obeyed, but unwillingly. In the old days man would advance against nature, he would cross its path at right angles, suddenly stop it, and deal a direct blow to its energies. The general trend today is away from the brutality of a butcher's hammer, hitting the bull directly on the forehead. Everywhere we try to foster nature's own inclinations and passions, and to let it work in its own way. A good example is the change in the technique of sluices. They used to be simple walls, set into the river to shut it off. The new regulation of a watershed takes a more complicated way of adapting itself to the river's slope. Without being able to go into details, I should say that in every technical field we listen to the own intentions of our material. The vibrations peculiar to each kind of metal and the tendencies of each chemical element are most carefully studied. Modern technique goes along with the violent passions of nature. ~~We unchain them because we are no longer afraid of them.~~



~~Louis XIV thought that nature should behave with propriety, like man. We think that nature should behave violently and passionately, because then it is more itself and we have less waste of energy."~~

~~He goes on to explain to us how the power in the plant is reproduced.~~ "We have a great second reservoir which enables us to meet sudden peaks in consumption. The interesting thing in the modern production of power is, we can say, its indirectness. Suppose that we wish to use power in Boston. The earth, water, and hills around Boston are not told anything about this purpose. Nobody in Boston sees any change. And what is even more important: no hands are hired in Massachusetts, no raw material is bought in Massachusetts, no money is spent in Massachusetts. That is the difference between the old craft and the regular factory on the one side and the power-plant on the other. A craftsman worked in his community. The working force must stream into Boston every morning by car, subway, bus. The production of power starts at the other end of America, somewhere in the mountains, near a colliery, in the Tennessee valley. The concrete channels for the water and the dams are built, the change in the landscape is accomplished, by men and materials entirely foreign to Boston, Massachusetts. In Boston all that happens is that years later some scores of standards for high-tension current make their quiet entrance. The water run on in their valley; they are deflected only slightly from their old bed. Our technical cunning really centers in the switchboard. The need for the use of power varies considerably. It must always be available, but at the same time we should not use more than necessary.

"The great riddle about power is to reconcile two contradictory needs: one to have as much power as possible at one's effective disposal at any given moment, the other to be able to stop its

41 5

use completely or to gradate it as you like.

"Every power-plant has to find its optimum between always and sometimes, between maximum and average. The idea that we should simply put in the biggest power-plant we can afford would be fatal. It would be a waste to overlook the optimum between what is sometimes needed and what is always needed. When we overshoot the mark, we lessen our resources for another task. An engineer cannot be happy when he is in charge of a power-plant whose capacity has been overbuilt. He feels like a robber who has stolen someone else's property. It is a waste. That's why we try to centralize all power-plant building, and are constantly exchanging power between different plants."

We thank the engineer, and are soon out of sight of the valley in which he so gallantly watches over the power supply of a city three hundred miles away.

The college buildings to which we now come are in the colonial style, some of them two hundred, some a hundred and fifty years old, and really very attractive. We find people in considerable excitement. A great donation has been left to the college for new building on a large scale, and it seems impossible to spare the old buildings; the new plan demands the whole space. The very elaborate will of the donor obliges the college to go on for thirty years expanding its plant and program. The rumor of the impending destruction of their old home has alarmed some hundred alumni, who are holding a big meeting at the time we arrive. On the other side of the town, the mayor has summoned the unions and the business men to support the donation, since it means an immense amount of business and an unexpected blessing to the unemployed in the building trade.

When we enter the hall where the alumni are meeting, an

old man is thundering against the conditions of the bequest.

"These buildings are priceless," he says. "There is no regular period of turnover for real architecture. These buildings embody the whole tradition of our college. It is nonsense to throw them away for a few millions. On that principle, every child of a poor family would have to look around for a rich man to adopt it."

The president of the college looks embarrassed. "If we offend our donors, I do not see how we can balance ~~our~~ <sup>the</sup> budget. Even now we have difficulty in paying the salaries of the staff."

"That is utterly unimportant," the stubborn old man replies. "What is a year in the life of a college? What is a president in the life of our college? The unbroken chain of generations is what makes an institution great. These old houses are the pledge of our full, unbroken tradition. If the balancing of the budget were all, we could just as well use barracks or tents. It would be much cheaper. Your logic, Mr. President, contradicts itself. You are haunted by the current deficit, and you recommend the most expensive marble buildings, which will cost twice as much to maintain as my old colonial mansions and four times as much as the barracks. I am willing to discuss your misgivings over the budget with you if you move that we tear down these old houses, dismiss the janitors, and live in tents. But as long as you propose to build the new stone palaces, I am on the side of sound finance, not you. But my real allies are the traditions, the memories of our ancestors. They will be suffocated by the new plan and its architecture."

The president makes a vague gesture of weariness. "Mr. Chairman," he says, "I appreciate Mr. Peabody's love of the past; but I should like to see him interested in the present also. I am certainly going to resign if the unbroken chain of tradition is used to

chain me to a present bankruptcy."

A young man rises. He looks really astoundingly young in this gathering of old-fashioned gentlemen and middle-aged professors; in fact, he looks as though he has just married. "Mr. Chairman, since I have had some experience in wills and legacies, may I say this: When my father died at the age of fifty, he left his huge fortune to me and my brothers, under the condition that we should all three enter the firm at the same time, that is to say, not until my youngest brother should come of age. Now this brother was five when my father died. So a gap of fifteen years was created by this testament, during which a council was appointed to administer the fortune and the factories. The men appointed to the council were all honest men, intelligent and devoted to my father and our family. The term of their administration has just elapsed, and we took over the firm ourselves last month. In this group I think I can speak frankly. What this council did is the result of a queer mixture of cleverness and honesty with stupidity and laziness. They were haunted by the idea of their great responsibility. They constantly looked back to my father's intentions and purposes. They always felt themselves his appointees and trustees. They did not feel themselves to be in power except so far as their power was derived from our father. They administered every bit of land or money or bonds or furniture with the utmost care. No moth has eaten a rug, no game has been killed beyond what an expert permitted, and no money could be spent for any pleasure or amusement or luxury. Insofar as things and possessions and money were concerned, they did a beautiful piece of administrative work. They went so far as to accuse my brother and me of poaching when we went off hunting on our own land without their permission.

"Yet these same men have ruined our factory. As you know, it is an enterprise of world-wide fame: our machines are as well-known in the Argentine as they are in Persia. And the name of our firm guarantees the excellence of every single piece that leaves our workshops. The family council could deal with things and money, but it could not deal with power. It has wasted all the firm's chances during the last fifteen years; and it did this because of its bureaucratic sense of responsibility. Feeling that this was not their own business, they minded it too much. They were scared by the faintest suggestion of a risk or change which could not be logically derived from the previous organization of the firm. As you know, conditions in the economic world have changed so completely during the last fifteen years that nothing could be logically derived from the preceding period. As a result, the factory stagnated more and more. Its external condition is wonderful; but when the moment came for us to take it into our own hands, we had serious misgivings whether we should not close the business completely. Only the fact that we still had 15,000 men working for the firm induced us to try to find a way out.

"We called <sup>in</sup> upon an expert in the field, who teaches at a technical institute, <sup>(who)</sup> and he happened to have been a friend of our father's. He listened to our report, looked at the figures we had procured, and finally said to us: 'Yes, this great firm is just a heap of scrap-iron. Incredible as it sounds, the material basis for a prosperous enterprise is gone. I quite understand your willingness to pay off the debts and wind up the affairs of the company. Liquidation is the logical ending of these fifteen years, <sup>seeing that</sup> since they have treated a living enterprise as a legacy. Its real power has vanished. I cannot dissuade you from your purpose. Yet in spite of

this mess, I could imagine someone in your position choosing a different point of view. One big asset of the firm is still half intact: its name and reputation. It is hollow now, undermined from within; but externally it is spotless. You could start a race between the forces of decay and your energy and courage by re-building a real business under the cover of this great name. Of course you would have to keep in mind that the name is really all that is left. You must repeat to yourselves every day that ~~all~~ the buildings and men and traditions around you are not assets at all, ~~by~~ a burden. Remember that the name is your only asset. But the reputation, wisely and honestly used, can carry you far. In another fifteen years you may have rebuilt and reconstructed the firm, if you never forget the character of adventure your enterprise must have. Never think of having power, always think of restoring it.'

"We were rapt by his vision, and there was no question what we would do. 'After all,' the old man said, 'you are in a perfectly normal situation. Anybody who thinks he has power may be sure that it is already declining. I have never understood how modern men, and especially youth, can be fascinated by power. They all think of it as a thing. You will soon find that it is not. Power is a function in society. Your family council just did not know what kind of function power is. They mistook property for power. They thought they could keep it in stock. But power does not exist except by permanent use. It is the perpetual beating of a track through the jungle of human hearts and brains.' This is what the expert said.

"May I apologize, Mr. Chairman, for the length of this story. But I object to the legacy because it binds the college for the next ~~thirty~~ years. Furthermore, it brings in a scheme of expansion in

the different branches of the university which would curtail the power of the president. We have twenty departments now which all branched off when the right moment came. The new plan is mechanical, since it provides for a new department every second year. I can understand that the President does not wish to go stone-broke. However, if this legacy is accepted I foresee a stroke, a stroke which would be even more fatal to the power we wish to see in his hands. If you have no money, you always have the reputation and the name of this glorious institution and the power to re-create it. If you accept this plan of arbitrary expansion, you become a slave to a dead man's whim."

The President gasps. He is obviously well prepared to fight the sentimentalities of the white-haired alumni; but the young man's remark comes from a direction in which he has never looked at all.

He shakes off the young man like an insect. "Mr. Chairman, I hope that this most interesting story will be retold by our friend to the ladies after dinner. They will be mightily interested in his personal difficulties in his firm. I am sure that he will very soon bring it back to prosperity. As to the agenda of this meeting, the question of the budget still has to be settled. It is of immediate urgency. To give up this large bequest in a period of lack of credit and considerable financial pressure would simply destroy our credit--destroy our credit," he repeats nervously, and leaves his hand in the air like an interrogation mark.

A man with a wrinkled face begins to speak. "Mr. President, I am not so sure of that. Destroy our credit, you say? You wish to make the annual budget secure. Well, we all wish that. But it can be done in different ways. We in forestry have to balance



our budget also. Yet we are little interested in the annual budget in terms of money. We have found that the annual budget is rather arbitrary and does not tell us the truth. The forests do not deliver the goods annually like fields of wheat or cotton. The idea of an annual budget seems to have sprung from agricultural habits or the administration of a legislature, when people would meet for a few days each year to collect taxes or assess contributions for the following year in a common enterprise outside their own. The annual budget dates from times with little central government. A year is an arbitrary political period. It very often has nothing to do with the real periods of sound economy. It often destroys the right picture of our economic status, if we are too subservient to these legal fictions. Will you please allow me to quote a little article by Westbrook Pegler on that subject. From it you will see that days and years are political periods. They are the result of man's power over time. They are man-made units. We are, therefore, perfectly capable of altering them by our own free will.

"This is what Mr. Pegler says:

"Washington, D. C., Jan. 4.--The sessions of the United States Congress are opened with prayers by the official chaplains, of whom there is one in the regular establishment of each House. These prayers are the official supplications of the United States government. They are paid for by the taxpayers and published in the record, which thus stands as legal proof that the legislative branch of the nation has not missed daily prayers. In the legal meaning of the term, "Day" is a long, long time. Perhaps the statesmen have never ~~their~~ missed their official prayers on any legislative day since the government was founded. The record would show it, and in case of any dispute the record would have to be accepted.

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"However, there is an interesting distinction between an official legislative day and an ordinary 24-hour day. An official day in the Senate or House of Representatives may last as long as a month, or conceivably a year, and frequently does last for many ordinary days. If the members decide not to adjourn at the end of the day's deliberations under Divine guidance but take a recess instead, their next meeting is deemed to be merely a resumption of the last previous one. The original invocation is held to cover the requirements of the case. In this manner, the statesmen may prolong a day indefinitely and may claim with absolute parliamentary authority that they addressed themselves to their Creator this very day, though a week ago."



Now if this can be done with a day, could it not be done with years as well?

"Our forefathers used their free and powerful will when <sup>they</sup> began to run their whole business on an annual basis. But it certainly was not in the nature of things. It was the free decision of those in power. ~~It was an arbitrary device. Why must all reads give dividends or declare that they can pay no dividends every year? They are required by law to do so, but there is nothing in the nature of business which makes it necessary.~~ In a one-crop climate the harvest of course makes a natural division every year. In a climate where crops ripen twice or thrice, the business cycle could easily be based on half-years or on thirds of a year. There might be a law to require that a balance-sheet be published <sup>account-</sup> every fourth month. And the ~~appointment~~ books would be thinner under such a regime. They would run for 120 days; the old Anglo-Saxon long hundred of 120 could be restored by such a reform.

"Modern business men are haunted by the ideal of shortening the periods of bookkeeping. They would like to publish every <sup>in account of</sup> day (where they stand or think they stand. These short-term balance-sheets for one year or half a year have nothing to do with reality. They express the belief of those in power in modern society that the only time-spans which deserve attention are the year and its smaller units. They exercise their power to inculcate this religion of the hour and the month into our pulpy brains. They cry out if the budget is not balanced for one year or for two or three years, because ~~that~~ they think their world is going to pieces if things do not show a return after a year's time. ~~It's the fanaticism of modern production for establishing a circuit. Circulation of waste and rubbish, rotation of energies, quick returns on capital - it is always the same~~

~~idea of a recurrent~~ <sup>system.</sup> nature. But why is the recurrence expected to follow the laws of dead nature instead of human nature? The harvest year is, so to speak, the upper limit for the formation of a natural economic period. All the technicalized kinds of production try to shorten the periods. They are season-industries.

"Now I cannot understand in the least why Uncle Sam must balance his budget within a period of 365 days. What are 365 days to a giant who is going to live a thousand years? They are like one day, a day when he might go fishing or catch flies or lie in bed. I certainly shall feel happy if my personal budget reaches a kind of balance after sixty or seventy years. A scholar learns for one half of his life--and for the rest of it he teaches others. He lives thirty-five years without earning, or at least without deserving, pay. A young student and author and scholar does more harm than good. He begins by breaking a great deal of china, or at least by thinking a tremendous amount of nonsense. The many Rockefeller stipendiaries are allowed to run into a lot of fallacies, because it takes thirty years to dig your way through the jungle of errors heaped up in all the great libraries. These fellows are paid for throwing sand in the machine. For if they do not begin by throwing sand into the machine they will be no good twenty years hence. A boy who was never naughty in his youth will not become much of a fighter as a man.

"The budget of mankind begins with a minus in every newborn child. From this point of view, you cannot expect to trace the growth of a nation by staring hypnotically at the span of one year. You will not see a thing. And the same is true if you stare at 175 different budgets, for 175 ~~different~~ <sup>successive</sup> years. They do not mean a thing. Thus I think it is permissible to ask ourselves what can be called the natural period of return for an educational institution.

As a forester, I am especially interested in that problem, because men are like trees. And both men and trees fare badly if they are squeezed into a bed of Procrustes simply because the system is deemed more important than the tree, or the man.

"For money, a daily balance-sheet is perfectly all right, because you can best express things in money when you are sure that you are measuring them all at one and the same moment of time. If you measure everything in terms of money-value, you must be sure that it remains the same money every day. Now this is not fully true except when money has no chance to change its quantity or value. Therefore the daily account is the only accurate account if you wish to balance your assets in money. Then the time-factor can be completely neglected. It is really an inventory in space. With a sliding scale in the value of money, even an annual budget becomes meaningless. A thousand dollars spent on the first of March, 1933, and a thousand dollars spent on the thirtieth of November of that year can not be added together; for we are counting two things as different as apples and pears. Apples and pears are both fruit. The Hoover dollar and the Roosevelt dollar are both money. But two apples and three pears remain two apples and three pears. Any annual budget is therefore fictitious, and always was: people wished to believe that money was stable and that the prices of goods were dancing around this fixed center. By this kind of year man has changed time into space. He has declared that the first day and the last day of the year shall be treated as interchangeable units. But what is sauce for the goose is sauce for the gander. If a banker needs a money balance-sheet, we need a human balance-sheet.

"In forestry this whole idea of money book-keeping breaks down completely. Our periods are time-spans of seventy or eighty

years. We cannot overlook the fact that all prices change completely during so long a time. Money <sup>little or</sup> makes no sense <sup>where</sup> ~~as space~~ as we deal with periods of more than seven years. Figures are made to be used ~~in time, not in space.~~ in space, not in time. The business cycle is probably the symbol of the recurrent breakdown of fixed price-relations and fixed rates of interest after a certain lapse of time. The transformation of time into space cannot be protracted beyond a limit of one or two or three years without producing a crisis. The old obligations between creditors and debtors, as expressed in figures, cannot be met after the lapse of seven years because the figures have lost their genuine meaning. If even seven years nullify the real uniformity of money, seventy years are fatal to it.

"We have drawn the conclusion that we can not budget our forestry in terms of money. Beyond a cycle of five or seven years, we cannot tie ourselves up with money. Our business is a permanent process of reforestation. We are dealing therefore with periods of growth and decay. Fifteen years are not fifteen separate years, but one single period of continuous growth for a certain part of the forest. A cycle of four or five times fifteen years can be used as an average basis for <sup>our</sup> computation. Since we are responsible for the equilibrium in the national forests, we are not interested in prices, but in the permanent reproduction of trees. The annual revenue is of secondary importance. Some years we are lucky, some years we are not. We have concluded that even though our figures must change every year, the quota of chopping, seeding, upkeep, etc., remains unchanged. I recommend this way of balancing the budget to the college and the university. " ~~Man's own time span ought to be taken more into~~  
~~into better consideration."~~

Now the President is losing his temper. He is barely able

to ask for a recess of half an hour, and to leave the room. He runs into our group, which has watched the meeting from the door. Since we are old friends, he does not conceal his excitement. "This is a conspiracy," he is shouting. "First the old ass who has been out of business for twenty years, and might easily be eighty, sings his psalm about tradition. Then this greenhorn <sup>babbles</sup> ~~talks~~ his personal story. And when that is over I am stabbed in the back by one of my own men. Forestry should really not be in the curriculum. It has often occurred to me that we should leave forestry to Canada and Germany. It isn't science; it's mysticism."

As we are old friends, I try to ~~search for~~ comfort him. "Cheer up," I say. "You should feel extremely happy. You have <sup>just</sup> experienced the greatest day in the history of your college."

"Are you trying to make fun of me?" he cries. "We are going bankrupt."

"Maybe you are; but since when have finances been at the core of education? This is the first time that you have had your alumni and your staff really entering the field of education. Don't you feel happy? Perhaps the experience is too overwhelming. Let us go out for a walk."

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~~So I take my leave from you, ladies and gentlemen. You see, I cannot leave the man alone in his despair, but I am willing to relate to you in a minute all that we had to say each other.~~

~~Here we are back again.~~ Said he : 'I hate these fellows.' I say: You know you have no better men. And then, besides their personal integrity, they represent three different generations. Whenever three ages, a man of 80, one of 25 and one of 55 are unanimous as they were this afternoon, you can be sure that they are revealing a great truth " But they are not saying the same thing. Each of them says something quite different. The old man trembles for his traditions, the lad dreams of adventure, and the professor is riding his hobby of reforestation. "

I cut short his lamentation : " No , these three men are expressing exactly the same idea. If they had opposed you with identically the same phrases and arguments they would not really be expressing one idea as independent and different individuals. A mere identity in words would really make me suspicious , and then you would probably be right . When the same slogan binds three generations together - for example prosperity or Socialism- and when they use the same words, they are generally acting under the spell of a momentary excitement. Then they repeat the catchwords of patriotism or of propaganda which simply carry them away with the mass. The mere echoing <sup>of</sup> the day's headline does not count. ~~It is not that~~ If the spectators of a boxing-match ~~are~~ all crying out at the same time, they are behaving as a crowd. Their personality is gone. But at your meeting the three men were actually expressing themselves in a ~~personal~~ representative way. They all have the college at heart. An old man will always deplore too reckless changes, a young man will always be bold enough to take a risk. And ~~man~~ a man in middle age will always try to establish something durable and permanent. ~~That's~~

That's ~~what~~ what they have done, and yet they agree. Now all these men are business men, and prosperous business men. All these men <sup>are</sup> con-  
 jur~~ing~~<sup>ing</sup> you to think of your college in terms of real power. Haven't  
 you suffered all the time from being misunderstood by your alumni?  
 You have simply forgotten <sup>your</sup> real self, which made you an educator, in  
 spite of other opportunities. At this meeting, you acted as the  
 business man, and these three representatives of the real people the  
 people which endures through time, through the ages, have tried to  
 play your role. That is an exchange of parts which is very useful some-  
 times. But now you can again show your real face~~s~~ to them.

This incident at the meeting is the great chance of your life.  
 Take it ! It will never come again."

By that time the president had become pensive. "What do you mean ?  
 he said.

"Why, your old plans, your old dreams, your old vision when you came  
 here : Have you completely forgotten how opposed you were to the modern  
 trend in education? ~~seemed to you.~~ Let me recollect some of your criti-  
 cisms from the time when you were still president of the chemical  
 works. " I am through with all my problems you would say. The process  
 of production is settled. It goes on day and night like a stream. The  
 recurrence is ideal. The market is safe and growing. The labor supply  
 is under control. Finances are more than satisfactory.

But one thing I can not solve. I cannot find a successor  
 for any important job, let alone for myself.

~~There is this young man; he came to us five years ago as an out-  
 standing expert . He was the pupil of our leading chemist. He had  
 worked day and night with his professor. I am still quoting you  
 as took a liking to him. After a year in our firm, he began to clear  
 up his table at 3, 30 because his working time was over at 4.~~  
 I am still quoting you  
 - ~~the president's remarking~~



He complained of that mechanisation himself. One day he told me that his colleagues were urging him not to work so hard. I was disappointed myself and dropped him. " Now that was only one of your stories . I remember the son of your colleague in the corporation. What a nice boy, well educated, proud of his father, highly dependable , but without the slightest ambition or liking for power. You always sighed that a factory did not and could not produce any man for the succession in power. On that <sup>Subject</sup> you wrote me a long letter <sup>which</sup> ~~it~~ impressed me deeply. It ~~is~~ <sup>was</sup> the letter which inspired me to <sup>bring</sup> ~~take this message out~~ to your college today. . I brought <sup>the letter</sup> ~~it~~ and I am going to read it ~~is~~ to you right now. You must listen to your first and best self before you ~~can~~ go back to the meeting. Here is what you wrote when you took over the presidency of the college :

\* I am going to take as my successor a relatively young man who graduated from a small college and has served as a private secretary and assistant to a friend of mine for some years. I feel that I cannot find the right man in my firm itself. I must take him from outside. In the firm, there seems <sup>to be</sup> ~~no~~ way of making him visible to me. A factory is a place which prevents man by <sup>principle</sup> ~~establishment~~ from looking backward to the past or forward to the future. In any other order and institution, men always gave half of their time to learning from their predecessors and training their successors. When apprentices, fellows, and masters lived together, the master gave half of his time for education. From the viewpoint of the apprentice and the fellow they gave half ~~of~~ <sup>learning</sup> their time to ~~conceive~~ the masters whims and motives and convictions and little ways of dealing with life. People who worked together looked as much at each other as they did at their products. Any <sup>old</sup> ~~young~~ lawyer trained at <sup>young</sup> ~~old~~ one, a young minister <sup>was</sup> trained by an



old parson.

All this is gone since we have become efficient. The modern business organisation has exiled all time for education, since all time is exclusively and with the highest speed possible made into working-time. We are naturally not interested in a man's potentialities but in a number x or y of impersonal working hours. There has never been a system where every member of a series in time was so completely left alone with his business. ~~xxxxxxxxxxxx~~ The very words for succession in time, like ancestor or heir, are archaic. We are merely collaborators in space. You do not know your predecessor, you do not educate your successor. You only fear a rival who might displace you. As the successor now comes regularly from outside, the old man who has preceded him has left the chair and has become invisible when he enters the firm. The chain between the generations is broken.

Every day, a further step in rationalisation pushes another group of candidates for a profession into a separate training school. A musician, a cook, a housewife, is sent to school for an education. because the orchestra, the kitchen and the family are busy and rationalized, and can not find time to teach the newcomer. The result is an incredible waste of capital. We are so thrifty in <sup>regard to the</sup> ~~exploitation~~ of energies; we are indescribably wasteful in respect to any moral heritage from father to son, from those in office to those in school. Never has any society more deliberately wasted all individual memory and experience.

And how could it be otherwise? Rationalisation has cut through all loyalties between the different age-groups. Every man who is hired is made, not a member of a family but a worker <sup>at</sup> an objective task. Industry and schools are becoming more and more two camps, separating

the generations and putting men into two extreme situations. In the ~~unlike~~ college the old men, the teachers are even too much interested in their students. The factory demon has entered the consciences of the staff. Because they think in figures of output they are devouring these boys. With the help of examinations, tutoring and homework they <sup>try to</sup> get hold of a fellow to an extent which would <sup>be</sup> considered disastrous in a family. That's why research is so vital for a college. It restores to a certain extent the natural conditions between two generations. Without research, teachers and pupils are always occupied with each other. That is certainly not a way of educating a man. But they can't help it. In any school, the objective work is far too unreal, too soft, to stand between ~~the~~ teacher and student as a salubrious barrier. The reverse situation prevails in business. Here nobody is allowed to take care of any body else. Every man concentrates on his material and works by the piece <sup>or</sup> ~~extended~~ the hour. But though this work looks very real in space, it is nothing but labour and work; it can no <sup>longer</sup> ~~more~~ become an opus operatum, a common experience in his personal life.

" With an inevitable logic, the two great machineries of industry and education polarize each other. Every step <sup>toward</sup> ~~of~~ mechanization in industry throws out a set of people which up to that moment had still been educated or trained by its predecessors. They are handed over to a school and to teachers. Rationalization of production means the banishment of the younger generation into schools. As soon as a barber shop gets highly rationalized, <sup>there must be</sup> ~~a school for barbers~~ <sup>to</sup> take over the education of barbers. This has a twofold influence on society. Every education is both human and professional. A father impresses his son by doing ~~some~~ certain very definite and objective things which must be done. No education can be solely personal and human, or objective and professional.

It is always both, or it is <sup>no</sup> ~~not~~ education. Therefore the barber who loses his apprentice loses a privilege and gets rid of a duty. The duty of the former barber had been to teach this silly and clumsy guy to shave and to give a hair-cut. The barber's privilege consisted in his power of preparing the future, of bridging the gulph between past and future by transferring to this human being the image of God which he ~~was~~ worshipped himself. No man in business has this privilege any more. It is gone with his duties toward youth.

" The loss of warmth, of confidence, of common faith of varied of experience, ~~can not be~~ but tremendous. Everything falls into the gap in time between predecessor and successor. They do not know each other, they do not like each other, they cannot learn from each other. Every man a king, yes, but a king in space, without ever <sup>having</sup> <sup>ful</sup> ~~been~~ the right heir, ~~being~~ <sup>they become</sup>. They are all taught in schools, vindictive instead of grateful <sup>toward their</sup> ~~against the~~ predecessors in the work. The schools become paradises of humanity, the factories hells of objective efficiency. Our system divides life more and more into two distinct halves : school and life. What will be the consequence of this arrangement in series of labour and education? ~~the~~ heaven first, hell later ? Education will cover more and more years . It will be extended to the 25 th year. It will be a paradise of mutual contact between the members of the class and <sup>certain</sup> ~~some~~ elderly men, without any real responsibilities. In business, man finds himself, <sup>thanks to</sup> ~~through~~ this serial arrangement between school and fact, facing ~~my~~ work as an isolated cog in the machine, with gnashing teeth and clenching fists. Any improvement in education fills me with deep sadness, since it means a loss on the business side of life. Every adult has the inborn privilege of being a link in the stream of real time and teachers should only be the stewards of this universal office which is en-

trusted to every human being. For this is the only allowable pursuit of happiness, to convey intact to further generations the stream of life and inspiration which we have received. Schools and professors cannot exclude or deprive anybody of this privilege. Every man is entitled to transmit to his latest descendants the inspiration which has come down from our ancestors. This is the test for all opinions and creeds. But today we are ripping open the dark abyss, sealed by our forefathers, which separates every generation from its predecessors and its successors."

"Stop, stop," the president said. "I had forgotten how garrulous my letters sometimes are. Yet I am glad you came. I know what the alumni must be told after the recess." . . .

We are back in the hall. The chairman is clearing his throat. "Mr. Chairman," says my friend, and rises to his full height, causing a certain stir of amazement in the room, "Mr. Chairman, I move that the assembled alumni recommend that the legacy be declined." The old gentleman shouts, "I second." With a small majority of ayes, and in the midst of a great silence, the motion is carried. "Any other business?" asks the chairman, thunderstruck by this sudden shift and fearfully looking in the direction of my friend.

The president is still standing, and replies in an easy voice, "It is the same business, I am inclined to think. Our alma mater has now buried all vanities of expansion in space. We are poor, and we shall probably remain poor for a long time. We are bound by our traditions, so highly praised by our senior, by the sound principles of economics expounded by my illustrious colleague, and <sup>by</sup> the exhortations of the new generation, to remain modest. That is only the negative side of our problem. It is my duty to develop the positive side. I ask the appointment of a committee consisting of the three powerful speakers in the discussion, this gentleman, who has been my collabora-

tor for many years"--here he points at me--" and the president; the committee to be directed to work out the consequences of the new situation. I do not wish to anticipate the decisions of the committee; but I suppose you may wish to hear in five minutes' time why I think we should have it.

"The refusal of the donation marks an epoch in the history of our college. The period of reckless expansion is over. We were almost shipwrecked by my own routine in trying to continue this expansion. I myself was not unwilling to sacrifice the past and the future of this college to the fetish of the annual budget. This is true of most men today.

"The reform of our college and the situation of the world outside cannot be visualized separately. If we succeed in coördinating the two problems of disintegration of power inside and outside the college, our college would probably reestablish itself at the very heart of modern society.

"We have, like most universities, many departments beside our main faculty. It is an open secret that the disintegration of the educational body has gone a long way through this constant addition of new fields. The faculties and divisions have lost their genuine meaning. Humanities and professional training are no longer in mutual permeation. The fate of our students in later life has become more and more difficult; and it has even become doubtful what the end of our education should be. Is it scholarship? Is it leadership? Is education an end in itself? If so, what are the sound limits between education and the practical life?

"Our students' curriculum is becoming more and more a mosaic of separate hours and separate examinations in isolated fields, on isolated facts. Their individual life in college is threatened with disintegration by the influence of industrial principles. A hundred

different lectures do not make up for one deep educational influence which would go through their lives and make them able to meditate. Their power of being masters of time is weakened in college. This power is weakened even more in the world outside. Though most people dream of social power, very few seem to know what social power means. It is the force that can bind together isolated moments of time.

"The power of succession through time is imperilled. The arches of time are no longer held secure by their anchorage in the hearts of men. Our hearts are afraid of committing themselves to any vow or purpose for more than a year. We have lost the power of binding together the longer units of time which might be in harmony with the inborn time-spans of human nature. The external calendar is invading the calendar that is proper to man and his growth. The worker cannot interconnect the hours of his life, man and wife cannot interconnect the phases of their marriage. Parents and children can no longer be thought of as a real serial arrangement in time. They do not follow each other, they do not replace each other. Finally, the important places in society are more and more filled by people who ignore and trample down the seed left by their predecessors, and whose successors are chosen without any real preparation or foresight. A man takes no interest in his future successor, ignoring him till the last minute.

"Our committee should study the waste of power in modern society. As its first task, the committee on power will have to look round in the social field and report on the most obvious solutions in the field of real time, such as have been attempted before or are developing around us in the present. In that way we shall keep firm ground under our feet and not get lost in lofty theories. Any special experiment in the field can lead us to a clearer insight into the powers that work in time and through time. Furthermore, by concentrating on specific questions the committee will be able to submit reports to you at very short intervals."

Fifth Lecture *The Social Body Rebelling Against*  
~~Capitalism~~ *Dead Time.*

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Ladies and Gentlemen,

Since the <sup>9</sup>beginning of the factory system, the hardships caused by it have given birth to numberless programs of reform. They have worked, at the time and in the country where they were proposed, as lenitives for social pressure. And whatever their result has been, and however fragmentary their success, they are justified by the moral support they have lent to their <sup>believers.</sup> ~~followers.~~ The great Swedish novelist, Selma Lagerlöf, has tried to put into a great symbol the idea that man's mistakes are often his greatest glory. In her book on "The Miracles of the Antichrist", the Pope is asked by the zealots of orthodoxy: "But he is the Antichrist! How then can we tolerate his doing miracles?" The Pope replies: "Nobody can redeem mankind from its sufferings. But he shall be amply pardoned who encourages mankind once more to bear its sufferings."

Since I am going to criticize the principle on which the solutions of the bygone century were based, may I say that I am aware of the fact that they had to come first. Without the help and comfort given to the working man in Europe by the reformers, our industrial system would have ruined mankind to a much greater extent than it has. We would not be able to discuss new possibilities in relative peace and calmness without the many safeguards which our fathers continuously developed against the excesses of industrialism.

These safeguards surround the corpse of dead time, represented by the working hour, on all sides, so that its poison shall not completely destroy the life of the worker. They enclose the working hour as the white blood corpuscles will enclose a splinter which has pierced the skin. As you know, after any such wound the body immediately delegates an army of globules to fight the enemy.



If the wound is on the surface of the body, the pus secreted from these white blood- corpuscles is able to <sup>u</sup>squeeze the splinter out.

In the case of a bullet which has penetrated deeper, the pus- forming system cannot eliminate the foreign body. All it can do is to incarcerate the projectile and neutralize it. The bullet remains in the body until the surgeon extracts it by an operation.

The complete blindness of the last century to the violence offered to man's time by space has infected us all. And in the speaking of the working-hour as a foreign body in man's real time, we can hardly escape serious misunderstandings. I seem to be making myself a spokesman for laziness, for all the Bohemians; I am certainly risking my reputation as a scholar by calling the established schedule of anticipated time the great symbol of the fall of man.

But I am confident, after our first four lectures, that most of you will be willing to admit the expression, because by now the murder of time by space has acquired some color of probability.

So in the middle of man's life, between youth, which is left to education, and old age, we find "working time" which fills the years from fifteen to sixty or seventy. Like a stone breaking the surface of the water, it necessarily calls forth reactions from all sides. There are four possible directions from which in a living society reactions against dead time can arise:

1. and 2. The non-mechanized phases of life can be prolonged, that is, either youth or old age can fittingly be expanded, so as to lessen the extent of dead time, or 3. and 4. dead time itself can be reformed, either by the employer or by the employee, each representing a different point of view. Of these four reactions, perhaps the most obvious is that which looks towards the future beyond working time. Here we have the greatest consoler of man, hope, in its purest form.



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~~actions against dead time in a living society: the most obvious is the reaction from the side of the future.~~

A worker, being done at forty or fifty, emerges from his working-time as a public burden. We all get nervous strokes from too much dead time in our appointment-books. We will try to insure ourselves against the breakdown of our natural energies before our natural life is over by attempting to ~~find~~<sup>find</sup> ~~a~~<sup>port</sup> a kind of hospitable harbor after a possible shipwreck during our years of work. The old-age pension is the great symbol of this idea. The average man being too weak and unstable, the law compels him to provide for his old age. The worker is obliged to pay a premium every week, <sup>and</sup> ~~(some~~ Santa Claus, in the form of the government or the employer, adds a certain premium. At forty-five or at fifty-five, the man can retire and lead a modest and quiet life as a pensioner of society. His fight is over. He has nothing to say or ~~to~~ do now. He has no responsibility. His future is not the result of his achievements during his working-time. His real future <sup>was</sup> ~~is~~ bought from him when he <sup>ed</sup> enlists in the army of industry. If the worker was interchangeable and impersonal in the factory, the old man with his money pension is in exactly the same abstract situation. He is again number 759,633 on the pension-list, as he was number 34,533 on the payroll. The old-age pension is a natural reaction against the working-time system. It introduces no new element into the life of the worker. It ~~acc-~~cepts the defeat of humanity by the hour-system and pays an indemnity to its victims.

Now in a way we are all the victims of our lives. In the old days, when a person made over his estate to an heir, he made a reservation of property for himself. A senior partner withdrawing from actual participation in business will retain a certain amount of

his former income. The old-age pension makes the worker into a senior partner of Society, but it does it before he has become a real partner, with a name and a firm. It gives him a money privilege equal to that of the man of property; but his real time remains bought off. This would be unimportant if the worker were "old" at the age at which bankers or presidents retire from office: at 60, 65, or 70. But he is not. The coal-miner in Germany was retired at 53. For many white-collar <sup>men</sup> ~~an~~ business 45 is the danger-point of their career. So the age line for the retiring cog in the machine will have to be drawn in the middle of his life, between 40 and 50. Society will be feeding a perfectly useless member of the community for <sup>20 or</sup> 30 years.

This picture is precisely the reverse of the <sup>gilded youth</sup> ~~picture~~ of the upper <sup>thousand</sup> ten. The young swells, sons of rich parents, used to go promenading, gambling, travelling, in order to try their parents' wealth and patience. The old worker, being at the mercy of the government for thirty years <sup>by virtue</sup> ~~because~~ of his money pension, would try the patience and wealth of the younger generation. I am afraid he might experience something of King Lear's fate. Lear made over his kingdom to his daughters, and it proved a complete failure: He didn't keep his pension long. Already youth has proposed to send the old men to war instead of the young. This is, I am sure, only a first step. The young in Europe love to think of themselves as the elite, the salt of the earth. The old are treated as the baccalaureus advised in Goethe's "Faust": "The best thing would be to kill them off as soon as possible." "Old" in the sense of over 70 and old as meaning over 50 have two different social connotations. The men and women over 70 are one twentieth or thirtieth of the nation. There is no question that they can be fed and sheltered and honored without a real break in our system.

But if one quarter or one third of the whole nation is concerned, instead of one twentieth, the problem ceases to be a financial or rational problem. Old-age pensions for the workers are no mere technical solution, because they reintroduce the King Lear problem into modern society on the largest scale. The old men are asked to abdicate from ownership or responsibility at 50 or before, and to rely on the mercy of their sons. I <sup>sh</sup>ould like to think of the verse in the Bible: "Woe to that country whose king is a child!" It is quite impossible to balance the relations between the four generations which have to live together in a nation, under a system by which the old depend on the mercy of the young. The young, with their well-known cruelty, will reduce the pensions year by year. *And in a society of young people the judges, being young, will not defend the constitution.* The scheme of old-age pensions can work in a society which is not completely industrialized. For the present day the plan seems only natural, the old worker without private savings being still taken as an exception by the law-makers, senators and representatives. But since we are dealing with the problems of a completely industrialized world, we cannot help foreseeing a shift in power from mature age to youth as soon as the men beyond 45 are put on the pension-roll.

It is possible that such a shift in <sup>political</sup> power towards youth is inevitable under modern conditions; but at least it should be perceived in its full significance. The money paid to the men worn out in industry is a simple and natural <sup>reaction</sup> to the devastations caused by the foreign body of the working-hour. The same, of course, is true of sickness insurance. This time it is a temporary unfitness of the worker to serve in the industrial army. Disease and sickness makes man an invalid for a certain time. But sickness insurance is certainly much more natural and less revolutionary than old-age pensions.

By bridging the smaller intervals, it helps to keep a man in work for the same length of time as people are able to work in a shop, on a farm, or in a liberal profession. Thus sickness insurance was the most adequate reaction of a liberal society to the working-time problem.

We now approach the same foreign body from the other side: from the side of youth and adolescence. Old-age pensions become something revolutionary only when prolonged to include the age-groups between 50 and 70. In itself, a provision for the man out of work is still too much connected with the specific character of a man's personal destiny to make us tremble for the foundations of civilization. The same remark could be made about the solution found for the problems on this side of the working-hour. Youth is not instructed in the factory. Modern workers are not taught in the factory. They are, as the expression goes, "broken in" for ten days or a fortnight. The rest of the teaching must be done in school. Any industrial civilization puts up a fight against illiteracy. Bolshevism claims to have reduced illiteracy from 89% to 12 or 13%. Illiteracy bars the floating of labor through an abstract, nation-wide market labor market. The illiterate cannot buy a railroad ticket, cannot travel away from home, cannot write for a job. He is bound to remain in his local environment. That is why illiteracy is no profligacy in a feudal society. It was not wicked to keep books from the people in these days when the pictures in church were called the library of the uneducated. In a local group, things can be conveyed to every member directly.

Illiteracy became a scourge with the opening of the labor market. A wandering laborer must set foot in the world of reading and writing. Compulsory education by a system of public schools

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was the natural premise and result of the new system of production. The first generation of girls in the cotton mills of Lowell came from the very best homes of New England villages. The pressure which their working-time brought to bear on these well-educated girls was such that they were soon replaced by cheap immigrants. The <sup>public</sup> school system is a minimum effort to replace the home education of ~~the~~ <sup>and</sup> ~~the~~ sons and daughters from independent homes, with ample family traditions, by the artificial methods of class-room instruction.

The race between Child Labor and a public system of education is still going on in this country. I am not competent to enter into the details of the legal questions involved: States' rights or Federal regulation. But two things, I think, can be said by an outsider. One is that all labor legislation must be uniform throughout the whole area of the labor market. Otherwise it ceases to be real. The American industrial labor market came into existence long after the States themselves. It is this fact of a national labor market which must find adequate regulation. ~~Any law~~ No law that transcends or falls short of the real extent of the market can claim to promote justice. I can understand municipal laws for Child Labor if it can be shown that children will work only in the community of which their parents are residents. I can understand sectional legislation which presumes that no child will take up work across the great desert. And I can understand Federal legislation based on the assumption that any form of movement and migration which is possible for an adult is accessible to children in this modern world. But I would not recognize the authority of any abstract constitutional rule for the problem of real justice to a child on the modern labor market. The same laws of nature which are quoted by the Declaration of Independence are paramount to any written constitution, and demand justice for the child

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against its real environment and its real labor market.

A second conclusion on Child Labor can be derived from the whole structure of modern industry: Child Labor is a question proper to the early age of industrialism, which should have been settled fifty years ago. It is obsolete. It is difficult to deal at the same time with this primitive fact that there are children in the world who are not even allowed to grow, and with all the more recent facts which <sup>have</sup> arisen under a reasonable division of labor between the grammar school and the factory.

I had to mention Child Labor for fear of being accused of oversimplification. In general, we can say that the line between school and factory is clearly drawn today. The coordination of work and education has given way to an arrangement in series. The school takes more and more exclusively the full time of the children. To be in school is now a full-time occupation for a child.

This again, like the old-age pensions, is a natural reaction against the factory system. And we may assume that the reaction has not reached its climax. The school is beginning to throw off all the connotations given to it in pre-industrial days. In those times the old grammar school, with its floggings by the teacher and its teasing on the part of the boys, was one of the few rationalized departments of society. In school, an hour was an hour, though it was called a lesson. Books were divided into lessons, "readings", and a curriculum was established which required a methodical effort extending through some hundreds of lessons. Like the drill in an army barracks, the drill in the old-fashioned school preceded the labor regulations of the factory system. The schools in old Europe supplemented the family education with a straitjacket of rigid discipline for body and mind. Children were required to sit for hours

as stiffly as soldiers on parade. They could not utter a sound. But the physical discipline was less remarkable than the minute and often brutal training of the children's brains. From calligraphy to learning the Bible by heart, nothing was spared to exercise the mind in a meticulous and a uniform way. The paths of memory and knowledge could never be rutted deep enough.

In a time when nature was still handled in small units, the children of men were already concentrated for a common mustering and intellectual mobilization. The uniformity of a drill that goes on for centuries in the schools is a great feature of any <sup>old</sup> civilization. Surrounded by a mysterious nature, man rationalized men. Scholasticism sacrificed hecatombs of children to the ideal of uniformity in indoctrination. The rigidity with which a child had to sit on its bench in school, and the adult in his pew in church, was the external symbol of a system to which people were eager to conform. In those days nobody longed for a creative or an original child in school. The school was meant as a mill for the output of regular and conforming members of the community. The school acted as a corrosive, cauterizing human nature with inhibitions. Since school and church were places where more people could be coordinated than in the single workshop, the two worked as machines for coordination. In spite of ~~under~~ the factory system, the old ideal of a school remained safe for a century. Not until industrialism undermined the homes of people in the liberal professions themselves did they begin to think of the fact that the schools were no longer the largest units. The groups in the process of production were larger than the classes in education. The working force of one factory provides children for ten schools. From a centuries-old <sup>(school)</sup> system which by its rigid uniformity had anticipated the factory system, we are now drifting into



a new conception of the schools. They are beginning to think of themselves as antitoxins against uniformity. They are horrified by the idea of an established schedule and rigid requirements. They no longer wish to personify man's anxiety for standardization. Progressive schools are the natural reaction of the school against the <sup>adult's</sup> working-time, ~~of the adult~~. When the gray uniformity of the cities becomes the inevitable destination of the adults, <sup>educators</sup> ~~the schools~~ look for means of postponing this process. They try to keep the children as original as possible, to make them do creative work, to encourage them. Instead of prohibiting all the time, they invite them to spontaneous action. Children must discover the whole world afresh, because their parents have to live in a <sup>world</sup> ~~state~~ of frazzled nerves.

The few sparks of life in a child seem twice as precious now, when the teachers know that later the child will have no opportunity to express itself personally in original work. They equip the children with ~~the~~ possible means of resistance against the deadening consequences of mechanization in business. And this ideal of life in school breaks down the established schedule of hours and lessons. The school is no longer a cage for imprisoned birds. It is a playground for little animals, from which they are to profit before they are caught by real life.

Here again we have a very natural reaction of an instinctive character against the foreign body of dead time. The schools try to delay the entrance of the children into business. They nibble a few years off the life spent under uniform hours.

We now turn to the other natural reactions against dead time. These do not gnaw at the working-time from the end, like <sup>social policy</sup> ~~the~~ ~~age pensions~~, or from the beginning, like education.

They are reactions of the citizen who sees himself or his brother and fellow entering the aggregate status described by us ad nauseam in the preceding lectures. If you see your brother drifting into a lower social situation, your natural reaction will be: "Can't we keep him on our side, in spite of this decline?" The cry for profit-sharing is a generous reaction of this kind, on the part of a class which sees what is going on and feels that something should be done. Since we all think that we ourselves are the climax of creation, the stockholder thinks: "Let the worker become a stockholder. Won't he be happy then? All his hardships during the day will mean nothing to him if he can pocket his dividends at the end of the year. He will forget his fate as a worker and will only look at his prosperous situation as a capitalist." For fifty years this hope has worked effectively on the mind of the average citizen and of the worker himself. It seems to have been the great incentive for the American worker, his chief faith. It worked in three different ways.

The word "capitalist" could awaken a threefold expectation in the worker. First, he could hope to earn high wages: then he would easily save money. By good husbandry, he could not only save money, but take a flier in the market and come out safely with a big fortune. Then he could cease to be a worker.

A second interpretation would be that he could at least provide an education for his sons. He had to remain a worker, true enough; but his son and daughter would start on a higher level. They would desert the army of work and become rich. This second interpretation anticipated a future for the children outside the factory, on the right side of capitalism, on the side of the inventors, directors, of the managing staff, of power and personality. The factory, though very real to the father, was nevertheless temporary, because

he identified himself completely with his children. Their emancipation was his real reward. By a very touching division of labor, the parent's work and the children's future seemed to be one and the same thing, looked at from two different sides.

Because of this superposition of two biographies, those of parents and of children, the present stage in the factory was really not <sup>very</sup> ~~too~~ important. It was one half of the situation, and just as unimportant as the drudgery of a physician in his practise day after day. It was borne with perfect ease and was usually overlooked.

These were the two great chances for the worker: savings, and a possible lucky strike, or a better destiny for the second generation. The vision of a capitalist's future shone over the difficulties of the present day as the picture of his future life on land outshines the hardships of a young man's service in the navy. That vision made the present look different. It connected the dead hours of today with the life in a better future.

I suppose that this faith in a future real life of liberty and happiness is still the deep conviction of most men in the modern world. We are always told that the notion of a life after death is gone. It is true that few people, even among those who pretend to know about heaven, are ready to act according to their alleged belief in a life after death. But for the thesis that the belief in a life after our present life is the ingredient without which man cannot live, the atheistic worker of today is a good witness. He believes from the bottom of his heart in two lives, one that of today, with wage-rates, hours, strikes, disease, unrest and unemployment, the other--for himself or his children--that of glamor, romance, with Greta

Garbo and Douglas Fairbanks. The duplication is complete, and each of you can sketch an accurate picture of the two worlds most people

are living in today.

By this vision, the deadening influence of the factory was well outbalanced. This ideal of a share-the-wealth program was and is so definitely rooted in most men that our description of the prevailing conditions in industry seems devoid of reality. In a world in which everybody is concerned with the future the details of the present day are of little interest. The man who expects a complete change will consider me a dreamer who takes a transition step much too seriously. In the old days it was an ungrateful business to be the prophet of evil. In the modern world the place of the prophet is taken by the man who points out that present conditions are bad. The prophets of wealth will despise such a man as a woolgatherer.

Yet in spite of the strength of this vision of future wealth, there are signs that it sometimes had to be fortified by artificial means. In discussing the artificial devices recommended in times of social unrest or depression, we shall be able to find a common ground for debate between the dreamer about reality and the dreamers about the future.

Whenever savings have been imperilled by a decline in wages, profit-sharing schemes have been recommended as a wise social policy. Give the worker a special share in his business; then he will feel more loyal toward his employer. A system of industrial partnership would regularize the way to wealth for the average worker. He would earn dividends without owning capital. He would become a capitalist in the same factory in which he works. Again the deadening influence of the daily grind would be outweighed by his membership on the liberal side of private ownership. This scheme tends to face reality a little more than the others. Under it the worker is not divided in his interest between two worlds which follow one another in time.

He has definitely settled in one world, where capital and labor must both exist. The individual worker cannot be shifted from the side of Labor to the side of Capital, because hands will be needed in the process of production for another century. The worker is to remain a worker, his son and his grandson are to remain workers, because industry cannot function without labor. Only the vision of participating in the results of the business might reconcile the family to its destination.

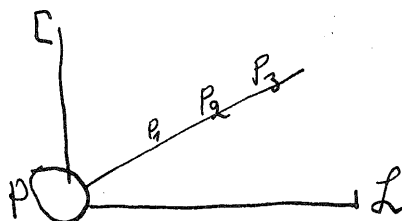
The scheme has never met with great enthusiasm. In Germany it was put into effect by the firm of Zeiss, at Jena. Abbe, the real founder, made the workers shareholders in his famous factory for telescopes, microscopes, and lenses. I have lived with a group of his workers for a month. They were not in the least influenced by the generous bequest. They were all Socialists, and there were as many strikes at Zeiss as in any other firm. This might come to many as a surprise. But imagine the opposite <sup>arrangement.</sup> ~~regulation.~~ Let us draw up a Share-the-Work program. Let us assume that every stockholder works at least a fortnight without pay in the factory of which he owns bonds. The fortnight without pay would correspond to the small share in profits available to an individual worker ~~without~~<sup>of</sup> work. Do you think that the stockholder would derive from this fortnight in the factory the idea that he was a worker? Would he feel that the prosperity of the firm depended on his achievements during that fortnight? Yet it would only be fair to compare the two measures. The gratuitous work of the stockholders would make it possible to grant profits to the worker. Such a measure would have a certain educational effect. But it would not be really satisfactory because of one special discrepancy between the character of the work and the character of the profits. ~~I regard this dis-~~

I regard this discrepancy as fundamental, and I have tried

for fifteen years to focus the attention of men in business and the unions upon it. So you will forgive me if I try to be more explicit about it, even though some of you may think it a point of minor importance. I consider it to be at the very core of our problem, once we have embarked on the working hypothesis that the dead time of the fellow in the workshop is poisoning the social atmosphere. Profits are the result of the transactions of an enterprise. They have nothing to do with the laborer's work at his place in the factory. Very often, the dividends of a factory can be made higher precisely because a number of workers have been dismissed at the right moment. If the dismissal of the workers can produce larger profits, then the worker would get his profits without their having any connection with his work. An enterprise profits by new tariffs, subsidies, inventions; it does not profit from the labor of the worker, since his work and wages have been anticipated. The anticipated part of the system--fixed costs, interest, wages--does not allow of profits. But more needs to be said about the discrepancy between profits and work. Let us look at the stockholder of the Standard Oil Company. We may assume that he enters a repair workshop at Baton Rouge for a fortnight as a volunteer. What does this mean to the stockholder? Is this repair workshop at Baton Rouge identical with the business in which he is interested? Not in the least. He may come to the conclusion that it would be much better for the company to do away with the repair shop because <sup>no customers see it.</sup> ~~it does no business~~. He will write a letter to the director and ask that the place be closed. What is going to happen? The fellows with whom he has worked peacefully in the workshop will go wild. Perhaps they will lynch him. He has ceased to be their friend. He has betrayed their confidence. The group working in that shop had one common interest that was real: to be kept in Ba-

ton Rouge where their families live, and to run this little workshop. That was and is their real interest--real in the twofold sense that it meant something to everybody and that it united all the men in the shop against any inspector or superintendent who came from outside. The very existence of their opportunity is the uniting link for men in a workshop. Under modern conditions, this has nothing to do with the success of the enterprise as a whole. Profit-sharing, though more realistic than the vision of a better world beyond industry, reveals the sharp conflict of interest between the man in the workshop and the stockholder in a business. One may easily be forced to throw out the other. As a stockholder, the worker might possibly have to recommend his own dismissal!

I have tried to illustrate the paradox by a little sketch,



P(erson) we will take as the point from which the average Liberal of the last century views the world. Like our corporation lawyer, the liberal idealist believes in a natural union between Capital and Labor. Robinson Crusoe is his man, a man who owns a pretty island and is at the same time a skilled worker. Talent and wealth, genius and property, should march together. Liberalism thinks that Capital and Labor are two eradiations from one center, the personal center at which the normal citizen, who ~~has~~ owns property and has brains, takes his stand.

We now follow the split between Capital and Labor by drawing a right angle: starting at  $P$  as the vertex of the angle, one side leads to Capital, one to Labor.  $\gamma$  We wish to determine the place of

$\gamma$  The two forces move away from each other. They are complex forces of collective Capital and collective labor



the single worker on the side of Labor and the place of the single capitalist on the side of Capital. Let us walk right into the workshop. We shall find that L, the laborer, works at a certain place *in* at a certain town at a certain time, together with ten or fifty other men. I see him working. He may be the master himself or the son of the owner, the son-in-law, a hired hand, a friend, he may be the owner himself; but all I see is the interplay between the men who are cooperating on this force. Their situation as workers--~~at~~ <sup>at</sup> ~~the~~ depends wholly upon the question how ten men can technically best be seated or organized to carry out the operations of the workshop. Now let us turn to the other side. The capitalist is a member of a company which runs a business <sup>at</sup> C. The <sup>Size</sup> ~~length~~ <sup>(the situation at)</sup> of C and the <sup>Size</sup> ~~length~~ <sup>of the situation</sup> of the ~~Situation~~ <sup>at</sup> ~~of~~ have nothing to do with each other. If we had to reconcile these two, ~~situation~~, it could only be done along the middle axis, which would start at P and repeat the all-round situation of the fully developed person at P at the new points  $p_1$ ,  $p_2$ , or  $p_3$ .

May I apologize for this pedantic tracking down of industrial partnership to its last hiding-place. It will help us a great deal in our efforts to find the real center of gravity in the industrial process. Another way out of the present deadlock for the individual worker is recommended by the advocates of "small property" or "self-subsistence" on the land. Indirectly, we have already dealt with the small-property program in our sketch; because the points  $p_1$   $p_2$   $p_3$  represent three happy Robinson Crusoes, whom we shall see re-emigrating to their little island, though in the modern programs it is called small property or self-subsistence homestead.

I do not deny that some people can be made happy by this program. In special cases, it may be a way out. As a general program, it is sentimental and utopian. It is simply the nullification

of the whole process of production built up during the last hundred years. It seems to me contrary to all probability that after a hundred years of the greatest known effort of men to coöperate the result should be small property. With a complete lack of faith, of courage, of imagination, people turn their eyes away from the world they are really in, and use their last faint remembrance of natural law to dream and hope for a small individual husbandry once more. Since we assume that we all wish to go on with Ford cars, telephones, highways and silk stockings, and since I am treating the social framework in an industrialized world, we need not step outside it. The small-property idea begins by stepping outside. This ideal corresponds to the sentiments of many men who are tired out by present-day life, and who no longer believe in future wealth. Instead of dreaming of a second world beyond the factory, they look backward to a golden age which used to exist. They find courage to bear the brunt of industrial warfare by fixing their eyes on an age where allegedly Capital was not divorced from Labor.

Thus among the visions which surround the factory worker during his stay in the factory itself we have to distinguish three which are capitalistic: the future world for his children, the former world of small property, and the present attempt to make the worker himself into a capitalist in spite of the conflict of interests on the two sides.

There is one more aspect to the picture. Among the forces which the social body has mobilized against the foreign body of dead time, we have not mentioned the worker's own efforts. They too have reacted in a natural way. Like the educators, in their schools, the government with its social policy, and the capitalists with their dream of small property, the worker himself had ~~a natural reaction~~

his natural reactions as a man. In this country he has seldom reacted as a worker. He was usually willing to undergo the influences of the other groups in the nation. But there is one reaction that is natural to the worker, I think, even in this country, and certainly in Europe. What happens to a man in prison? What do we do when we are disconnected from our real life? We cannot help dreaming. As we have seen, some workers dream of past or future, golden age or children's happiness. But some had a greater vision. Every curse of mankind can become a blessing when borne unitedly. Work, a curse in the Old Testament, can become a blessing if performed done by all of us unitedly. The unity of the proletariat is the proletarians answer to his isolation.

What has always struck me most in a debate with a really conscious worker is his insight into the fact that his fate depends on economic conditions throughout the world. Relations carefully overlooked by the isolationist mind of the respectable citizen are perfectly obvious to a worker who has experienced the recurrent stream of production. We must not forget that the average worker in the factory is handed over from the very beginning to powers which are far beyond his understanding. One is business, the other is technique. A scholar in his study, a lawyer in his office, a parson in his church, can still feel himself a master in his domain. A worker cannot dream such a dream. Working as he does at a crane in a dockyard or at a pig-iron furnace, the amount of apparatus around him is a clear evidence of his dependence on his environment. He cannot help being a behaviorist. Technique and economy, which we were able, (in our lectures) to describe/with a certain amount of detachment, are the two premises which govern every little move open to him. They are like giants, compared to the Lilliputian individual.

The dream of a worker who is nothing but a worker is therefore never the dream of becoming a capitalist and owning the crane or the furnace or the mine. His is a dream of world-wide coöperation, of universal communism. The giants are so incredibly high tall that it may take all the two billions of mankind to get a hold on them. The communist dream is a good and wholesome dream. It is the natural opiate of the weak. The weaker they feel, the more universal their dream will be. The dream of "all mankind" balances the reality of their loneliness.

The worker's whole imagination is pushed in this one direction of universalism. Being a product of technique himself, he is of course receptive to the popular writings on technique and science. The most recent popular scientific book on Space and Time, by Jeans, gives periods for our life on earth of 1,750,000 years! Space is treated with the same prodigality of figures. The worker, by instinct, will contrast the smallness of the real place he occupies in a modern factory with the biggest, largest, farthest worlds which our thought can reach in time and space. We visualize enormous time-spans and enormous spaces today, but we are not real masters of more than an hour or a week. This misproportion between vision and actual power is the paradox of modern man. Marxism, from this point of view, is but a sub-case of the natural reactions of the workers in the factory. They think that only a universal agglomeration of all men can stop the maddening song of the machines, which goes beyond the understanding of the individual.

The dream of a world revolution, the end of history, the united effort of billions, is, for the proletarian who believes neither in wealth nor in the education of his children, a real drug to help him bear his existence. It is at least derived from his real hardships, his real humiliation, whereas all the opiates mentioned be-

fore gnaw into the factory system from outside.

This is the answer given by the worker to the pressure brought upon him by the great powers of industry while he is employed.

A second and different reaction may be registered when a crisis or a bankruptcy, that is, astronomic constellations in a sky which is much too far away to have a human aspect, make him lose his job. Then the worker seeks a home, a protection. He is fighting the steaming, boiling and successful machines; when they slack down, he longs for a refuge. In Europe the trade unions have been the spiritual and moral home of the worker in a crisis. Such a union was something different from the American union, because it gave a mother-like protection to the worker. For the worker, when he loses his job, is suddenly deprived of all social significance or importance. It is invaluable, in such a situation, to find a place where you are received, where you are welcome.

In a more general way, the reaction of the unemployed, or of an employee preoccupied with the idea of a possible dismissal, can be described as the reverse of the fighting universalism. I myself have some experience in unemployment, and I have studied this reaction by an inquiry at the Academy of Labor. Most unemployed workers prefer to wait for a real job corresponding to their capacity rather than to go in immediately for any job that offers. Their instinct, therefore, would be in favor of the following solution: Everybody should have a minimum of existence guaranteed without regard to his real work. Everybody should be treated like a minor whose parents give him shelter in an emergency. This leaning toward a general princi-

ple of support. For everybody forms a sharp contrast to the other principle that the man who does not work shall not eat. It is no use to try to reconcile the two principles logically. They are contradictory. Yet both reflect genuine and recurring experiences and war-cries of Labour. Communism has a fighting front. He who ~~has~~ <sup>does</sup> network be starved or sent to the Murman Coast. The young intellectuals who pretend to be communists, are usually only acquainted with this aspect. The real worker belongs to a second, a sentimental front also: He who has no work shall be fed and sheltered regardless of any specific merits or talents. He shall live as a child does in its parents house.

Ordinarily the contradiction between the two principles is not acknowledged by the pride of the proletarian. It never occurs to him that the unemployed worker and the impoverished liberal are in the same boat. He thinks with irrefutable obstinacy that a rich man who becomes poor is still very rich. Any one on the other side does not belong to the Labour force and is therefore of no interest except for curiosity.

~~Thus~~ The two natural reactions on the side of Labour are consistent with each other and give the full human picture of a man who never faces his adversaries in life on the same level - as two artists or employers who compete with each other on equal terms. The dangers and the opponents for the worker are always far above and beyond his reach. In weak moments when he feels how accidentally it is whether he has work or not, he longs for a harbour and home where work is no longer the premise for his daily bread. In more courageous periods he will tolerate nobody in the ranks of his army but these who are actual fighters in the process of production.

Finally, a comparison between the side of Labour and the side of capital reveals a noticeable difference.

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The worker reacts against his atomization ~~in~~ in time and space by multiplying and expanding ~~it~~ <sup>The atom</sup> into a gigantic and universal scheme, but without changing it ! He starts from the single hour.

The capitalist endeavours to embrace the whole period of man's working time, 40 or <sup>50</sup> ~~fifty~~ years shall be restored to their full unity and wholeness. The desire for "wholeness" in modern philosophy reflects this desire to unify the Un-unifiable, ~~that is~~ <sup>different</sup> dead atoms of time.

We have studied the ~~max~~ four <sup>The side of</sup> external attacks on dead time. The social body has made strong efforts to immunize itself against the infection. Our sketch proves, I think, that these are the four possible avenues ~~of~~ attack. The sketch though it excludes many details and compromises between the attacks from <sup>The side of</sup> education, government, capital and labour, is complete. ~~xxxxxxxxxxxx~~ Its being complete is the advantage derived from our principle, ~~that is~~ of taking working-time seriously and looking at it as a foreign body in society. The tremendous repercussions on all sides indicate the violence of the infection.

Now all these repercussions can be called more or less instinctive. If we survey them all we can say that all are content to decrease the amount of working-time. Education is extended, and the character of hard work is exiled from the schools. The other sides of life are stressed : ownership, children, world revolution. Under the old age pension system, the worker of 50 or 55 is treated like a citizen of 65 or 70.

Perhaps this one symptom may serve better than any other to put us on the track of the complete change which we are going to see in the future. During the 19th century, the typical successful citizen was above all the man between 45 and 65. At this age he was at the zenith of success and influence. It is the man between 50 and 60 who govern the world, a great historian of that period used to say.



The typical ~~millionaire~~ bourgeois was not an adolescent or a man of thirty, because it took him thirty or more years to succeed and to gather a fortune. The millionaires who have occupied the front of the stage in our world during the last century were and ~~had~~ <sup>had</sup> quite naturally to be men in middle age. Without the full development of a man's activities from his young days up to 50 and 60, the true goal of this period - wealth, success, expansion -- becomes impossible. In setting the fatal deadline of a workers' and ~~em/~~ <sup>em/</sup> employees' destiny at 40 or ~~50~~ <sup>50</sup>, the new industrial world goes directly against the curve of the liberal professions. It is the real tragedy of our days that liberals are pushed by the situation into providing measures for one half of the population which cancel all identity of ideals between it and the rest of the nation. Yet, there is no arbitrary choice in this evolution. It shows the radical change brought about by the system in the course of two generations. A great fireworks <sup>display</sup> of dreams and a great reaction of natural charity ~~have~~ <sup>has</sup> concealed the truth. But today, the very core of manhood is infected <sup>5</sup> and imperiled.

These are the stubborn facts : youth between 20 and ~~forty~~ <sup>40</sup>, abounding ~~and~~ <sup>and</sup> aggressive, is more efficient in many ways in the modern factory than men over ~~forty~~. If free competition rules the labour market, youth will force the old men out of work. These old men are not old in the sense of real manhood. They represent the stage of life during which the men of the liberal century won their greatest economic and scientific victories.

A loss of all the social energies of the men between 45 and 60 must be the result of their being driven more and more ~~out~~ of work. But such a loss would result in a drying up of all the achievements in complicated tasks. The greatest contributions are - except in mathematics - rarely made in early years. ~~ixf~~ <sup>are</sup> Already most of the younger men <sup>are</sup> seek <sup>ing</sup> definite and final fulfilment in the immature ~~days~~ <sup>years</sup> under forty, age under thirty. To destroy the desire for a longer future and to keep men from expecting anything im-

portant from their actions at 50, will be enough to kill our civilisation. Already we find this sterility wide-spread. Already, the young are encouraged to take their present more seriously than any future. And already are the old trying to keep ~~young~~ artificially young for fear of being overruled. The bad conscience of the old is perhaps the most remarkable symptom.

Granted that in the industrial world of the future Fords or Morgans or Kreugers can not be plentiful as blackberries, - Can we not make ~~maxxi~~ use of the full grown man in industry?

At this moment nobody can fully answer this question. But ~~in~~ <sup>5</sup> think our survey of the different reactions that are coming from all possible sides forces us to conclude: A united effort of all these forces has never been made. ~~All~~ <sup>Each</sup> these reactions sprang up in the special field, in the special ideology of one profession or class-. M a n - k i n d in its unspecialized reality, in its peculiar character as the kind which must build up the lives of its specimens from birth to death through the course of seventy or eighty years, ~~maxx~~ mankind as free from class prejudices or professional responsibilities, mankind as a whole, has ~~hardly~~ <sup>hardly</sup> looked at the problem. It had no time to do it! Man has been invested with the twofold privilege of inheriting from his ancestors and of bequeathing a heritage to posterity. No expansion in space can comfort him for the loss of this privilege. That is why, after any period of expansion in space, his life through time cries out for a new form of representation.

FIRST ECODYNAMIC LAW:  
THE GROUP IN PRODUCTION

We have analyzed the natural reactions of society to industry. The foreign body of dead time was attacked from all sides, in order to make the individual a little happier. It is not necessary to foster these natural reactions; they originate of themselves. And since they are spontaneous, they never attack the whole problem.

Our path starts from a different point. It starts from a conscious experience of dead time and ventures a conscious and scientific treatment of its central principle. That makes it impossible for us to be satisfied by these simple plans for individual happiness or destiny. The industrial process is too real; it is so much the basis of our existence that we are not bold enough to argue it away in the usual manner.

By nature we think of our own happiness and the happiness of our neighbors in a straightforward and direct way. A man has no pension: give him one. A child is illiterate: send it to school. A man has no property: give him some. I am alone: let all the workers of the world unite!

The physician cures diseases; the hygienist prevents most of them by prophylactics. Hygienic prophylaxis, by an inconspicuous vaccination, for example, or by an inconsiderable quantity of disinfecting chemicals, turns the body from the obvious, broad way of illness into the narrow path of health.

Social hygiene looks ahead and is interested, not in healing the victims of the last epidemic, but in preventing the next. Natural reactions always come too late. One could even say: the very thing against which we react is doomed to happen again. If it becomes

known that charity will feed the poor, then there is some probability that the poor will always <sup>be with us,</sup> ~~exist~~, since they can rely on charity. In the Greek Orthodox Church charity has always preserved its character of taking care of beggars. In an old monastery in the midst of the Balkans I once found a family, father and two boys, being fed by an old monk. They were in rags, dirty and filthy. We began to talk. "We feed them twice a week," said the monk. It is one of the clauses in the charter of our foundation." It was clear that the filth and rags belonged to the stage setting. This family could not take a bath for fear of losing its support from Christian charity. And the monks would have deeply deplored a deficit in beggars, seeing that they made it possible to carry out the original intentions of the founder.

It is a great secret about human experience that every experience of failure comes to us too late. The assertion that mistakes are wholesome and that we learn by mistakes is a truism. But are we really the same man after a real loss, a great experience like divorce, death, revolution, war, illness? We are not. We have changed. The girl who marries for the third time--well, she is no girl. If she has come to the conclusion: "I should have carried on. Divorce is an evil"--she herself cannot use this experience. The negative <sup>result</sup> ~~experience~~ of her first two divorces may perhaps bear fruit for some other girl who sees her friend's unfortunate experience. A worker who finds himself worn out at forty can swear and curse his fate, but he cannot change it. Life is irreversible. That is why experience always means reform for somebody else. We cannot reform ourselves. We always come to ourselves too late! The unity of mankind is restored by the reforms carried out for others by people who feel remorse over the direction of their own lives. Charity, on the

other hand, is something offered to strangers, whom we pity without identifying ourselves with them.

Natural reactions come too late to people like ourselves. They are results of pity, of love, of the desire to help; but not of re-forming or re-thinking life. If the education a worker wishes to give to his child should lead to dissipation, disillusion, and waste of the child's life, the worker must re-think his own life; ~~we~~ must re-think the worker's life. In this case, the primitive reaction against the factory, which was: "My children shall be happier than I am," will not help him any longer. His own life in the factory must be re-thought.

At first sight you are perhaps frightened by the maxim: "Our experience always comes too late for our own use." Yet it is the great secret which binds men together. Remorse, confession of sins, negative experiences consciously lived through and frankly accepted are the only cement which really binds us together. All the rest of our loyalties are uncertain. No inclination, no volition, no purpose will guarantee us the eternal loyalty of anybody else. When we build a house, the bricks must be cemented with fresh mortar. It is the same with humanity. The house of mankind cannot be safely built with the common ends or aims of groups of men. Every group differs in its aims. The only universal and everlasting mortar for all mankind is the transfer of negative experience, since our negative experiences cannot bear their full fruit in our own lives, but only in the life of somebody else. The transmission of change and of the need for change is not effected through direct physical propagation from parent to child. It is transferred from sufferer to healed, from martyr to baptized, from victim to him who is saved, from slaves to emancipated colored people. Uncle Tom dies so that

hundreds or thousands may live.

Human time, real time, is irreversible; and this property tends to make it final and tragic. Yet the tragedy of life blindly streaming toward fatal and negative experiences and towards death has been abolished in our era by the interplay between our own waste and the use<sup>made</sup> of our experiences by others. The solace of man's life in society is his constantly finding an heir in somebody else who can learn from his mistakes, vices, and disfiguration. Perhaps we ourselves are only bound together by the memory of our mistakes and failures. Complete happiness and complete fulfilment would perhaps include complete forgetfulness. Without such a transfer, <sup>of negative experience</sup> we are not really united with our neighbors. Yet communities in space know nothing of this transfer of experience, produced by our ~~permanent~~ <sup>perpetual</sup> confession of sins and the permanent effect of this confession on others. Most people think that the globe, with its round and inescapable surface, holds man together to a satisfactory degree, and that if they can live peacefully one beside the other in a world-wide society the space of the earth can become a paradise.

But the very fact that the people of one generation live in a certain way obliges the next generation to live in a different way. He who dreams of restoring peace by assuring it over the whole earth for one generation, but for one generation only, is bound to unchain war in the next. The next generation will always do the opposite. Society is easily organized in space. Its real problems are all problems of continuity, of mutual permeation, of our universal responsibility, everybody for everybody else, of the transfer of real experience through the ages.

He who tries to change the life of one individual must look at the hinges of the doors through which man passes during his life.

Jesus, who seemed to care for nothing but man's soul, asked the twelve apostles to baptize the nations. A complete paradox, I concede. ~~Must~~ Many Protestants have forgotten the importance of a universal church; many Catholics the uniqueness of one soul's liberty. But Jesus lived and taught the full paradox of interplay between both. It is a simple sociological rule: if we wish to reform institutions, we must change the men who run them. If we wish to reform man, we must rebuild the institutions which shelter and house him. To abolish war, it is not enough to outlaw it by Kellogg Pacts, etc. The institutions which lead to war are not destroyed by words or documents. Word must become thought, thought must become ~~doctrines~~ <sup>and</sup> doctrines must become institutions as visible in space as the old barracks or armament industries.

In our last three lectures I am going to draw your attention to the institutions which form the man in industry. I will try to answer the question, not by simple reactions, but by re-thinking. Our coöperative groups for work, the alliance of man and wife for the propagation of children, and the company of each class or each generation, are objective instruments which shape us irresistibly. Today our lecture will focus on the group at work, <sup>the next</sup> ~~that on Friday~~ on matrimony, and the last lecture on the ages of man and the successive groups of the generations. We deliberately avoid concentrating our attention on man directly, because his restoration is really our only endeavor and his reformation the yardstick for all these social and political institutions. We are satisfied if by our reflections the torrent of society is deflected just an inch and allows one single man more to reach the normal goal of life.

This attitude is opposed to that of the statesman or of anybody engaged directly in politics. <sup>Such men</sup> ~~They~~ hear the cry of the masses.



They are threatened by their unrest. They must act immediately, and satisfy some of the wishes of the excited and dissatisfied millions. They cannot stop to re-think man's purposes in life. Politicians wish to remain in power, and therefore they deal with man and his claims directly and immediately. They are not allowed to tell the majority of the American people that it wishes the wrong thing, that it has lost the notion of a really human life. Modern machines have ruined the brains of most men to such an extent that these brains ask for the most foolish things, as: more movies, more advertisements, more noise, more change, etc.

The political leader is interested in everybody's existence in space; ~~namely~~ <sup>that is, he is interested</sup> in his constituency. Very rarely can he have the stamina to resist the force of these millions of men pressing upon him at the same moment.

The present crisis, of 1932 to '35, cannot be solved by thinkers. Mr. Roosevelt must rely on foregone thought which has taken possession of the people during the last thirty years. The recovery acts of the present administration are bound to meet the wishes and the understanding of people whose thoughts were formed long ago.

No doubt you may say our thoughts here are useless from the point of view of practical politics. They do not pay. Because only present-day things pay. Real thoughts on man can become things only in the future. They do not pay in cash. They have no price. If I were arrogant, I should like to say, they are priceless. The process of materialization takes time, and it is the very essence of a real thought about man that its materialization takes a long time. In six weeks you can produce a blue eagle, but you cannot produce the blue blood of royalty!

The present crisis challenges both social groups to extreme

vigilance and energetic effort: the politicians and the thinkers. But the two groups have to do very different things. We rely on immediate action by the President, the Supreme Court, Congress, etc. On the other hand, all this action would lead to nothing if after thirty twenty or thirty years there were no new men who had learned from the mistakes of the preceding generations, who had not decided that the unpreparedness of the world in its present crisis is a shame and that this unpreparedness alone excuses the ineptitude of the measures carried out by the leaders of our generation.

I should like to propose a truce between action and thought, between legislation and teaching. Let the legislators go ahead with their sudden replies to sudden demands. That cannot be stopped, and should not be stopped. But let the legislators permit thought to consider the future, to take little interest in present-day action. Once we grant <sup>OUT</sup> ~~the~~ complete unpreparedness and the blind sequence of natural reactions, <sup>during the last 20 years</sup> there is only one possible conclusion: the hurly-burly of today is caused by this blindness and unpreparedness. One half of mankind may be delegated to fight the crisis itself; the other half is badly needed to preserve the future from similar surprises. Youth should withdraw from the scene of the daily news-dispatches. There should be a passion for man's real future to steel them against curiosity about present-day events and against a sentimental compassion for the pin-pricks of everyday life. Youth <sup>the</sup> and thinkers must <sup>realize</sup> ~~know~~ that they have come too late, anyhow, for the questions of today. After all, in an industrialized world the speed of production and the unpreparedness in all questions of real time are only natural. You cannot expect, after having killed time, to find it going on prosperously.

That is why in an industrial society the life of the <sup>social</sup> ~~mind~~ <sup>mind</sup>

and that of the <sup>social</sup> body must go on, so to speak, on two levels. It is not enough to distinguish between recovery and reconstruction, as Walter Lippmann did. The two levels are those of reconstruction and premeditation. A staff must be segregated which is able to hold aloof from every-day reactions. How to harden the youth of a nation against letting itself be involved too early in the movements of the day is a very real problem for an industrial society.

Staff and students of the college we are reforming will have to form a group with a special function in relation to time. They will have to make the future secure. For that purpose it may prove necessary for them to submit to certain rigid rules. We will not discuss these rules in detail. The details of the reform of the university will come logically in the last lecture. But the principle of any group-life must be dealt with here.

The principle is that a group with a special function in society must specialize ~~in~~ its behavior. It must be willing to sacrifice to its function certain habits or customs common to other members of society. A staff of pre-thinkers must be ready to renounce immediate intervention in politics. It would be compromising their function if the members of the staff all went to Washington, D. C. To become a brain-truster is a natural reaction in a crisis. To remain in your hut of seclusion is a very unnatural reaction, and can be excused by no private amusements or cultural refinements. The only excuse for not going to Washington in a crisis is your faith that you have a social function which lends color and sense to the things they are doing in the capital.

The premeditating group is the vanguard of an advancing army. If it lives secluded in a forest or a valley, if its buildings resemble Jefferson's Monticello, it still remains the vanguard of a

nation in movement, and it is misleading to think of its buildings as a matter of space. Any social group exercises a function in time. Its settlement in space is but a projection of time into space. This is true of the group in the wilderness premeditating the future; it is true of the headquarters of the government in Washington. What is true of our college is true of a factory as well. The local appearance and the visible factories of the groups in the process of production are the projections into space of the processes which the body of society has to carry on in its march through time.

Any functioning educational group demands segregation, articulation in space, localization. And education addresses special demands to the architect in respect to size, beauty, plumbing. It is aware that it has an optimum in size.

For quite a long time the size of the capitalistic enterprise has been confused with its units of production. The demon of "bigger and better" has exaggerated the magnitude of factories, by making them as big as trusts and corporations.

But every agglomeration of men has its natural limit. Beyond it, the overhead expenses for upkeep, staff, etc., are greater than the advantages of local concentration. When five rubber stamps, wielded by five different officials, are needed to grant a young clerk a five-days leave--and I have seen it happen--something is rotten in the state of Denmark. One day that same great business man who had nearly lost his fortune through the fifteen-year-long family council asked me the following question: "Why don't the workers have a natural leaning toward me and my directors? Why do they imitate the book-keeper, the small clerk, the man who can just afford to wear a white collar? Am I not much more like the good mechanic? He and I are workmen, we are husbandmen of creation. We cultivate the soil. How I like a

man who understands his work, who has the instinctive feeling for his materials, his machinery, his tools. Why can't we fight together against the dominance of the typewriter and the dry-as-dust atmosphere of the shriveled-up people in the office?"

It is this very question that I am asking myself and you today. Why cannot the workshop develop all the characteristics of real skill and craftsmanship which the ploughman and shepherd had in agriculture? Why has the factory not created a new relationship to nature, as general and universal as farming did in former days? In any given historical era humanity can organize its campaign against the soil in one way only. Today the individual farmer <sup>area</sup> lives in the agricultural ~~is~~ a man who represents the last generation on the soil and who wants to see his sons find their way to the city. The worker lives in the city; but he is not an individual. As long as this situation prevails, the industrial society has stopped half-way. It has sterilized the form of work represented by farming; but it is not able to amalgamate it into its own new form of coöperation. Farming is done on the personal basis of private property; but it is less sure of being transmitted as a business to the children of the present owner than it was before. Factories for our real needs are relatively sure of their existence, but they are destitute of a personal basis.

This gap between the legal and social forms of work in industry and agriculture has paralyzed many of Mr. Wallace's attempts to save the farmer. In the period of transition we are in, a common form of organization for the work in city and country has not yet matured. Country and city are still contradictory forms of life. Civilization and what the English country squires of the Glorious Revolution called countrification are still in opposition. The group on

a farm and the group in a factory are still far from each other.

Yet we here, in our coven or plát against space, and as the avengers of time over space, can foresee a time when countrification and civiláization will have found their synthesis in electrification.

Electrification is the truest symbol of a time when the factory does belong neither to city nor to country, when the difference between the two is less decisive than the pragmatic unity of electrified work in both sections of a national economy.

A real organization of an industrialized society is impossible ~~before~~ <sup>unless</sup> and until electrification has abolished the enmity between farmer and worker. A nation cannot go forward with real faith into the future without a common ideal for the organization of its work. It is pathetic ~~in~~ that the political leaders of the nations everywhere are unable to unite the workers and farmers for a common future. A split of faith means a split of energy.

The industrialization of agriculture and the agrarianization of the worker are two movements which mutually depend on each other. Before this can become clear to worker and farmer, their government must be either ~~weak~~ <sup>paralyzed</sup> or dictatorial. The farmer reacts violently against the consequences of industrialization; the worker views all attempts to get him out of the crowd with suspicious eyes.

Let us try now to learn something more definite about the character of a group in industry. Why don't we speak of the individual worker? Is the group an objective thing? The smallest unit in a factory is not one man, and that for a demonstrable ~~reason~~ cause. The smallest unit for work under the accepted domination of electricity and technique must bear one special mark of identification: it must be able to work in shifts. The great accomplishment of the last centuries must be upheld. The individual who needs sleep and rest can-

not compete with recurrent nature and its men or iron and steel who need no stopping or relaxation. The great law of second nature runs: Three natural men are equal to one man in industry. The group must prevail in an industrialized world for the very reason that 3 are equal to 1 in the calendar of technicalized nature.

The representation of man in industry cannot be achieved by the individual. The team is the natural unit in technical work. The three physical men must be conceived as one working unit, as the smallest social molecule. Our time-principle makes it easy for us to see what the fanaticists of space deliberately overlook: that man, in entering a factory, is a third of that human force which can be used in the system without disastrous results.

This first ecodynamic law of industry abolishes all individualism in the conventional sense. It does justice to the worker's instinctive feeling that he cannot be helped as an individual. The supra-personal character of his problems as a worker is solemnly recognized. I hope it is perfectly clear that this ecodynamic law framed by the commission of our college is as abstract as the thermodynamic laws of dead nature. I know that in countless cases no three shifts exist: people go home after eight or ten hours. And many factories close on Saturday and Sunday.

But by virtue of man's power over time, our constitution for the technical world declares all these cases to be exceptions to the technical principle. It does that because it wishes to get at the very root of the prevailing conditions. And the fathers of this constitution are convinced that a student who is paid by the hour, a half-time secretary, an assistant, are all more or less dependent in their treatment and pay on the first ecodynamic law that three is equal to one.



What is true of one day is also true of one week. Since a great deal of work cannot stop on Saturday, but goes on seven days a week, even those men who do not work in daily shifts need a substitute for the seventh day. This is but a sub-case of our first economic law. Let me illustrate by an example.

I know a man in Boston who is in charge of a workshop of nearly a hundred people. The workshop is open from 7:30 in the morning to 7 in the evening. As the head of the department, he must be there all the time. ~~But~~ the business goes on week-days and Sundays alike. The force of the department gets an equivalent of Sunday ~~by~~ through a system of alternation. But the head has a seven-day week! He told me that he had practically no day off. The man himself blushed when he admitted that he had no Sunday. He felt that there was something revolting, something inhuman in his situation. His sense of human dignity and the pressure brought upon him by the system were obviously irreconcilable. But he was afraid that he would lose his job unless he proved to be irreplaceable.

A third application of our law can be derived from the fact that this same man who did not observe Sundays took a fortnight off every year. During this fortnight ~~his~~ an assistant was allowed to replace him. The annual vacation proved to be unrenounceable and unresignable. This enlarges our picture of the natural man's second form of existence in a technicalized world. His natural and personal year revolts against the solar year of 365 days in the demand for a vacation. Vacations were unknown to the pre-industrial world; but they are perfectly legitimate now, since the industrial calendar is no longer based on human needs.

The vacation can be found even in cases where the three-shift principle or the Sunday substitution does not happen to obtain.

expression  
It is the most general principle of man's liberation from the perpetual calendar of his work. Where vacations are sanctified and seem more important than free evenings or free Sundays, you can be sure that you are living under the spell of industry. A farmer had no vacations. The soil rested for a time in winter, and so he rested with the soil. Vacations mean that the business does not stop, but is going on without you or me.

The civilization of the worker and the employee will probably be based on the fact of his annual vacation. With a wonderful simplicity, man has emerged from his scattered 2400 hours a year by asking for one vacation every year. This once granted, the year is reintegrated in spite of the wage mechanism: it is reintegrated for the individual worker. He is the man who has 50 weeks of work and two weeks of vacation, or 46 weeks of work and six of vacation, and so on. The length of the vacation, though not unimportant, is less important than the principle itself, which restores man to a human level of existence. A year is human; the hour was not.

But the same fact which makes it possible for the worker to have vacations also unites him to the man who replaces him in the meantime. This man must not betray him. This man must not try to throw him out or to get the place himself. Vacations and shifts are based on a code of honor between members of a group in time. According to this code, ~~no~~ <sup>no</sup> member of the group can take ~~no~~ <sup>no</sup> advantage during his shift which damages the prospects of another member of the group.

If we consider this mechanism of a group in the workshop as a natural arrangement in series of three workers working one after the other, this law of good comradeship needs no explanation. But since we are assuming that this is the fundamental law of industry, it

throws a bright light upon the fact known to every expert, that even those who work together and at the same time in a group despise a member who breaks the common standard of production. ~~By principle,~~

By principle, the idea of working in shifts permeates our whole industrial system. The groups in space, where five or ten men or women cooperate in the same workshop by doing precisely the same thing, are only projections in space of an arrangement whereby one of these men or girls would take up the work left by his predecessor. The famous ~~holding back~~<sup>slacking</sup> in efficiency is a general rule for any group. The lowest member, or at least a normal member, of the group determines the maximum output. A smart employer tries to enforce upon every individual worker the idea of going to the limit of his individual capacities. The factories have built up incentive plans and premium systems on the assumption that the worker will react as an individual. But he does not do anything of the kind. I quote from a study worked out in the Harvard Business School: "Most of the operators were obsessed with the idea of keeping their weekly average hourly output rates "even" from week to week. The activities of the group were such as to nullify the employer's attempt to increase output. Some of the workers had actually completed more work than they ever reported to the group chief at the end of the day. They reported a figure which approximated their individual mean daily output."

The atomic unit in a factory is not the single physical man. The smallest unit which the factory morale has to be built upon is the equation "three equals one".

This conception enables us to see that work in an industrial society will have to take account of the group. The group is a reality the existence of which is felt everywhere. Yet its requirements and needs are constantly violated by the employer because he

and his staff are trained to look upon a man as a man.

When I first tried to get hold of the trans-personal situation in the factory, I came to the conclusion that industrial law had to recognize the real facts. I sent my book on the decentralization of industry to my teacher of Civil Law at the University of Heidelberg. When he saw me the next time he tapped me paternally on the shoulder and said, half irritated and half depressed: "But we are all human beings. I see human beings everywhere, I see nothing but human beings." This ~~area~~<sup>kind</sup> and charitable fellow was doing exactly what the proverb means when it says: "He cannot see the wood for the trees." He could not see the industrial system for the workers.

All propositions for the organization of industry have to be revised at one blow. Honor, competition, ambition, pride, can be developed between groups in a factory, not between individuals. The normal size of a group in space can now be investigated. I cannot give in detail the reasons which lead me to the assumption that from 5 to 15 people coöperating simultaneously can preserve the qualities of identity and unity significant for the group in industry. The optimum in the size of a group differs of course according to circumstances. Yet the collective group ~~has~~<sup>has</sup> an optimum. And as soon as the prejudices of humanitarianism no longer blind men to reality, the energies of electricity or steam will cease to be the only forces of which the optimum is carefully explored.

Once this point of view has proved useful, the optimum of the factory as a whole will become a question of primary importance for the civil engineer. The social and economic optimum for a factory as a whole is, according to my own investigations in Germany, much lower than is usually assumed. Units containing more than 600 or 800 workers are nowhere really necessary. The "bigger and better"

principle has looked at the bricks instead of the men, and has burdened public finances by increasing the expenditures for police, prisons, hospitals, roads, railroads, lunatic asylums, to a scandalous extent. The financial unity of an enterprise has nothing to do with a sense of duty toward the energies used in a factory. They have to be used in a scientific way. And they are not technicalized as long as enormous darkish masses of ten or fifteen thousand workers pour through the gates of a factory. This mammoth is usually overorganized. Friction among the members of the staff is inevitable. And since every such friction is apt to show up in some mysterious way at the bottom, friction above is partly responsible for unrest below. It would prove much more profitable in many cases to study these frictions than the seconds which figure in the time-studies of piece-work.

We have taken for a moment the point of view that the optimum can be determined by a study in space alone. This was a breach of my promise to apply our own yardstick of time to the problems of the factory. Can it be done for the factory as a whole?

I maintain not only that it can be done but that it is a necessary condition for a correct balance-sheet in an electrified industry.

Modern industry differs completely from farming in a village. There the same soil is tilled every year; the same fences surround the same area year after year. Man is at home on his soil.

In industry and in an electrified world, this is no longer true. The factory is the application of the gold-mine principle to all work. The factory lives for a limited period of time. It is not a permanent foundation like the church and the churchyard: the factory is a ~~cool temporary tool~~ <sup>particular enterprise</sup> like the cranes and steam-shovels in the Tennessee valley. The factory is transient by principle. It should

not be built for eternity. It is a temporary arrangement, the machines of which are written off after three or five years. To an imagination which <sup>pictured</sup> ~~thought of~~ business above and individual workers below, this vision of a perpetually changing workshop was terrifying. The average Liberal preferred to believe that an ugly factory had to be carried through the centuries as inevitably as the Cathedrals of Milan or of St. John the Evangelist in New York--a vision which seems much more terrifying to me. Thanks to Heaven, Kings Chapel will outlive many factories. We need not cling to the assumption that modern work must be done in houses built for eternity. We know already that a factory is a rearrangement of nature. That is why it is as transitory as nature <sup>and</sup> that is why the enterprises of the future will <sup>be mobile</sup> ~~move~~. Some of them will <sup>follow</sup> their raw materials over the earth. Others will change their location in space for reasons of organization. And the groups at the bottom will survive the migrating factory. The individual worker can accept this vision of change wholeheartedly. On the one side, the factory ceases to be a lasting fortress like a Bastille; it proves to be a tool

for a transient purpose. Technique reveals itself not <sup>as</sup> as a despot who establishes himself for ever in one particular territory but as <sup>a</sup> servant of simple and special tasks.

And the individual worker is protected against the violence of the change by his recognized membership in the group. Some day, the solidarity of the group will survive the changes in the buildings of industry.

And is that not the simplest ~~may~~ thing in the world? Since the group is the backbone of the factory, it must be strengthened enough to survive.

Naturally our concept of time will warn us against oversimplification. We can not assume that every group has an equally long existence. The group is unknown to us unless we know something of the sound or natural time-span for its existence. How long is it possible to identify myself with my associates in such a cooperative fellowship? Here again, the superstition of space-experts has prevented man from even raising the simple question. : How long does such a group last? How long should it last? What is the optimum in time for one and the same fellowship? When I first mentioned this question of an optimum in time I well remember that people <sup>Simply</sup> laughed. One of the critics was the editor of a periodical. He was so polite that he only smiled. Five minutes later he said: Most magazines are utterly wrong in trying to go on for ever. Every journal of real value and purpose has its *raison d'être* for a certain period. It should be honest enough to know that and to expire after that certain period of time. The best test is the loyalty of the first group of editors. The commercialized periodical is as a rule completely dead and prevents good and better things from growing. It goes on for ever because it is dead. Dead things cannot die. Most people do not know how dead ~~time~~ the stuff is they are living on. But a group of very youngmen



has something valuable to say only for a couple of years. Older men can go on longer."

"Well," I said, "I am rewarded for your smile at my reforms in industry. You are a very reasonable fellow. You could join one of my factory groups."

The units in a factory are not life-time units. You are not born in a factory, and you are not born into a factory group. The group is not a dead thing like the commercialized journal. It is alive, and for that very reason it is bound to die some day. Death of the group is inevitable. And it must come as a real pain and a human experience. But the death of the group is by no means tragic. Death has lost its tragic character in modern society, because it is distributed over the whole of life in little doses. It is always partial; a part of us survives.

The worship of space has caused terrible loss in the modern world by its neglecting to notice how serious these permanent processes of death and birth, of binding and loosing the groups, really are. The hour system has misled people into thinking that all sacraments have vanished without a trace and that man can live by adding meaningless seconds or hours or days together. The discovery of the group and its moral and legal recognition would be a first step in the direction in which life can regain its full depth and intensity. The modern masses will have to learn how to spell "five years". It is like learning to walk again after a long illness.

I hope there is no misunderstanding of the fact that the optimum for a group--let us say three or five or seven years--is a real and moral unit of time and not a mere sum-total of hours. He who enters the group must know that it is intended to exist for five years.

He must commit himself from the very beginning to the difficult and serious task of being a member of an optimum group instead of a laborer per hour. The five-year time-span is no external and accidental measure of the factory administration. It is meant as a duty and a privilege of the members of the group. The five years are their five years, not the five years of an abstract plan. They are their five years because man does exhibit his different powers and original qualities when he co-exists with his fellow-workers day after day, but only when he can anticipate his fellowship with them over the period of five years.

The five-year or three-year or seven-year group--whatever the optimum and the balance between human and economic elements in the different trades will have to be--all these groups will demand the same social discipline which the four years in college ask of a man who is on the football team. A time-span of five years is less serious than a vow for life; still it is impressive enough to distinguish its embodiment, the group, sharply from the kind of momentary agglomeration we see on a street-car. Today the behavior in the subway sets the standard for all the other forms of living together in society. I suppose many people never get over this stage in their relations to others. They never commit themselves. They never undergo the tremendous experience of becoming more themselves by being thrown against the steady effort of someone else's self. Diversity springs from coöperation. The sad uniformity of today is the result of the cheap coexistence to which we have condemned man in the hour-system. That kills all differentiation. The whole social morale suffers from the lack of faith in the medium of moderately long time-spans. A second and a thousand years are the only periods which a modern man hears mentioned.

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As you know, Hitler came into power in Germany after the Socialist and democratic ideal in abstract space, without any sense for time, had completely failed. He, feeling that time should be restored to its <sup>place</sup> position of honor, declared that this revolution was the last for the next thousand years, and a law was passed that farmers could not sell their land, but that it should go down through the coming centuries. This extreme can no more work in an industrialized world than a timeless arrangement in space.

In an industrialized world the periods for cooperation will have to be shorter than they were in earlier times. Our endeavor should not be paralyzed by exaggerations. Hitler's reaction was sound in its direction, but it was an exaggeration. Such an excess may satisfy the excited imagination of the first minutes, but it will fill the farmers and workers who try to live under the new conditions with deepest disappointment. An honest farmer or worker should not be disillusioned. He who sets out to work should not be told that modern society can assure

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him any continuity of work for an arbitrary and indefinite length of time. Yet the very element of some continuity is central. And the five year span deserves our special attention since it is modest and nobody is likely to feel betrayed if it turns out to be capable of extension. The politicians move heaven and earth today with their five, ten, three, four and six year- plans. Politicians must speak very loudly to show that a little something is ~~about~~ going to be done. Five millions groups organized for five years would give more moral strength to a great nation than the most wonderful figures in a plan for money and stones and bricks and electricity.

However, society has experienced such a complete atomization and degradation of man ' s faith in time that to organize even one five - year group of nine workers is a very difficult task. The way to form them is of course , to force them into responsibility . Work is only done well if the duties are clear and testable. The group in a factory can develop self- government. It can be allowed to discipline its members. Its chief can be appointed ~~possibly~~ <sup>perhaps</sup> with regard to the groups own feelings. The group, ~~not the factory, not the unit~~ not the thousandfold individual in the unarticulated force, is the unit on which to build up a representation of the force. Most workshop councils are false imitations of the democracy of universal suffrage. Don' t fall into the error of mistaking the workers during <sup>their</sup> ~~work~~ <sup>ing time</sup> for voters at a State election. Three equals one ! The problem of representation in a factory is not solved by a manhood suffrage. The workshop councils in Germany have been a failure in spite of the honesty of all those involved. ~~They~~ <sup>They</sup> never gained flesh and blood, because ~~a~~ <sup>it</sup> represented the unarticulated ~~the~~ labour force as a whole.

The groups are more than mere social units. In many cases, they can take care of the space they are in themselves. Wherever the group gets back the right to police its environment itself it begins to conquer space like the knight <sup>installed in</sup> ~~put into~~ a medieval castle far from <sup>his over loved</sup> ~~home~~. There will never be a one - man space again. But space can be turned into the ~~an~~ assigned field of responsibility and self - government, for a group. In many cases, more than one group will have to be coordinated. The divers<sup>e</sup> ~~ities~~ <sup>problems</sup> in coordinating two, three, or more groups for all or for special purposes are countless.

From our inquiries <sup>into</sup> ~~made about~~ the potentialities of the group in industry I ~~can~~ <sup>u</sup> not say much today. It will be explained in the next lecture how definite<sup>ly</sup> ~~our~~ ultimate goals can already be determined.

I wish to focus all your attention today on the ecodynamic law we have discovered, <sup>kind of</sup> ~~and~~ which says that in every organized work today more than one man is potentially presupposed. The equation : three equals one, is at the bottom of industrial society for all purposes of work. People must feel unhappy and can not be really organized as long as this principle is not thought through. It is not <sup>a</sup> ~~a~~ question of money. Unemployment is not <sup>a</sup> ~~a~~ question of money. People have been happy, have been real men and good citizens, with much less money than people have today. <sup>When</sup> ~~If~~ I hear people speak of the standards of living I wonder <sup>if</sup> ~~whether~~ men in this country are still slaves in spite of the Civil War.

The schemes for money spending of which the newspapers are so full, Bonus, Luncheon, Townsend plans etc., make my hair stand on end. I admire the President of the United States, who among these political forces and their pressure upon him, has to work for reconstruction <sup>in this face of</sup> ~~in spite of~~ all these dead time schemes. How easy it is for us, in a Lowell lec-

ture , to resuscitate time, <sup>since</sup> ~~because~~ we do not have to compromise with the claims of the misled members of all classes. And yet, our report on the group should facilitate the President's job also. Most people <sup>confuse</sup> ~~misapprehend~~ possible action for the moment <sup>with</sup> ~~and~~ possible ends. They will neither get immediate action nor final results. The leverage of a statesman has to be based on man's available ideas. Today, the available ideas of the masses and of the Republicans are all without exception ideas <sup>about</sup> ~~on~~ money, because for a hundred years people have talked of nothing but of ~~things~~ things expanding in space. For things in space , money is the denominator. The present mess is not a trouble in space, but ~~in time~~ one in time. The President has to shift from a policy of expansion ~~in~~ through space to a policy of reproduction through time, while the nation <sup>only</sup> ~~only~~ thinks <sup>only</sup> ~~in~~ terms of money and space. This tremendous task can be facilitated if more people begin to explore the other side of the river across which the President has to lead the nation.

When Abraham Lincoln was reelected for his second term, he modestly said : "The nation thought it unwise to swap horses in the middle of the river." But today the nation's ~~and~~ the President's problem is just the reverse. Then, one idea carried <sup>men</sup> ~~men~~ through all the darkness of ~~a~~ war : liberty. But in the torrent of this crisis the leaders of the industrialized countries have to - swap horses !

The past century, with its ~~idolatry~~ ~~fan~~ idolatry ~~fan~~ of space, has lent him, - I mean ~~in~~ the political leader - its horse only as far as the middle of the stream. He now must persuade the nation to jump on the other horse. They cry, "We see no horse at all," and they ask for money, cash in hand. The only noun ~~which~~ they have heard of <sup>that</sup> ~~and~~ which points <sup>somewhat toward</sup> ~~a little bit to~~ the other side of the river ; is "experiment".

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So experiment is the word freely used to give comfort to the brains of a bygone era.

Believe me : there is a horse in the middle of the river . It may be a young colt, but the real future is with it. Its dam is human time and this faithful mother is waiting for him and us on the other side of the river. And therefore I say : <sup>a/</sup> swap horses !



## Seventh Lecture

~~THE~~ SECOND ECODYNAMIC LAW: *The Responsibility For Reproduction.* *The*

The last lecture opened the way to <sup>the</sup> scientific treatment of human time. We have distinguished man's state of aggregate in work and for work as something which resists complete individualization. We have proclaimed the first ecodynamic law, that in the struggle for man's existence on earth the individual disappears in the chain of co-workers. In its formula "three equals one" the first ecodynamic law only reminds modern man of the eternal fact that society wages its struggle for life unitedly. Whenever we participate in the division of labor, we are soldiers in an army. The soldiers on the night-watch in Hamlet, who meet the Ghost of Hamlet's Father, are links in a chain of ~~guards~~ watches that guard the castle of Elsinore day and night. Work in shifts is no new fact. Men have always been posted as sentinels of the community. Labor in society is the organized sentry-go which must be performed regardless of individual illness, weakness, or death. The struggle for life goes on whether a father dies, a child cries, or a wife's heart breaks. This is expressed by the equation: three equals one. "Three" expresses the un-individual and social character of man as co-worker. Working in shifts, relying on predecessor and successor, evening out as far as possible our deviations from predecessor and successor, we do our best when we become ~~reliable~~ <sup>replaceable</sup>. To be ~~reliable~~ <sup>replaceable</sup> is to be successfully turned into a wheel of the social machine; it means to be employable. But that is not all. The situation involved in "three" includes a risk. Whenever I must think of myself as one sentinel between two others, I walk into the unknown. "Three equals one" has a connotation of social risk which is familiar to us in driving a car. On the highway you do not know the people who are driving; ~~and~~ you

cannot know them. You assume that they will act reasonably, as you try to do. But once in a thousand times your assumption proves fatal. The other man reacts foolishly. The actuarial law of "once in a thousand" turns against you. The drunkard jams your fender. This remains an impersonal event. It is no use to feel vindictive toward the man. He represents that inevitable social risk proved by the statisticians, the risk of the unknown. The anonymous character of our social coöperation incessantly forces this kind of risk <sup>upon us</sup> ~~one~~ which may be expressed by saying that we cannot know that special co-worker who is going to be a match for us. We can know one other human being. We can know our mate; we do not know our co-worker enough to exclude the risk of failure.

In the ecodynamic law  $3=1$ , three means three and over. The implication is more than the individual can vouch for. In society, we are liable without being guilty. In an auto accident, very often, nobody is guilty; but everybody is liable. Wherever we reach the number three and over, we go beyond private responsibilities of a merely moral and ethical character. Instead of this subjective reasoning about man's individual conscience, we recognize for modern work the rule "caught together, hanged together." This proverb ~~"caught together, hanged together"~~ was adequate in primitive economic stages where work was done less unitedly; today "caught together, hanged together" has unfortunately been extended from the robber gang to the whole of human society.

It is obvious that the equation of "three equals one" cannot exhaust our social relations. We shall try to formulate today the second ecodynamic law, which governs the relations in which we are more than anonymous cogs in the machine. In pushing the group principle to its ultimate conclusions, we shall find it itself leading to

something more personal; the group which sets out in the neutral and indifferent field of force around an objective task, leads further on.

But before we accompany the group and the members of the group on their way into a less abstract reality than the factory, some questions from the audience after the last lecture suggest that the expressions "ecodynamics" and "laws in ecodynamics" should be explained. It is true, we have proclaimed a law of ecodynamics. I am fully aware of the implications which can be found in my use of the word "science" for my doctrines. I am weighing my words when I say that I have to develop the laws of Ecodynamics. A science about ~~an~~ an industrialized world is possible. It is necessary for our survival. It does not yet exist.

Why do I call the science toward which I am paving a road by the name ecodynamics? The two words which compose it, "ecos" and "dynamics", have been divided for the last few centuries between natural science and the humanities. As you know, thermodynamics are the general basis of modern physics. Economy is at the core of political economy. "Dynamics" implies the dealing with forces and powers moving through space. It implies motion. "Economy" contains the Greek word "oikos", which means "house" and can be traced in our vocabulary to the words "ecumenical", "economize", "ecology", etc. Houses are human, stable, historical. Dynamics are natural, unhistorical, moving. The triumph of modern thermodynamics springs from the reckless logic with which stability <sup>has been</sup> ~~was~~ made a sub-case of motion and change. Political science is bound to look out for a relative stability. Human husbandry and human history build up spaces of time, create an artificial calendar, and organize houses of men to which this human calendar can be applied. By building houses and by organizing the calendar, man has again and again conquered the dead

and reversible time of ~~human~~ external nature.

The conflict of economy and thermodynamics is no longer needed. We have discovered the first house of nature, the house by which nature is made recurrent. The factory has incorporated nature into the family of man. Nature has become a part of man's history thanks to the era of technique. No wonder that we can reconcile thermodynamics and economy. Housed nature is no longer the nature of mere physics. It has been conquered by a historical victory. Thermodynamics can be balanced by Ecodynamics. On the other hand, we discovered man as a part of this nature housed in the factory. He and his unique properties must be studied in a scientific way, since he has been made a part of nature. Man, who cannot be explained by the laws of thermodynamics--that is an insult, <sup>and</sup> ~~which~~ <sup>LOP</sup> insinuates that he is dead--need not feel insulted if we begin to study his behavior in a factory. Ecodynamics may even restore his dignity among his older brothers, steam, coal, electricity.

The ecodynamic <sup>laws</sup> can perhaps overcome the prior right of these first-born elements in the modern world. The laws of ecodynamics can take the right from the first-born and give it back to man. Esau sold his birthright to Jacob. Mankind is always in the position of Jacob. It is always on the edge of despair, always near to idolatry, always prone to recognize the powers of dead things. It has worshipped iron and steel as it worshipped the golden calf. In Egypt the golden calf symbolized the technical world of cattle-raising and ploughing; <sup>Modern faith in the water</sup> today electricity and steel personify <sup>LOP</sup> motor cars and telephones. After a time of excessive technical excitement, mankind always comes to its senses and recognizes its idolatry. It re-establishes man among the elements of nature, and a calf is simply a calf again. Then humanity shifts from Esau to Jacob. Yet the ex-

perience with the golden calf is of the highest value. All our know-  
 ledge of nature sprang from our passion for nature. If ecodynamics  
 is going to <sup>install</sup> seat man in his rightful place among the elements, it is  
 still indebted, as a new science, to the scientific advance of the  
 last centuries. Karl Marx, for example, was groping for our new sci-  
 ence. He formulated the rule "caught together, hanged together" for  
 our cooperation in society. It is only because he paid his tribute  
 to the golden calf of space that he had to formulate his rule in the  
 Communist way, "all for one", which by its abstract universalism is  
 made unadaptable to practical use. Our rule "three equals one" does  
 not exclude the "all equals one" of Communism; but it allows that  
 rule to broaden out from group to nation and from <sup>the</sup> nation to the world.  
 The abstract formula of absolute solidarity is a wonderful idea for  
 Sundays, but it <sup>discourages</sup> suppresses all efforts to act immediately and restore  
 labor everywhere to its dignity. And it sharpens the group competi-  
 tion between the nations by getting the nations into war with each  
 other instead of getting them together for work. The Russians are  
 practically nationalists and Fascists today, despite the Marxian for-  
 mula. "Three equals one" is enough to tell man the truth about his  
 situation in society. The rest, the "more than three", is implied  
 in it. And it is a golden rule, set up by St. John the Evangelist, <sup>that</sup>  
 that we shall never try to impose on our fellow-men more of a common  
 creed than is absolutely and intrinsically required for our co-exist-  
 ence. St. John, in his old age, limited the whole creed to two indic-  
 ative phrases and one imperative. *(All three phrases together contain 12 words!)*  
 The Communist creed is like Islam:  
 it demands the acceptance of a complete intellectual system. It can-  
 not help, therefore, separating men instead of uniting them. Ecody-  
 namics, if it is to be handled in a really scientific way, must re-  
 strict itself to the least area within which truth can still be ascer-

tained. It must be built up from the bottom and not from the top. The science of ecodynamics, in its formulations, has to give the minimum requirements and not the maximums. It is opposed to the Liberal or Communist confusion between political science and political programs. We purposely say "three", while the political leader says "all and everybody". He is right. But we are right also. Without our sobriety, his drunkenness cannot help leading to the saddest hang-over. The thing that makes Communism impossible, or which at least delays it indefinitely, is the Communist party.

A minimum requirement for coöperation, in a scientific rule, does no violence to the pride of man in applying the rule himself. A universal creed abolishes spontaneous action. But here everybody is invited to investigate for himself the sore spots where this rule is violated in his environment.

Marxism, by its universal formulas, tries to put mankind into the straitjacket of natural science, commanding two billions of men to behave like drops of water. That is enough to prevent man from behaving so. Everywhere where man is not invited to give his consent by a spontaneous "Yes", he is obliged to say "No", lest he cease to be a man. Ecodynamics has to respect man's freedom of allegiance. Man will never say "No" if you leave him the power of saying <sup>"Yes"</sup> freely and decently. But it must be left to him in full truth and reality: that is the core of democracy. ~~A man who~~ A man <sup>self-respect</sup> who is not asked for his consent is challenged by his sense of ~~dignity~~ to say no. That is an assumption with which a science of society cannot dispense.

If we give the name of ecodynamics to this science, we lay all our emphasis on the two facts that mankind is constantly building houses, that man is a house-builder; and that the houses of mankind are transitory and provisional. We defy the traditional rule of the

political economists that it is in the nature of governments, churches, corporations, to build their houses for as long a time as possible. We declare the long duration of <sup>such</sup> ~~their~~ houses to be an exception, and concede the necessity for a perpetual revision of all the foundations of society. We are assuming that there is an optimum time-span for the different houses. By starting with the factory as the most ephemeral house in society, we can hope to prove the temporary character of every house in an unmistakable way. But of course not every house is as short-lived as the factory. Mount Vernon is meant to remind many generations of George Washington. And it is no luxury that St. Peter's in Rome is so old. Without its continuity, we should know nothing of Christianity. The difference between the old balance-sheet of society and an ecodynamic balance-sheet can be defined as a simple change of direction. Political economy took its departure from stable forms of government in State and Church. It discussed the constitutions of empires or republics. It looked with horror upon <sup>the</sup> decline and fall of those great powers. And it admitted but reluctantly that the change and breakdown and death of institutions was inevitable.

Ecodynamics sets out from forms slated for death. It is not afraid to face the quick turnover of houses. It begins with the old question: "Quousque tandem?" "How long can it last?" This is its thread of Ariadne through the labyrinth of man's temporary forms. It is quite willing to learn of the existence of everlasting houses or long-enduring loyalties. But it wishes to know why they have the power of lasting so long. After having ascertained the fugitive character of man's life in a factory, we ask for the next higher form of man's houses on earth. We shall try to reduce the short-time grouping to its proper purposes. By doing so, we can limit our



first ecodynamic law and supplement it with another.

The first ecodynamic law is unsatisfactory because it seems to nail man to his work alone, and seems to derive all the rules for his treatment from his place in the group which fulfills a social task. As in most cases, it is enough to pursue the group principle to its own ultimate goal in order to see it transferred into another. The dialectical turn of the group principle comes inevitably when the group gains more strength. We have spoken of the factory group as a temporary arrangement. Man is not the same after ten years of work. By nature, a group is an arrangement for less than a human life-time.

From our inquiries into the potentialities of the group system in industry, two ultimate goals have been developed : one repre-

sents the technical, the other the economic problem involved in the group. The technical solution would mean that a good group can become the basis for a decentralization of industry. The group could survive its existence in one place, the centralized factory, and draw the work out to a place where the group would have control over space. This decentralization would avoid the evils of sentimental individualism. The group must exist before it can remigrate to the country. The group is formed by the objective and tangible needs of technique, ~~This group~~ is the fulfilment of the technical idea, not its nullification. [The optimum for a central <sup>factory</sup> (of 600 men can be enlarged by a circle of ten additional groups in its neighborhood. Especially in the ~~whole~~ metal industry, the daily transportation of the workers to the factory can be balanced morally and financially against the transportation of material and tools to the group.

The economic problem involved is that of calculation. Even today a chain-store or department in a big factory or in a public utility has its own budget and does its book-keeping in a kind of domestic competition with the other departments. The self-calculation of the group is nothing impossible. I have seen such a group at work. The idea is to treat the group workshop as a company of which the capitalistic central firm is the senior, and the group itself the junior partner. This solution protects the central firm, which remains at the head of its business, but it concedes a real partnership to the group, in exactly that social and technical area which is real and natural to it. It avoids the illusions of industrial partnership and of Communism, yet it is based on the two real impulses of those two systems: the worker's solidarity with his comrades, and the owner's interest in encouraging competitive responsibility.

It is impossible to deal with the <sup>legal</sup> difficulties in law and

~~tradition against such a measure.~~ All I will say is that the law has made it almost impossible to establish such a form legally. The Frenchman Dubreuil has called this <sup>new</sup> form "commandite de travail". I have called it "Werkstattkommandite" in German. An English expression for this organic status of a dominion within the empire of industry does not seem to be available.

The metaphor of a dominion shows what is implied. The word "decentralization" is not very happy. Because the main point is the new degree of articulatedness which would be reached. ~~Though~~ The agglomeration of capital remains in its full power. On the other hand, the group is objective and flexible enough to survive the loss of one or two members. Thus the group is capable of taking over duties which would be beyond the stamina of an individual worker, or even of two or three of them.

May I repeat once more: both the group settled in a special place and the Werkstattkommandite, the junior partnership of the group in an articulated workshop, are limiting concepts which show the ultimate consequences of our scheme. They would unburden the administration of the central firm. The mammoth trusts would regain a life which we already see spreading over the country.

~~Let us have a look around and see the factory and have a~~  
 When we look at the splendid boys who are in charge of a filling-station, we see that they are all-round men, that they are <sup>When the study is deeper we find that</sup> a team. ~~But~~ the human qualities to which the administration of a firm makes its appeal when it is decentralizing differ completely from the qualities needed in the mere group-work of a factory. The moral virtues of the man in the filling-station cannot be compared ~~to~~ the virtues which make a man fit into a mere factory group. On his shoulders is put the independent representation of the firm. He must be a man. And you do not become a man by being a cog. Soci-

ety itself strives for properties in man which are not identical with a maximum in output, with physical vigor and technical skill. "Out of sight, out of mind" is the natural reaction of the anonymous man. Those who can resist the temptation of this rule, "out of sight, out of mind", are called responsible in our language. "Responsible" is a queer word. It means "capable of giving an answer". It means that Cain was wrong when he pretended that he need not answer for Abel, since after all man must answer for himself and his neighbor.

In the average group in a factory, as we have seen before, nobody--or everybody--is responsible. In an articulated group of junior partners and de-urbanized men a responsive mood is presupposed.

They are expected to balance the "out of sight" with a vigorous "on my mind"--a reaction which is, in itself, unnatural.

There is a second objection to the "commandite" of the workshop. It cannot be based on the optimum principle of more than three and less than ten years. It asks for longer periods and greater steadiness. Otherwise it would be too expensive. He who goes out into such a group in the country and takes over a responsibility is valuable to the firm only if changes are an exception and his carrying on can be taken as the general rule.

How can a man live up to the unnatural rule "out of sight, on my mind"? He who looks at his co-workers as objective and neutral third persons in the social set-up of the factory or of car-driving, and who is himself at best an impersonal link in a chain, an anonymous part of a group, defending himself against any special peak in his work, becomes a man in his relations to the wife he loves, and vice versa. "To know", the languages say of the relation between man and wife. You cannot know everybody. One single other person, one companion, is given to man to know really and completely. The

sin of the English race is that it has abolished the differentiation of thou and you, and cannot express the fact that man and wife, by saying "thou" to each other, know each other as nobody else can know another. What you know you can answer for. Responsibility is impossible without complete knowledge. All the responsibilities in the world are derived from marriage between man and wife, and their becoming one body is the great model for any body politic. Marriage is the eternal source of real responsibility. "Caught together, hanged together" is the anonymous liability for anonymous risks. "Out of sight, on my mind" is the sublimation of love into far-sighted care and provision for an indefinite future. What makes a ~~man~~ <sup>husband</sup> a husband, a wife a wife? The fact that they can distinguish sex from marriage. The same instinct which is a mechanism of lust in a world conceived as mere space, is the arch <sup>of</sup> ~~through~~ time when transformed into marriage. Every permanent institution is based on the transformer in man which enables him to build matrimony above the momentary ~~inducement~~ <sup>stimulus</sup> of sex. Why does he do it? It is against his self-interest. It is expensive. It is annoying. It is not stimulating.

Modern man is facing a complete breakdown of matrimony today. Sex appeal, sex problems, the sex relations of their parents, are frankly discussed by college girls, as we can read in serious American textbooks. Yet you are not allowed to use the word "damned" over the radio in criticizing such a book. Any freshman is allowed to take courses on Freud, and is agonized at not finding a complex in his boyish fibre; but "Within the Gates" is prohibited because a poor creature of a prostitute enters the scene. In times like this it is very difficult to know where we are drifting. Everybody seems to have become a bit immoral, but nobody is allowed to be so by profession.

And I really think that is not a mere guess. The industri-

al society has abolished the character of uniqueness, the expensive funerals; it has abolished all tragedy. Death is nowhere finally it happens un peu partout.

The infection of this same principle in matrimony has <sup>done</sup> ~~abolished~~ away with the absolute distinction between prostitution and matrimony monogamic marriage, on which the old world was based. It has mixed the colors and the situations until there is neither prostitution nor matrimony. Love becomes a temporary arrangement, like work. With his bold imagination, Aldous Huxley has sketched a society in which the law "three equals one" applies to matrimony. Of course this is all nonsense.

The infection of matrimony is very serious; ~~but~~ the abolition of professional prostitution is the greatest hope and the greatest asset of society. That we must pay a price for its abolition is a matter of course. Only a lady in her drawing-room can imagine that we can abolish prostitution without paying a price. She is like the Prohibitionist in respect to liquor. You always pay a price for every reform.

Our attention is fixed today on <sup>a society in which everything</sup> ~~something~~ <sup>(by the invasion of the factory spirit)</sup> which is potentially temporary. That is not to say that every marriage must be temporary. Not at all. The majority may last forever. But potentially even many of the permanent marriages could have ended in divorce. Real marriages today have to be re-contracted in order to last. The simple, though true, statement of those in authority that matrimony is a sacrament gives no help to the man and wife who do not perceive in time that this sacrament has to be reestablished more than once by their own faith and love. The Catholic Church has always insisted that husband and wife consummate the sacrament of marriage themselves. On the other hand, it is no happy whim of two nice-looking

young people. It is as far from sex as it is from the Church. It is near to both and is based on both; <sup>but</sup> it has a logic of its own.

Looking into our own situation, we find three main and undeniable facts which are incessantly undermining the character of marriage.

For three thousand years man married late. It is a pious lie that early marriage is normal in any civilized society. The Greek Hesiod, 700 B. C., declares thirty years to be the normal age for a farmer to marry. And how could it be otherwise? In those days the notion that sexual satisfaction and matrimony were identical would have seemed ~~foolish~~ absurd, foolish and comical. To marry meant to establish a husbandry. A husband was a man who set up a relatively independent economy. Where such an economy did not exist, there was no room for matrimony. Population was kept even. Prostitution flourished. Matrimony was based on economy. The man married a dowry or a property when he married a girl. Today in many countries <sup>every thing is reversed:</sup> social wages are paid to married workers. Income taxes are lower for married people. Celibacy is taxed. ~~Everything is reversed.~~ Economy is, at best, based on matrimony.

*very often goes astray. And marriage, having lost its economic significance is adrift and*  
~~But at least the girl~~ <sup>who</sup> marries the man whom she chooses.

Very often, through this choice of the girl's, so much volition enters the scene that a temporary arrangement becomes very probable.

Eternity is not accessible to human will. Marriage as a real meeting of heaven and earth, of human obedience <sup>and</sup> manifest destiny, is as rare as any miracle. It happens; <sup>but</sup> it cannot be expected from a choice made by a girl who runs away from taking her examinations or who out of vanity dreams of changing a clumsy bear into a prince! Vanity, *dépit d'amour*, sex appeal, are radiations of our character as an individual. They cannot claim to make up for the



loss of the external economic supports on which the propagation of the kind was based.

The second reason for a definite change is externally symbolized by the fact that girls marry later than in former days and are more likely to be of the same age as their husbands. A wife and a husband who are of the same age by the astronomical calendar are not of the same age. All the moral periods in the life of man and wife differ. I will give only one example. A bride who marries and bears five children is a mother before she is anything else. Only later does she become a housewife, with the special properties of that vocation. A man who marries becomes a husband first. Fatherhood is a quality which he cannot develop until considerably later. When the mother adds wifehood to her qualities, the husband is learning paternity.

This important dislocation in the succession of ages between the two sexes is more easily overlooked if man and wife were born in the same calendar year; and every such loss of differentiation tends to change the real knowledge between wife and man into a mere comradeship. Many people think that a marriage should be framed on the model of a good team. The standard for a married couple is that of "Keep smiling", "Be a good comrade", "Help each other". That is all very nice, but it has nothing to do with matrimony. Neither the good comrade nor the cheerful companion nor the good Samaritan is the mate for the propagation of the kind. These forms of co-existence fall under the concept of "coöperative group". The task of the race has nothing to do with these poor and external forms of good behavior, which are certainly highly commendable for a wedding trip.

The grayish imitation of workshop forms of life, the ironing out of all possible distinctions between man and wife, threatens

matrimony with becoming a natural arrangement between two individuals. Natural arrangements between two individuals are always temporary. Temporary arrangements cannot be compared with a life-time destiny. Temporary arrangements are rightly made as easy as possible. Children become a superfluous addition to matrimony. Birth control is the natural right of two partners to a contract. Sterility is the manifest destiny of a temporary arrangement, because childlessness eases the financial burden. To have children is perhaps great fun, as a lady told me the other day, and many people ~~have children~~ who are nothing but good comrades have children simply because they are such fun. But these children are all illegitimate children, because they have no real claim against their parents. If we have children because it is such great fun to have at least one or two, we are neither mothers nor fathers. We are impudent intruders into the sanctuary of mankind. Equipped with the brains of contractors and mill-hands, we try to act the sentiments of movie stars and gangsters; but we should not call this mixed brew of Sactory and Broadway a marriage. Fortunately, this picture is only to be met with in the brains of most people today. Their real creed is quite different. They try to be parents as much as they can. But, feeling new obstacles, in their way, they are groping and using strange slogans to explain their behavior.

We cannot tackle the problem of matrimony from the <sup>traditional</sup>view-point of Church or State. <sup>The very principle of</sup>Ecodynamics <sup>restrains</sup> obliges us to begin our task with the question about the optimum <sup>and</sup> without any dogmatic prejudice in favor either of eternity or of Mr. Lindsay's short-term comradeship.

We see two great series of facts, on which we can base a positive judgment. First, Marriage and vocation have nothing to do

with each other any longer. You marry without a change in your economic situation. You marry very early. You simply go on with the same kind of work after your wedding, and your wife does likewise. You cannot, therefore, during the first five or six years, afford to have children. It would be irresponsible, a sentimental confusing of marriage at twenty with the old marriage of the Greek farmer in Hesiod at thirty. The mistake would be unforgivable just from the point of view of possible posterity. Both parents and children become unhappy if a boy of 21, who must fight his way and use his elbows to make a career has to tame himself into a child's nurse, while his wife works as secretary in an office. This picture is more repugnant to me than birth-control, since I see a man and a girl both deprived of their natural growth; and the children of such a couple are going to have parents who are dwarfs and hunchbacks ~~as regards~~<sup>in</sup> their parenthood.

In truth, birth-control is the result of our high morality, ~~and~~ the ultimate victory of monogamy. By introducing early marriage we save at least the boy's virginity. The phase between 20 and 30, between the wedding day and the first child, is made into a new period of life which never before existed in the life of mankind in this form. It is a compromise between the period of wooing and courting and the ideal of monogamy. In previous society man was a suitor on the lookout for a wife for quite a time. He wandered through foreign countries, he saw the world abroad, before he came back; and either he found his bride abroad or he discovered her, under the influence of his experiences and his matured point of view, among the daughters of his home country. Exogamy was guaranteed by this stage of travelling, of the Wanderjahre. The roving suitor could become a settled father of a family, ~~since~~<sup>because</sup> he had once felt the blessings of

an experimental stage and a great adventure. Exogamy is a great premise of our civilization. And the amorality of the young men between 20 and 30 was the price paid to guarantee this permanent choice and adventure. Fresh blood, fresh views, new influences kept the race from degeneration. Men could not walk far enough out of his way to find the pearl hidden on a foreign shore.

But in an industrialized world, exogamy becomes more difficult. How can we reestablish continuity in a world <sup>known world</sup> ~~completely~~ Without exogamy, society <sup>(would be)</sup> is doomed. And I am convinced that exogamy <sup>People who</sup> ~~is~~ has relatively little to do with physical relationship. <sup>since they themselves</sup> ~~married~~ <sup>married</sup> couple whose parents were friendly neighbors, and ~~who~~ went to

the same school, are committing inbreeding. On the other hand, the social <sup>effort</sup> ~~problem~~ of adventure and <sup>on which mankind must insist</sup> ~~courting~~ does not contradict the mechanism of <sup>which we observe</sup> ~~propagation~~ (in the <sup>natural</sup> physical world. Plants and animals go through an ecstatic period of wooing, in order to strip the core of the species from the superficial layers of everyday life. The body of an individual animal is a means of defense against dangers and fears, and a receptacle for food. Skin and paws, weapons and the apparatus of digestion, are the short-term means of existence for the individual specimen. The specimen's whole apparatus for its maintenance through its short life must be stripped off when the life of the kind is at stake. Fears must be removed, the question of food supply must be solved. Then, in perfect security and devotion, the life of the kind is promoted and secured. The intensity of courting guarantees the success of mating. The fantastic superstition of the idolaters of space has led research in the field of race and heredity astray. <sup>The geneticists</sup> They look for chromosomes under the microscope. They count germs and cells in space. They find out that there are 4,700,000 possible combinations, and they hope to reduce this number step by step until they arrive at a description of the fact that one and one equals two. Do you believe that these materialists of space will

ever know anything about <sup>genetics</sup> ~~anagenics~~? They mix and count things as if there were no fate, no constellations or destiny. Four billions of chromosomes can never be brought down to the equation between two individual specimens of the race which are mated with each other. Because two is a number which is separated from three by an abyss.

All primitive languages were so convinced of the abyss between two and three that they invented, besides the singular, two separate grammatical forms: a dual and a plural. The new science of ecodynamics will have to bring out the fact that two and three are not in any sense figures in one line, but are separated from each other as the two worlds of individual work and reproduction of the kind. The Dual of grammar and the dualism of mating one sex with the other are a process of mutual response and recognition unknown among three. The risk of mating one <sup>with</sup> from one differs from the social risk of working together with two or more co-workers. The three or more remain individuals. The love between thou and me lays bare the life of the kind behind our existence as specimens. The real problem of good breeding is therefore to induce two specimens, in perfect self-forgetfulness, to dissolve their individuality and represent nothing but the kind. The endless reproduction of the Kind is secured not by

*our volition as individuals but inspire our personal will. We obey.*  
 Thus, good breeding ~~there is of course~~ no problem of volition or abstract thought.

Propagation is no device of the intellect or of the physician's test-tubes. It is a problem of intensifying courtship. The wonderful colors of blossom and feathers, the iridescence of a shell, are attempts to produce this self-forgetfulness. They wish to pierce through the fears and selfish interests of the anonymous and impersonal individual and to push it into taking over its responsibility for the kind. That is why a thou and an I, in a process of selection, challenge each other. It is a selective process, by which man and wife are singled

Wherever the uniqueness is fully realized, and the individual harness is melted down and the endless regeneration of the kind takes place as it should. The defects of the heredity of the two parts was healed and compensated.

out and sealed together as one unique constellation in time. Eugenics has to deal with constellations in time, not with mixtures in space. This explains the impossibility of forecasting anything for all time about miscegenation. The results are bad, where the courting is not intensified. If white and black <sup>Simply</sup> meet in the cheap way of master and slave, the result cannot help being miserable. As long as the environment of the negress does not surround her with all the ~~same~~ refinements, secrets, treasures of a complicated civilization, miscegenation does not fulfil the intrinsic requirements of a good marriage. It is nothing but miscegenation. It has not reached the stage when inbreeding on the one side and interbreeding on the other are balanced in the <sup>mind</sup> (equilibrium of intensified courtship which <sup>should result in a normal profession</sup> leads to ~~exogamous~~ marriage prescribed by our traditions. Marriage circles in a medium between exotism and vicinity. But I know that most people are not prepared to transfer the physical enticements of plants and animals to society. The worshippers of space can only compare things. So they compare the beauty of a fiancée and the splendor of her outfit to the feathers and colors of a bird in nature. They compare the wrong thing. Even a natural scientist would agree to this criticism, since in nature it is the male who charms the female by his beauty and vigor. The cock is more interesting and more alluring than the hen. Now, then, can we compare the trousseau of a bride, or her jewelry, to the feathers of a cock?

of

The constellation ~~between~~ two individuals who are singled out for the propagation of the kind is much more of a social constellation. Mankind uses all the physical means proper to animals and plants: they remain at its disposal. Beauty, youth, wealth, jewelry, colors, smells--all this charms the individuals in order to make them meet. But this is a relatively subordinate matter, a free play

of mankind on the means offered by nature. Mankind is nowhere the slave of nature. It constantly exalts nature by a process of democratic interchange of everything for everybody. Whereas in nature the male is the carrier of beauty and charm, man is free to blend the two sexes. By an astonishing effort, civilization has bestowed on women the charms and fascination which are inaccessible to the female in nature. It was probably one of the greatest discoveries and inventions of human history when man and wife began to interchange their properties and when both, human beings as they are, got their equal share of decoration, adornment, and attractiveness. The wife's jewelry is still a remnant of a period when the woman had to be made beautiful to rival with man's beauty. The cock is more alluring than the hen: how then can we compare the trousseau and attractiveness of a bride to the feathers of a cock? I beg your pardon, ladies and gentlemen, but I am seriously convinced that the equality of man and woman in questions of beauty is a conquest of civilization. It is not "natural"; it might be quite otherwise.

I grant that Christian civilization has changed the balance of the scales. Today we take it for granted that the ladies are the natural monopolists of beauty. I do not deny it: I am not longing to be stoned. But I dare to say that it is an historical and social monopoly and not at all a natural one. It is based on one of humanity's great campaigns for equality between the sexes. Bridal outfit, trousseau, tailors and beauty shops, are the results of a complicated society. They already point in the direction in which I wish to lead your thought: namely, that courting is a social as well as a personal process, and that the selection of the particular physical girl and boy who are going to be married is only a last step in the social mechanism. That a man from Iowa comes to Boston, that the son of a banker meets the daughter of a farmer, that a descendant of German ancestors meets the child of Scotch parents, that a Communist meets a Fascist, a Catholic a Free-



thinker, that someone whose mother tongue was German and whose musical tradition was Bach and Beethoven is mated with a girl who has in her ear the songs of the Highlands--these are the important social steps that precede the realization in the persons of the two individuals.

The accessibility of railroad tickets, Shakespeare's sonnets, the glories of a presidential convention, the social position of an uncle, the fervor of a manly decision in a discussion around the fireplace--all this is more important than the blue negligée or red lips of the girl or the blank face of the boy. And are not the blue negligée, the red lips, and the blank face a product of society also? How could he have a blank face without the security of a real home and the fitness of his parents to bear the brunt of life for the boy? Their wrinkles are his empty face. Why does the girl wear the right blue negligée? What a host of angels and demons have to whisper in her ear before she chooses the right negligée, one which is decent and yet attractive! Everywhere society is at work intensifying courtship. And we can say without exaggeration that the world during the phase of courtship is the undiscovered world of glamour and romance, and that mankind is safe as long as during this phase life is not life in a nunnery, but keeps the charm of Aphrodite.

But today life does look like a nunnery. We have abolished the period of courtship by our system of marriage at 21. How drab is this marriage without children and based on sex-appeal. Sex has no secrets today. The charm of the unknown is gone. Women have lost a great deal of their power over men since the sexual enlightenment developed. But a substitute is at hand which will restore the second economic law--the law which says that the kind is reproduced when and where two equals one. In the old days the girl was courted by her suitor because in winning her he became a prince conquering the kingdom of ancient traditions to which the daughter

was the rightful heir.

It took you thirty years to unseal the hidden treasures of tradition embodied in a daughter of a good family. She was not only her father's daughter, but her grandfather's granddaughter also. Folklore, medicine, wisdom, festivals, ceremonies, religious principles, idiomatic language, music, the rules of hospitality, the secrets of childbirth, cooking, and sewing were handed down for five thousand years through the daughters of men. There would be no hospitality and no religion, no valentine and no dialect, without this iron chain from father to daughter. The Puritans, these <sup>aggressive</sup> ~~progressive~~ males, robbed the daughters of men when they broke down the Maypole; for festivals are the seats of tradition, and tradition puts the feminine side of humanity practically into power. Now that is all gone. She and he, married at 21, have no fathers' or grandfathers' secrets to discover. They go to the movies and get, instead of the dialects of <sup>Contemporary Slang has replaced the dialect of centuries.</sup> their parents, the latest slangy expression of the day. This marriage is not matrimony. It is a regulation of the problems of sex-life-- which is something, but something that is still impersonal. Man is not a thing. A little something is never a solution for his desire to represent the kind.

The couple have to <sup>learn</sup> become what they cannot be <sup>known at 21</sup> at 21: they have to court <sup>together</sup> ~~each other~~. The new forms of life by which courtship and adventure get hold of them again are surprisingly wide-spread and surprisingly simple. The girls are studying like the boys. They read and work like the men. They are exposed to the same heresies and fallacies of science as the men of their age. They have all ceased to be daughters of individual fathers in their religion or tradition. All the women have been turned into daughters of the industrial revolution. ~~They are all trying out many deities, many doc-~~

~~the old days, a father, was a jealous God. Modern women~~

The great adventure of humanity in the present period is women's emancipation. Women, the residents and the defenders of human houses through the ages, are being made members, residents, and queens of that one united house of humanity which modern economics and technique are building around us. One economy, one household, is replacing millions of separate husbandries. The earth is becoming one great second house for the restitution of nature. The blind elements and the raw materials are being organized by an effort of science and skill which can be extolled as "natura renaturata", nature re-naturalized. Man's fireplace and hearth, the kitchen and the barn of private economies, are giving way to a much bigger economy, in which men and women are going to cooperate on a continent-wide scale. That is what makes the women at home like the men. Since the world has been made into one great house for mankind, there is no reason why the women should not be the queens and presiding officers of this house.

As we have based our system on the assumption that industrialization will some day be complete, we can foresee the time when the daughters of men, having become daughters of the industrial revolution, will definitely be transformed, all of them, into mothers, daughters, sisters, and housewives of mankind, of society as a whole. In the old days, a father would never have allowed his daughter to worship Freud, Gandhi, Marx, Admiral Byrd, Leslie Howard. He would have been a jealous god. Modern women are all trying out many deities, many doctrines, and, I should like to hope for the sake of the American kitchen, many cooking recipes. The place of the father, the one great personal authority for values, is taken by an anonymous contemporaneity. The girls are exposed to a destruction of their sound instinct by all the false prophets of a golden-calf society. But they react in a very healthy way. They take their boy and marry. This is a decision which pre-

serves them from the worst results of those fallacies about space and time. It opens into the future.

And now courtship begins. During these next seven or eight years man and wife seek out their real gods. They single out which tradition, which creed, which belief and which value shall be restored, which can be dropped. In a process of synthesis, the couple selects its gods. The girl is no longer the heiress of her physical father's kingdom; instead, she and her husband rediscover the kingdom of their father in heaven. Together, boy and girl can achieve what the out-of and roving half is never able to accomplish: they can find God. In Mozart's "Magic Flute" there is a line which runs:

"Man and wife, wife and man,  
Deity attain they can."

Mutual responsibility is the self-forgetting principle of any marriage. It is the simple principle which destroys all nightmares of sect, superstition, and the slogans of the day. He who sees with the eyes of the race sees the ends to which man has been created. He who learns to renounce his individuality for the sake of somebody else gets it back a thousandfold. He discovers a new secret every day. He begins to grow. Existence ceases to be a repetition, it becomes a permanent growth and change. In a true marriage, the common search of man and wife should lead on imperceptively to a fuller and fuller desire for the race. And if, after successful work, the phase of social pressure is overcome, birth control will reveal itself not as a question of rationalizing matrimony, but of building it up from courtship to real parenthood. The real bride will be, as in the Virgin Mary's day, the young wife who throws off the yoke of the experimental stage and now, as well as the man, welcomes her manifest destiny as the handmaid of the Lord. Her husband will, if they have not wasted their time, be a

responsible member of a group outside in the community. In acting for the kind, man becomes responsible. His mind changes: it pierces through space, it thinks in generations. He who thinks of his children is no longer under the temptation "out of sight, out of mind". And the length of the experimental stage will have steeled them against divorce. The one with whom you have fought the false demons, with whom you have paved the road into the life of the kind, is your natural partner for the rest of your life.

Once these parents have experienced a common faith and established a community which tries to obey the commandments of this faith, their progeny is legitimate. Without his parents being united by a common faith, a child remains illegitimate. Civil law has no influence on this premise of good breeding. With a common faith won in a common campaign, parents will easily regain the strength to educate their children. They will ignore the silly inhibitions of parents who do not know what to tell their children. The telling, it is true, is not the important thing. A common faith eradicated and pervades a nursery without words; it gives power and security to future generations.

Such a couple has rediscovered the second ecodynamic law; they have overcome the factory demon of today, who is whispering divorce and hourly relations in their ear. By a new use of their life between twenty and thirty, the young generation is going to reestablish the second ecodynamic law. For the propagation of mankind the old equation persists: two equals one.

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THIRD ECODYNAMIC LAW:  
THE NEW ROOTS OF PERSONALITY

Ladies and Gentlemen,

Ecodynamics was to apply a different yardstick to the production and the reproduction of the kind. Temporality, quickly changing, asked of man hourly, weekly or yearly labor; whereas Eternity, perpetually recurrent, challenged man and wife to <sup>an</sup> absolute and final devotion beyond their personal lives.

The two eras, the calendar for work and the calendar of the kind, had to be discovered in the midst of a world of space where neither the one or the other was really allowed to function freely. Work and Marriage have of course never quite been overlooked as the main features of society. But the peculiar property of time in relation to both was underrated or even forgotten in the days of Capitalism and Socialism. Temporality and Eternity were, therefore, the two orders whose redintegration was the concern of our first two ecodynamic laws.

In this last lecture we are in a different position. We are facing a time-span which has a natural certainty in itself. Man's lifetime, the lifetime of a worker, is the societal period which has to be considered in its own right as lying between temporal production and eternal reproduction. Man's conduct through life stretches out as an undoubted unit from birth to death. In this third case the length of the time-span is clear. Man is one throughout his life. "One equals one" is the obvious third ecodynamic law. But alas, it is a little too obvious. ~~Has this unit of time any social meaning at all?~~ Has this clearly defined unit of time any social significance? Is man's life more than a zoölogical unit or a physiological sequence from birth to death? Can life, in a mechanized world, be experienced by man and himself and by his companions as a true biography?



A man outlives a score of the combinations into which he is forced by the nature of his work. What makes him an "I"? He lives through two or three generations: what constitutes his identity? He blends feminine and masculine traits of character into a complex pattern. Is he not perhaps a multiple being, playing his parts at the beck of innumerable demons who use him for their temporal dwelling-place? Disintegration of personality: well known to be a serious threat to our modern society. Man's unity is questioned by a whole set of modern philosophies.

Since these philosophies seem disheartening and confusing, their negative power makes our task ~~makes our~~ more difficult than it appeared to people a century ago. Our ancestors believed in man as the carrier of one or more unchanging ideas. For the nineteenth-century European, the classic vehicle of personality was man's addiction to immortal and immortalizing ideas. Through the tempest of life, in the world of

change, the only star which seemed to give some direction was the inner light of ideas. Mr. Dewey has summed up the religion of the past century in his book on social idealism. Idealism unifies a man's efforts through all the periods of his life. Idealism binds together the fragmentary stages of his personality. To have a conviction and to remain loyal to our conviction was our fathers' great exhortation to us. Unshakable ideas kept the balance of a globe shaken to its depths by a tremendous revolution.

The steadfastness of ideas was excellent in a period of industrialization. It encouraged people to go on with one new idea for a lifetime. But in a world of completed mechanization the individual finds no roots in idealism. The result of modern discussions on ideas in college is a complete scienticism. The principle of letting everything be discussed from two or three points of view has starved the realm of ideas. In every educational effort to popularize ideas by discussing them from two angles, one more feather is pulled out. The result is simply miserable. To an honest boy or girl, ideas look like plucked chickens. Not one of them will be able to base his whole life on ideas or any kind of idealism. Every idea is now taken to be the result of a complex or the veneer for a racket. Ideas are no longer trusted. The divine character of absolute ideas has faded away. They have become all too human. And once revealed as the expression of special interests, they have lost all special interest to a beginner in life. The beautiful or the good or the true, the guiding stars for three or four generations, are now being psychoanalyzed. No star can survive that.

But live we must, and the "we" and the "I" demand their full restitution as well as the "it" of work and the "thou" of love. What are we going to do? How can we survive without lifetime convictions?

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Another difficulty arises from all the movements for emancipation. We have already dealt with women's emancipation. Every emancipation changes our concepts of personality. It is no longer possible to overlook the fact that humanity is not personified by man alone or by man and woman as mere man or mere woman. The more vividly we pleaded the needs of the kind in our last lecture, the more frankly can we emphasize the rule that has obtained during the two thousand years of Christianity, that no human being was human who possessed nothing but the specific virtues and features of his own sex. What we call the soul is built on the firm ground of mutual permeation of each sex by all the psychic features of the other. The intrinsic human qualities of devotion, faith, humility, courage, knowledge, boldness, cunning and simplicity, coyness and aggressiveness, politeness and austerity, are all results of a permanent interplay of attributes which paganism assigned exclusively to either man or wife.

Personality is more than the polarity of sex. But from that situation a new difficulty arises. Mutual permeability is the secret of all human souls. For that reason, women's emancipation is always balanced by men's domestication. Women cannot get full equality without changing man's character and woman's character both. If women's emancipation seems nothing but gain, man's domestication is clearly a loss. It is a loss for the women themselves, since man will become even more uninteresting and tiresome than he is now. What is the permanent<sup>domestication</sup> of the male, brought about by the complete emancipation of the female, leading to? It destroys man's personality just as the multiplicity of modern life has done, only from another angle. Domestication leads<sup>a</sup> man into the only state which he cannot bear without immediate degeneration, a state of mind where he thinks: "This is a cinch." No man can bear this atmosphere of security without becoming a drone. And many feminists, as you know, have forecast a future in which men

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will be drones, as in the bee-hive, and had better be killed, their duty once done. The bee-hive gives a good foretaste of what the results of a complete technicalization are going to be.

I have never understood the admirers of bee-hives. At home, the wife governs and has always governed through the ages. Nobody doubts and nobody attacks that. Society becoming one great house, the women are entitled to administer this house in the future. This is obvious to me. But I do not believe that men are bees or that men's economy will ever be established like that of animals. Ecodynamics denies such a stage of economic perfection. The masculine side is the side of imperfection. However, it is also the side which is ~~for~~ ~~and~~ against imperfection. Ecodynamics, viewing the need for breaks, revolutions and changes in society, has to delve deep enough so that man may regain a useful function in a world of complete domestication.

"Save men from becoming drones," would be my war-cry in a society governed by women and successful pacifists. But alas, in a society which had abolished war I should probably be jailed for using the expression "war-cry". And yet I agree, war has to be abolished in an industrialized world. I repeat what I said in my second lecture: natural science and war are incompatible. Ecodynamics must furnish the technical world with the language and the ideas which can protect this world against being abused by armament industries. The abolition of war and the emancipation of women are two sides of the same process, by which the world is becoming one great house for humanity. The fatal side of this evolution is man's being made into a lap-dog. Anticipating a domesticated world, I am raising the following question: If the sublimation of a woman from one man's daughter into a daughter of society can be achieved, cannot the sons of men contribute something to the future society? In the same way as the girl had to give up her physical father's house, the boy would have to cease being the son of

one motherland; he would have to become the son of society, the son of the whole earth. But what would turn him into such an inheritor of all life on earth? What would make him a person?

Or let us look at this great dilemma of future education in a very simple way, shifting our attention even from the distinction between the sexes and focussing on another form of polarity in each human soul. We are all, in our feelings and instincts, a mixture of plant and animal. As in the tree or the flower, there is in us the instinct of the house-builder who wishes to settle down and remain. The lion and the horse within us wish to go on roving and moving. The tree trusts in the world around it, and draws every kind of salt from the earth for its own sap. The animal goes wandering over the earth, spreading germs and changes without tending them. Mere motion and careful conservation, migration and settlement, are two antagonistic tendencies in every human heart; and we are not happy until both elements are fully expressed in the realization of our life. Therefore to some of us the migration and the <sup>movement</sup> ~~motion~~ must be made accessible by an emancipation. The poetry of the cricket on the hearth must be balanced by the prose of the great world, the work in the privacy of a home by an apostolic mission for the whole of society. The plant-like attitude must be rounded off by experience. And experience means wandering, roving, moving.

The opposite is likewise true. The plant-like attitude which attaches us to our family and our environment, which makes it natural for a woman to fulfil her duties in spite of all her rights, is an attitude which is inaccessible to the nomad. He has no mother-like earth under his feet. He is a fugitive. Whether he is a Don Juan in his sex-relations or a rover in his geographical relations or a traitor in his personal relations, the animal in his heart, and in our heart, is

always restlessly keen for change. This brute is represented in our civilization by millions and millions of de-localized people. They are cut off from any motherland, though they may be fighters for ideas or a new heaven. But they are not humanized, because they have never felt like a tree and have therefore never planted a tree. What you feel fully within your self begins to gain new life from your support. A gardener is the personification of man's feeling like a tree. But the

delocalized type cannot be domesticated simply by overlooking his lack of poise. He will destroy the most wonderful peaceful world of Amazons out of nothing but the lust for change and destruction, and especially of locomotion. He must be educated to conquer the soil of his mother earth afresh. Nomads must learn to settle down. This

is a ~~moral~~ <sup>transmogrification</sup> process in every man's life; and it ~~must be fostered by education~~ <sup>humanity tries to foster</sup> such conduct by education. Conduct and education are two halves of the vital process through which we turn our life into a conscious experience and a deliberate success. What is not granted by nature must be supplied by teaching.

And since nature has bestowed something different on each individual, each human being must get a different, that is to say, a personal education. What we are not by nature we must try to become. Becoming is a seventy-year process. And man is in process of becoming all his life. He loses and gains, but he is always supplementing what he is by what he is not. For example, he collides with the standards of work in his group and feels unhappy. He drops his work and goes into another profession. He is disappointed by the lack of a common faith with his partner in family life, and withdraws. No human being is limited to his coöperation in the group and his responsibility in the family. He and she will always think of a third world into which they can retreat whenever work and family are annoying. Whenever the dullness of the anonymous "three" in production and the high tension of the responsible "two" in reproduction become overwhelming, man discovers the <sup>unique</sup> ~~saint~~ within himself and bids farewell to the two worlds of production and reproduction. He looks out for his own personality, for the salvation of his and other men's single souls. He realizes that he is unique, a unique name inscribed in the book of life.

The world of <sup>right</sup> ~~education~~ <sup>and conduct</sup> ~~whether self-education or education~~ <sup>neither acquired by self-education or through education</sup> by others, is the isle of the blessed where everybody has his name, unique, unmistakable, where no rights or duties are discussed, no nat-



ural limitations or talents, no physical beauty or ugliness, count any longer. By our personal life and by our psychic wear, by our failures and by our recovery from social shocks and disillusion, the great democracy of All Souls is rebuilt every day by educated mankind.

In this realm no one can be replaced by anyone else. Everybody is unique. Everybody has an immediate relation to God. Not one of us can fulfil all the requirements imposed on us by society and mankind. Say we do not marry: we cannot have children. Or we are unfit for work; we are even unemployable. Does this exclude us from the world of uniqueness represented by all the powers that educate man? Not in the least. The third ecodynamic law assures to everybody a realm in which he exists not as a specimen of a kind, or a cog in the machine, but as a name of unique value. He who can say "I" is a shareholder in God's own uniqueness. The use of "I", the majestic and dangerous power of man to say "I", is the expression of a third ecodynamic law which balances the first and second.

Anonymous in the group, responsible in the pair, man emerges from the crowd and acquires a name of his own when he acts as an "I", as an independent person; here, by regaining his native hue of resolution, he reclaims some of God's own power of creating.

Education is the broad sloping approach to the railroad station from which the train of our personal life is to take its departure. "One equals one" is the formula of education and of personal life. "One equals one" is the application of ecodynamics to personal life. By this formula the time-span for personal life is put between the time-span of labor and that of marriage. Work is ephemeral and temporary; cooperation is a matter of the day and the year. No single grouping for work can last more than three, five, seven years. Marriage is timeless. The kind goes on forever. And in our duties

as parents or children we are submerged in periods which transcend the individual existence by far. Scores of generation build up a nation. And the responsible link in the chain does not see the harvest of his seed. Between work and matrimony stands man's biography, as a third time-span of middle length.

*But the misgivings about modern man's personality*  
~~A man outlives a score of combinations into which he is~~  
~~retired with double force when he realizes how much~~  
~~forced by the nature of his work. He lives through two or three gen-~~  
~~erations. What makes him an "I"? What constitutes his identity?~~

Is he really one and the same man after living seventy years? His body has completely changed several times. His work has changed even more often. His environment has changed. Why is he an "I"? As a cog in the machine he is an "it"; as a partner in marriage he is a "thou". Where is he permitted to be an "I"? At this point our economic principles gain their full importance, because they will allow us to contrast the future of the biographical "I" with the Liberal or Communist concept of a personality. The biography of a great personality has always had to lead through different houses. Oliver Cromwell's birthplace at Hunchingbrook, his school at Cambridge, his manor at Ely, Parliament in London, Protectorate in Whitehall, coffin in the cemetery, are the stations on the road he travelled. The time-span from birth to death is by nature one; but man must re-naturalize his own nature by a conscious experiencing of his own life. He must ac-  
quire the property given to him during his lifetime. Man's real and  
only private property is his lifetime. It goes right through the rhythm of the ephemeral grouping of daily work and the permanent build-  
 ings for the everlasting race. It has a rhythm of its own.

This rhythm has been destroyed today. <sup>Theological</sup> The means by which  
 it was kept going have lost their efficacy. ~~These means are well-~~  
~~known to all of you. Through the tempests of life, in the world of~~

The identity of our self can no longer be secured by the wonderful simplicity with which a man inherited his political convictions from his father at the age of six and went on being a Democrat for seventy years--like the people in the South. The fact that a white in the South was a Democrat was a dogma and a creed which gave security to a man's mind. We organize all our values by building on the most unshakable and indisputable rock we know. A political conviction was very much a religious creed in the last century, and it successfully organized the whole kaleidoscope of values. If you have one stable point in a system, it is easy to relate everything else to it. With relative ease, Southern Democrats would relate the Hohenzollerns and Queen Victoria and Chinese missions and tariffs and fundamentalism and birth control and prohibition and the "line" in Mr. Ford's factory to the one central dogma that a decent fellow of good family in the South had to vote the Democratic ticket.

This attitude is an everyday application of idealism. You must not mistake idealism to mean a sort of unreal highbrow-ness. It means that a man uses one certain conviction to group and organize all the millions of impressions of his whole life. To base one's life on convictions or principles is idealism. A business man who is convinced that he must make money all the time and everywhere and at all costs, is an idealist. This idea may not please you and may not convince you. But he is obsessed by his idea. He cannot get rid of it. He would think he was losing his honor if he trespassed against it. He is an idealist in our sense of the word, exactly like the man who thinks that he ought not to earn money or interest anywhere or from anybody. He too is obsessed by his idea and principle, and sacrifices his fortune to his conviction. Both men are idealists. Both are convinced that they have found a heavenly star

to guide them through the night of doubts.

Both are unable to see that sometimes you have to think of money as hard as you can and sometimes you have to despise it as violently as possible. But this is the case of any man of common sense. He who has realized the incapacity of any principle to tell us when it ought to be applied and when not, knows that the rhythm of personal can never be restored by idealism.

Idealism does not tell us when to do anything. This, however, is the only thing we are interested in when we are trying to unite the different phases of our lives. The man who knows when to act, when to trust, when to fight, when to endure, when to bear, is the real man of personality. The divine nature of man consists in nothing but this power of knowing when. After all, in this world we find ourselves in, everything is done without us. Stones and clouds, soil and stars--it's all there. Man is no creator. That has been done by somebody else. In our work, we feel very definitely that we are replaceable. And the race--mon Dieu, what is one boy or girl in the chain of the ages? But to us it is given to say: "Now and here." This is the time for God's will with creation to be advanced one step further. There is nobody but you and I to feel and to say and to insist that this thing should be done here and now. To feel the need for change, to tell the truth about it, and to insist on its realization, are the three great chapters in man's personal life, ~~in the community.~~

Education ought to endow us with sensitiveness, command of language, and courage. We are educated if we feel <sup>and see</sup> the beauty or ugliness of a situation, if we tell the truth about a state of affairs, and if we insist fearlessly on the changes that result from our feeling and our testimony. Education must appeal to our senses so that we can feel, <sup>and see</sup> it must appeal to our organs of impression and express-

ion so that we can listen to other people's speaking and can speak ourselves, and it cannot help strengthening our courage so that we can insist on the good we have chosen against the bad that we see in power.

The appeal to our organs of impression and expression is well organized in modern education. Our senses are still starved; but a little improvement is visible. Our courage to resist the bad is developed very little--no, it isn't developed at all.

If the strengthening of feeling, seeing, telling, and insisting makes up the three stages of education, we can divide the periods of human growth, from the birth of the child to his twenty-first or -second year, into various parts. The first period would foster apperception by the senses: dancing, music, training of touch and movement, would be the most important part of this phase of education. Later, vision becomes the leading sense. When rhythm, physical instinct, and sight are well developed, listening, reading, talking, and writing become the central problems. Beyond that, service becomes the main objective; for he who has not proved a faithful servant can never resist the powers of wickedness and superstition in open warfare. He has never acquired a balance sheet of his moral and nervous strength. He would either underrate or overrate the strength needed for any fight. Like the one-sided, abstract idealists, he would gird himself with a club of pedantry instead of the best sword, that of victorious faith.

The children of workers, who are going to be workers themselves, need dancing lessons and physical experience more than reading and writing. And they certainly need them at the very beginning, before they enter the world where reality is transformed into literature; for this is always a second-hand world. <sup>(of the literary education)</sup> The predicament is generally felt today, and I am happy to mention Mr. L. P. Jacks' remarks on the subject in his Colver lectures of 1933. Speaking of

the "Ethical Factors of the Present Crisis", he described the deep impression made on him by the little children in one of the slums of London when he saw them dance. Mr. Jacks has been a pioneer in the whole way of thinking I have tried to pursue and follow up. He did not attack the dead-time world with the weapon of a new science. The times were not ripe for that. But he did annihilate it with a stroke of his pen in his "Heroes of Smokeover". And I feel greatly encouraged to see him take the same attitude on all the important issues. Isn't it heartening that the rhythmical movements of our bodies are no longer just tolerated as an adornment of life, but are actually called by Mr. Jacks an ethical factor of the present crisis? Since I am no expert in dancing, it was fortunate ~~for me~~ to have the authority of Mr. Jacks backing me for the first period of education.

I feel surer ground under my feet when the question of service in the years between 14 and 21 comes up for discussion. The period from 14 to 21 is of the greatest social importance, for the simple reason that during that period the poor work and the well-off don't. Between 14 and 21 no democracy exists: ~~One set of the young generation is proletarianized in~~ the dead-time workshop is proletarianizing one set of the young generation, and the college is sophisticating the other. This system works on the unity of the nation like the thin end of the wedge. The proletarian spirit of universalism and the academic spirit of scepticism alike threaten the nation. Neither the college boy nor the worker learns to serve. One is paid by the hour; and this system denies him any exercise of his power to connect his actions with his own feelings or impressions. He is forced into action, but no use is made of his own <sup>potentialities for</sup> ~~foundations of~~ feeling and telling. The college boy is allowed to nurse the most absurd feelings about a picture or about his parents, and to express the most violent ideas

about life and the world in general. But sentiments and ideas are talked to death and decay before anything can result from them.

Both ways are sterile; both disconnect a man's epochs of life instead of reintegrating them. Service alone can teach persistence. Now service is not so easy to provide in an industrialized world.

The old system of service was based on the threat of external warfare. The mustering-day of the militia was a solemn element in the education of the young American in 1800. The modern American trend is certainly not favorable to any effort toward basing a nation-wide education on that principle. But please do not think that America alone is standing pat in the question of military education.

The need of modern society for a new type of service was felt before the World War. In 1910 William James wrote his famous article on an <sup>equivalent</sup> ~~substitute~~ for war. He asked for service to knock the childishness out of the bones of gilded youth. He attacked the problem from the only point of view which can ~~have a bearing~~ <sup>be of</sup> real relevance. It is not the poor, destitute, and abused member of society alone who needs the opportunity for <sup>real</sup> service. It is the rich, the wealthy, the playboy, who degenerates without it. And James painted a picture in which all these academic fellows were washing dishes and driving locomotives and making hay all over the country. At the same time, a German plan attacked the problem at the heart of the Prussian military system. The army had always been a great training school, furnishing to the sedate German precisely that kind of worldly experience which your ancestors acquired by setting sail for America. The farmer's or carpenter's son in a little valley of hilly Thuringia would see the world and bigger and newer forms of organized society



by joining the army for two years. An American paid this price of experience by getting sea-sick on the boat to this country.

The Memorandum of 1911, which originated in the University of Heidelberg, proposed that all the men not needed in the army be employed in social labor camps on a voluntary basis. The crucial point, here also, was to make it clear to the Ministry of War that this was not a question of the poor, but a duty and an opportunity for the upper ten thousand. The camp idea was based on the existence, not of millions of poor devils, but of some ten thousand nice boys who were imperilled by the temptation of becoming unreal ~~dreamers and~~ sceptics and dreamers. The coincidence of these two plans with the Boy Scout movement of Baden-Powell shows how deeply <sup>it</sup> the need was felt in all the industrialized countries before the War. ~~to develop a service for~~ <sup>that a form of service should be</sup> ~~the inheritance of modern society.~~

*created for* An army enlisted for a war against Nature seems a natural remedy for the divisions in society. The nation, being divided into labor and Capital, co-workers in the pit and collaborators in the office, farmers in the fields and cogs in the machine, no longer offers a national calendar to its children. Exposed to the black magic of dead time, the rhythm of man's growth and man's internal time is destroyed. Warfare, whatever its defects may be, conveys to every soldier the sense for timeliness. A war can be fought only when people agree and consent. They must be convinced that this is the time to try men's souls. A war-cry is a cry which can act as ignition. It sets people in motion, and they begin to march. There is something so enticing in any marching procession that you feel: this is like an inevitable stream of inspiration, this goes over the world like a plough. The irresistible movement of an army which a nation sends wholeheartedly into war is the product of a boyish sense for timeliness. Why can a nation be plunged into a war for the sake of

sheer nonsense? When it is fast disintegrating and being drowned in a dead and meaningless world of technique, it tries to react against this vortex. Despotism was always able to involve a nation in war, because any common danger restores the feeling of timeliness. In an industrialized world without wars, the energies of warfare must be used to train the nation's youth in its sense for the timeliness of action. The army enlisted against nature can infuse this experience into the lowest member of the whole nation and make him keep in line with everybody else.

The forming of this army, prophesied a quarter of a century ago, has been delayed by the World War, which was precisely a violent effort of Europe and America to escape disintegration. It was, of course, the wrong device, and the real war has to be organized now, twenty years too late. Unemployment has made the problem urgent. Unemployed youth is ruined by relief and the dole. And it is the best capital of the nation. If capitalism does not know that the youth of a country is its most important capital, and if Socialism thinks of the unemployed only in terms of money, they will both have to surrender to the nation the handling of that capital. Youth which is not employed becomes unemployable. Youth which does not cross the ocean of mere scepticism and casual work and never lands on any shore of realization, cannot grow to manhood. Two different aspects of Labor, the shortage of actual work and the deadening influence of the situation in the factory, have brought about the CCC movement in this country. Unfortunately, it is merely a child of the depression and is nothing but a scheme against unemployment. It has forgotten William James' <sup>warning</sup> ~~foreboding~~ that gilded youth must take the lead in this service. The CCC, though it employs young Americans in an excellent way, still proletarianizes those who enter the camps,

because the educated class shuns them like leprosy and also has practically no opportunity to enter them. The sons of good old farming stock go <sup>to</sup> the Reserve Officers' Training Camp, which may be satisfactory also; but the gulf between the two armies of youth, the educated people and the unemployed working class, is widened by their different training. This abnormal situation cannot last forever. There could easily be a crusade in all the American colleges which would restore the unity of the national education. The approach to this goal through the slogan: "Give everybody a college education," is an honest expression of democratic ideals. But it does not delve deep enough: the colleges are not reintegrating the young generation to the extent that is needed by an industrialized society. Make everybody serve in the working camps which are restoring the usefulness of the forests and cleaning out the rivers; then, for all the rest, things will <sup>look after</sup> ~~take care of~~ themselves.

For in these camps the old idea of pioneering, which for a century formed the universal background of citizenship, would be revitalized. During the last forty years the frontier has been gone. The country no longer invites the individual to conquer virgin territory acquired by the Union. It is only a superficial assertion that rugged individualism built up the Western States. For 150 years the march westward was a fight on two levels. The Federal government was the machinery for expansion set up by the old colonies. The new territories have always been the common possession of the older States. The frontier was a moving frontier, into ~~the~~ which the rugged individuals could pour because the star-spangled banner was waving over their heads.

Future generations can ask for an analogous opportunity. The demand for a "new frontier" has been expressed over and over a-

gain. The whole tradition of this great continent is driving in the pacifist direction of a service and fight against nature instead of a warfare against the other nations around the Pacific. Such a perpetual effort of the generations to come would embody the best of the effort ~~undertaken~~ made by all the preceding generations. It would give back to every class of youth the privilege of reconquering the continent. It would bring the nomad concealed in every adolescent down to the soil of his mother earth. He would meet the ~~monthly~~ motherly and terrestrial forces of lasting, dwelling, rooting and settling, which round off the traits of a full human being. ~~He would help to build up a country in which farming and industry would be reconciled, by preparing the homestead for the decentralizing groups.~~ Every generation must pay its tribute to the soil lest it lose its own equilibrium between plant and animal, between steadfastness and mobility. Did not every <sup>immigrant</sup> ~~boy and girl~~ pay his passage across the ocean? Why shall not every boy and girl pay for the passage into full citizenship in the house of nature?

I am not going to defend this arrangement merely on economic grounds. However, it is by no means a fault of the plan that the army enlisted against nature in working camps of the younger generation would unburden the older men in their fight for jobs. Youth must bear the brunt of unemployment before the married couples are put out of work. That should be obvious. At the same time, the "moral equivalent to war" is a "moral equivalent to the <sup>young</sup> worker's immoral situation in the factory. No college education can rescue a proletarian from the destruction of his outlook on life by a system of payment by the hour or the piece. <sup>But</sup> During his service, the sub-human treatment of the young boy to which we have stooped would be replaced by the building up of a time-unit which has educational value. For, let us say, at least one year, the economy surrounding this youth would be condensed into a real annual husbandry. This would be the

best education for national citizenship. Today an individual on fifteen dollars a week passes judgment on city, State or Federal budgets which reach into millions and billions. No theoretical information on the significance of these astronomical figures can make them clearer to common sense.

The only thing to do seems to be to furnish everybody with the medium of a husbandry of moderate size. It must transcend the private economy of his pocketbook considerably, yet it must be within the reach of his understanding and responsibility. A camp of 100 or 200 young men offers a wonderful opportunity for teaching and learning all the financial problems of living in a larger group. The camp budget should be, therefore, in itself a first-rate object of study for every member of the company. The life in a camp is a great lesson in economics; yet it is a kind of economy whose importance is usually overlooked.

The service in this army has little to do with pay. If you get any money at all, it should be given in a lump sum at the end of the training period. That would change the significance of the money. From a wage paid weekly over the counter, it would be transformed into a nest-egg acquired in one great campaign. Such a lump sum would not be an income to be spent while you are working in the camp, but a basis to begin on after you have left, it.

All these results can be gained from a new economic conception which looks upon youth as the most important kind of national capital. Once considered as such it must be of course used in the appropriate way. Education through service is the only way for a nation to provide itself with real men. Today, education is making every possible effort to strip the nation of personalities. This is a world wide process: Examinations and games, games and examinations, are the <sup>harvesting machine</sup> ~~harvesting~~ through which youth is relentlessly put for <sup>the sake of</sup> ~~its~~ standardization. But though it loses its individual shell, it does not acquire any positive power less of all the divine power of resisting the trend of convention by its personal courage.

It is just at this point that the committee of our college in the hills has reached a definite conclusion. You remember that the committee on power stands behind the four reports on the ecodynamic situation. When it had arrived at the formulation of the third ecodynamic law, <sup>clearly</sup> it saw its own situation in the community ~~clearly~~. The third ~~educational~~ equation of 'one is unique' is the most important for any reform in education. The first rule applies to the production of goods; Nature can be ~~reproduced~~ <sup>restored</sup> and to its proper omnipresence in space wherever three or more represent this longing of nature for ubiquity. The reproduction of the kind depends on matrimony; Mankind is regenerated when a dyad of man and

wife respond to the longing of the kind for eternity. These two realms are beyond education. But the humanities in a college must take care that humanity does not become dehumanized, because if it is, nobody is going to take the trouble of reclaiming the lost calendar of humanity, its capacity for doing things at the right moment.

That is why the report on power has not taken up the question of service from the view-point of national welfare or unemployment; it has stuck to its guns. It has discussed the periods and ages of personal life, and explains ~~and~~ its attitude toward service in terms of human time, as follows :

" The <sup>need for an</sup> army enlisted against nature can be deduced from merely personal exigencies. In human life, the period of listening and talking from 14 to 21 prepares the way ~~for the period of insistance~~ for the period of insistance by beginning the period of independent thought. While the pupil and student listens, a chorus of voices begins to grow <sup>inside him</sup> ~~in his interior~~. The " cogito, ergo sum ", I think therefore I exist ", is especially true of that period where the adolescent begins to contradict and to criticize his environment. Doubt is the philosophical term for the dialogue which begins between the heart and the brain of such an adolescent. By thought and doubt, those words and teachings that have reached our ear, are sifted out. To think means that the winged words which have visited us die and <sup>live again</sup> ~~reconstruct~~ within our brain. Our brain is like a field on which the grass is mown by ~~our doubt~~ our doubt, and on which <sup>new</sup> a prifled seed grows again which we have declared worthy to survive. Yet this process is only in a very few cases the business of one sophisticated individual. The race fulfills this process of mowing and resuscitating the eternal truth <sup>by more than</sup> ~~not~~ by the pure thought and the personal abstract <sup>doubt</sup> ~~thought~~ of one lonely youngster. The race cleans up the mess of rotten and dead thought by a common effort of the young generation.



This effort begins at fourteen. Instead of doubting himself personally, the lad chooses a friend of whom he can report at home: "Geoffrey says. . ." This strengthens his position against his environment. In splitting his inner self--and split it must be in this age of reason--he doubles his critical half through friendship. And here is the great place held by friendship in modern life. The friend is our alter ego for all purposes of self-assertion. A further reinforcement for the siege against the accustomed environment is found in the gang. A friend is private. He suffices as against the privacy of the home. But for the young proletarian the conditioning environment is not the home, but the quarter where he lives. As a defense against the half public life of the streets, he joins a gang. A gang is already half public, but it is still illegitimate. The third stage of alliance is reached when a class in college exercises its social power by stamping its members with the one stamp of Class of '33 or '36. Here the common experience of a generation is even more strongly emphasized. The descent of the stream of life has bound together more than two friends, more than a group. It begins to take on definite and general significance.

At 21, every young man is a Communist. This fact has nothing to do with politics. It means that the soul in its endeavor to bury the rotten ghosts of the past must cry out, if it is healthy and normal: "Be embraced, ye millions! Let every right-thinking man be my brother! Let us wage war against the unrighteous world of yesterday!" This stage of mind and heart must be experienced by every human being at least once in his life. And it is dangerous if the experience is postponed to his later years because he is denied the chance to obey this universalist~~ic~~ instinct at twenty. He who has never yielded to this thirst for identifying himself with the coming kingdom of heaven remains child-

ish all his life. He never gets over the stage which we must pass through before we can enter the period of fruitful realization. Communism is more than a political system invented by the Marxists or a natural reaction of the cog in the machine. Every generation, at 21, is potentially a cataract of power; and this cataract can be put to social use. Communism is the normal ecodynamic attitude of any youth who in the years between fourteen and twenty-one has grown to a complete emancipation from his environment. The force of this stream of youth is something specific which cannot be destroyed and suppressed without the greatest danger. By the very fact that Communism is a normal state for the young man of 21, it cannot be normal for the man of 29 or 40 or 60. Ecodynamics shows that a man passes through more than one stage of conviction and faith. We are educating Communists if we do not allow men to pass through a Communist stage in their lives, a stage where everything belongs to everybody, where the whole manhood of a generation is in open warfare and complete devotion, serving for the delight of identifying and dissolving itself in the universe. The perversion of paying the 20-year-old worker by the hour and by the piece is leading inevitably to Bolshevism. Since he is forced into an economic system which is precisely the opposite of that natural to his age, he can and will not rest until the men of 40, 50, and 60 have lost their salaries and their property also. That is why he must serve in the army against the decay of nature before he can pass on. This is the power-plant which society is called upon to build lest the noblest energies of which it is the trustee be wasted or perverted.

By answering the Communist husbandry of youth in the affirmative, we discover the economic values of the different ages of man. What a queer idea, to assume that man is a greedy being or a spendthrift throughout his life. Each age has a different hierarchy of values and

runs its economy on a different principle. He who never changes his economic principles is no man. Must a grandfather behave financially like a boy? Yet Communism, Liberalism, Capitalism, Feudalism, and so on and so forth, eternalize one of the many phases through which we pass during our life. It is not possible for an honest man to have one economic conviction all his life. Ideas themselves, as far as the world is concerned, must change in the course of a consciously experienced life. The roots of the personality of the future cannot be found in ideas, in ism's, in massive intellectual beams which pierce straight through the whole length of a man's biography. Children have no ideas, and men test, bury, and create ideas.

The biography of a real human being includes a deeper secret than the fulfilment of one ideal or one philosophical system. Ripeness is everything. To take every step in life at the proper time is man's great personal mission, the mission which will link together his work and his passions, his natural needs and his historical role. The ages through which man passes are his soil. Man's first twenty years, as we have described them, are only a prelude to the biographical wealth implicit in the various ages and steps of the remaining fifty years of his life. Our lives represent the great elemental forces. Man has his seasons, spring-time and harvest, like our mother earth. He has his high and low tide like the ocean. Fire and air are familiar to man; revolutionary terror and tender poetry are both familiar to him. Man is the microcosm. Nothing earthly or heavenly can remain foreign to him. But the microcosm is gifted with a sense unknown, as it seems, to the macrocosm: he is the founder of time and the determiner of ending and beginning.

This makes man the tiller of his life. Industry, though it mechanizes agriculture, must nevertheless invite us to farm the unique

soil of man himself. In an industrialized world he can survive only if he is treated as if he were a special kind of soil. This is a reconciliation of agrarianism and industry by which man and nature exchange roles. Nature has become chemical, electric, inorganic. Man's organism, as an organism of growth and change lasting through seventy years, is no inorganic matter. Humanity does not center in an abstract conviction. The nucleus of our humanity is the deep faith which leads us on amid the encircling gloom, from phase to phase and from age to age, and which makes us discover with increasing reverence the elemental changes in our nature. If we are going to organize man in his reality, if we shift from hiring a hand by the hour to the organization of the lifetime of a worker in industry, we must take into account the organic changes in a man's convictions, ideas, and economic tastes and values. It is no adequate ideal to establish everybody in one place for all time. School, camp, factory, decentralized group in the country, must follow each other at reasonable intervals. Children should grow up in the country. But a young couple should be exposed to the training of a big center and the rigid discipline of big business at its highest speed. Then they will be glad to retire again from the turmoil. The solution must be planned so that as many people as possible are enabled to pass through three or four environments of completely different, aye, antagonistic economic character. But each phase would require to be lived intensely. The <sup>most</sup> loyal devotion to the duties of this period would lead on to the next. There would be no contradiction between abstract programs or ideas; instead, the human organism farmed by industry would complete his course with great determination. Manifest destiny would not mean a mere adventure in space, but at the same time, or even more, an adventure in time. If your ancestors had the courage to cross the ocean, it meant that they were bold enough to lead two lives, one before

the other after their landing, two lives with completely different values. The sons and grandsons will have to learn to risk as much as their ancestors, because crossing the ocean once during one's life was the foundation on which this country was built. It was not simply Europeans who came to the New World, but Europeans who were resolved to start a new life.

This is--the report concludes--why we recommend the abolition of the obsolete division of learning into law, theology, history, philosophy, philology, economics, etc. At least they should be reestablished as two faculties, one dealing with natural space, the other with time. All this is only the application of what we heard said at the alumni meeting: that industry has ripped open the abyss between fathers and sons, since no predecessor is now capable of teaching or training his specific successor. We must face the peril involved, and use the great potential value of these breaks between the generations. Each new generation can gain a specific social function if it is allowed to discharge its potential energy as a recognized unit. The open break in conviction between the generations loses its terror if it is frankly admitted and if society is built on the acknowledgement of this cross-section in time. The generations would succeed each other more consciously, but perhaps with more mutual recognition, with that "anagnorisis" (recognition of each other) of which Greek tragedy and modern literature are so full. Political parties are much less natural than generations. A one-party system is Fascism's and Communism's answer when the nations grow dissatisfied with the party system. Would not a two-generation system be more in harmony with man's discovery of his own nature and its twofold need for movement and continuity?

## EPILOGUE

And now let us end these lectures, which have pierced through the black magic of dead time. The dead time which people call the fourth dimension of space contains no future, no timeliness, no eternity; and as a result of that mutilation, even its temporality, its hours of work or amusement, lack the quality of real life.

The magicians of dead time, assailed by the sighs and groaning of the millions, heap up their plans for work and their schemes of amusement. They think the great quantity can make up for the lack of quality. That will not work for long. For the search for the right time and the right length of every time-span is the great search of every living soul. We seem to be born into society and family without a claim of our own. Yet by instinct we know that any child born into this mess of a world can reclaim it. Any child can be re-born to its full growth and uniqueness by knowing the right hour and choosing the right grouping. Our timely conduct between the temporal grouping of individuals for cooperation and the eternal recurrence of the kind unites and blends the three ecodynamic equations into one. Practically, they permeate each other incessantly. Work in nature, which must be represented by three or over, can quench--at a given period of life--the personal thirst of growing youth for universal service. And vice versa, matrimony, the responsive union of two people caring for the kind, can bring forward the responsible head of a local group in the settlement. Education, by condensing the conduct of a human being into real uniqueness, can provide society with sensible and courageous leaders for its tasks. On the surface, the three rules for production, reproduction, and education are completely diverse. Yet once their "otherness" and diversity are respected, they will show their

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intrinsic agreement. We must have the courage to deal with the different spans of time in a tri-lingual way. The periods during which work must be organized, during which the kind is ~~going to be~~ secured, and during which the ripening of man takes place, have a different rhythm and a different key. The cold figures of the actuary, the passionate poems of the suitor, and the treble of a soul in her majesty, are all interdependent. Temporality, eternity, and timeliness are one and the same truth applied to three different situations, though human brains are weak and must express one truth by a threefold attack and a triple formula. Cartesian space should not be allowed to murder its own creator, man. After all, human beings invented this tool for the specific purpose of conquering outside nature. In this dead space, the powers of representing, regenerating, and reclaiming--these three human powers--cannot be found. In space we can find neither the kind nor the defining limits for work nor the rules for the self-revelation of a soul through time. In space our labors, our love and our experience remain bewitched by the black magic of dead time and are made into parts of a working machinery.

But the work of society, the regeneration of mankind, and the personalization of humanity can only be called passing guests if related to space. They are rooted in time, and radiate from their homeland into space. They have the privilege of changing space and the divisions of space unceasingly. This human trinity enjoys the unforfeitable liberty of building up and tearing down all the houses and communities of our race in accordance with their own vitality. Any institution in space and any concept of space which dares to establish a dogmatic or scientific or abstract authority beyond those three final values (representation of nature, regeneration of the kind, and personalization) is nothing but a new Moloch. We have found that barrenness, disintegration, child labor, unemployment, scepticism, are the heavy toll



levied by the modern cult of Moloch.

He who approaches one of the three stages of reality in the appropriate way, by displaying the energy of an "it" in temporal work, the responsible love of a "thou" in everlasting marriage, and the growth and fulfilment of a named "I" in personal life, traverses the three stages of our soul, and shows that he is one of the legitimate inheritors of the life entrusted to man. Through his good will, life is reborn at its source outside space and society is rejuvenated in spite of its mechanization.

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