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John U. Nef

Excerpt

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## I

## MOVEMENTS OF THE MIND

c. 1570–c. 1660

The distinguished French writer, Georges Bernanos, was on the island of Majorca during the early phases of the recent Spanish Civil War. He was profoundly shocked by what he saw: by the liquidation without trial of men and women who were suspected of sympathizing with the cause of the Spanish Republic. The shock suggested the title—*Les grands cimetières sous la lune*—of his book of protest against the disintegration of decent standards of judgement and of conduct that he felt was taking place among the Christian peoples, particularly those of western Europe. When he visited General Franco's headquarters, he is said to have expressed his disgust to some of the leading officers. He spoke to them of the *barbarism* with which cemeteries were being dug to bury the mutilated bodies of the victims taken from their homes and shot in the night. One of these officers replied that Frenchmen are only lukewarm in their Christian faith. They suppose the supreme virtue is to die for Christ when in fact it is to kill for Him!<sup>1</sup>

This incident reminds us that violence, bloody death and death by incineration are part of Christian history. It introduces us to that age whose part in forming the cultural foundations for industrial civilization it is our purpose to examine. Fighting and killing in the name of Christ were probably never so common within Europe as during the last half of the sixteenth century. In the reigns of Elizabeth I of England and Philip II of Spain, differences over religious

<sup>1</sup> Georges Bernanos, *Les grands cimetières sous la lune* (Paris, 1938). My authority for this episode is the distinguished man to whom these lectures of mine are dedicated. There is no mention of it in Bernanos' book, but it is quite in keeping with what he tells us about the Spanish attitude towards such executions, pp. 139–40, 145–9.

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issues became one of the major causes for war between states, between factions inside states, and even between members of the same family. The kind of slaughter against which Bernanos protested was almost endemic to many parts of Europe.

We think of Montaigne rightly as one of the most humane men of those times. A letter that he wrote on 24 August 1562, at the beginning of the long era of so-called religious wars which was to last for nearly a century, suggests that he, like Bernanos four hundred years afterwards, was sorrowful over the spectacle of violent and cruel human nature engaged in civil strife. But his words suggest also a resignation, which permeates his *Essays* and which separates him from Bernanos. He does not attribute the callous ways in which men are committing and accepting murder and rape to any decadence in standards of conduct or to any weakening of the human conscience. Writing to a royal official in Paris, he said:

I have already put you in possession, Monsieur, of the troubles which desolated the Agenois and Périgord, where our common friend, Mesney, taken prisoner, was brought to Bordeaux and had his head cut off. I wish to tell you now that those of Nérac, having by the indiscretion of the young captain of this town, lost from a hundred to a hundred and twenty men in a skirmish against a troop of Montluc, withdrew into Béarn with their ministers, not without great danger of their lives, about the fifteenth day of July, at which time those of Castel Jalous surrendered, of which place the minister was executed. Those of Marmande, Saint Macaire, and Bazas fled likewise, but not without a cruel loss, for immediately the château of Duras was pillaged, and that of Monseigneur Villette was forced, where there were two citizens and a large number of churchmen. There every cruelty and violence were exercised, the first day of August, without regard to quality, sex, or age. Montluc violated the daughter of the minister, who was slain with the others. I am extremely sorry to tell you that in this massacre were involved our kinswoman, the wife of Gaspard Duprat, and two of her children; it was a noble woman, whom I have had opportunities of often seeing when I went into those parts, and at whose house I was always assured of enjoying good hospitality. In short, I say no more

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to you at present, for the recital causes me severe pain, and therefore I pray God to have you in His holy keeping. . . .<sup>1</sup>

Montaigne was living in a period of strain and fear, not unlike our own, with Europe on the brink of total war. It is therefore something more than mere curiosity which leads a historian to consider what men's minds and imaginations were able to do for the later welfare of the human race during the critical times which lasted from the mid-sixteenth to the mid-seventeenth century, from the abdication of Charles V and the accession of Elizabeth I to the Peace of the Pyrenees and the Restoration. Let us try to clarify a little what were the basic changes in human thought, in faith, in art and in conduct during this age, and how these changes were associated with the eventual coming of industrial civilization. If we raise the question how these changes took place, how far they resulted from the exercise of man's free will in a Europe frequently at war, we can perhaps help our contemporaries and our descendants to recognize the forces in human nature which need to be encouraged as a means of meeting the dangers that beset men and women everywhere today, and especially those that confront the chief nations of the earth, armed as they now are with weapons so powerful that they would be safe only in the hands of God the Father.

Historical inquiries concerning the origins of industrialism have been preoccupied for the past two generations with Marxian notions of progress, and with the part played by technical changes in methods of production, transportation, communication and administration in bringing into being the mechanized world in which we live. This preoccupation has led students and scholars to centre their attention upon changes in economic conditions, in seeking for the causes for the coming of industrial civilization, whether in the immediate or the more distant past. In this search the place of the

<sup>1</sup> *Essays of Montaigne*, translated by Charles Cotton, 1 (ed. W. C. Hazlitt; London, 1902), xliii-iv.

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human personality has been largely limited to those ideas, to those intellectual discoveries, which can be seen as factors contributing to utility, as that word is widely understood: to the abridgement of human labour, the multiplication of output, to reductions in the cost and increases in the speed of transport and communication, to the prolongation of the average span of human life by the conquest of disease. It is often forgotten that the concept of utility that prevails in our time is largely the result of economic speculations, of the practical applications of scientific knowledge and of a concentration upon certain kinds of inventions, especially those which substitute machinery for manual labour. The utility of faith, of workmanship, of beauty, of everything that nourishes the soul and that is beyond price, has been forgotten or denied.

Has not this preoccupation with particular aspects of the influence of human genius produced a one-sided view of the genesis of the contemporary industrialized world? Did not the development of both faith and art also help to create the civilization of the eighteenth and early nineteenth centuries in Europe and America?

Before we can consider the place of faith, of moral values and of art in the world that we have inherited, we have to consider the consequences of the gradual separation of both from scientifically accepted knowledge. In so far as the conditions of the contemporary world have been achieved by the works of the mind and the efforts of the will, the *direct* causes of the great wealth and the vast population can hardly be found in the inventions of faith and the inventions of art.

The very separation of science from faith, from ethics and from art, which is so characteristic of our times, is at the roots of the industrialized world in which we live. In a letter destined for Fermat, which he sent to Father Mersenne in 1637, Descartes remarked that the great Toulouse mathematician seemed to suppose 'that in saying a thing is easy to believe, I meant only to say that it is probable. This is far

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from my position: I consider everything that is only probable as almost false. . . .<sup>1</sup> Such a position has led to the admission as true of only what is verifiable in tangible and increasingly in measurable terms, or in terms of mathematical demonstrations which start from propositions artificially divorced from the actual experience of living. Since it is impossible, as Pascal seems to have been the first to recognize, to offer the same kind of tangible proof and to get the same kind of assent in matters of faith, of morals and of beauty, the truths of religion, moral philosophy and art have come to be treated as subjects of private opinion rather than of public knowledge. Their contributions to the contemporary world are *indirect*, though not for that reason necessarily inferior to those of science.

A revolution in the ways human minds work seems to manifest itself differently from a revolution in the economic life of human societies. Startlingly rapid industrial changes—startlingly rapid changes in the ways men exploit the earth, produce and transport commodities and transmit messages—such changes are revolutionary, one may say, only if they affect a large proportion of the population, and alter radically their habits of work, of transportation, of consumption and of communication. The revolutionary stage in intellectual history is, on the contrary, generally the stage in which a few powerful minds emphasize certain hitherto neglected values and methods, and relate them potentially in novel ways to the life of action which individuals and societies have to lead in order to inhabit the earth. Innovations are usually brought about by the exceptionally powerful thinkers, the exceptionally inspired hearts, the exceptionally fertile and disciplined imaginations. Up to the present, the life of the mind, in the sense of that inner spiritual life that affects history, has never been the life of masses of men and women. It has influenced directly those who have been able to participate in the works of the few by reading, enacting or contemplating them. What

<sup>1</sup> *Œuvres de Fermat*, eds. Paul Tannery and Charles Henry, II (Paris, 1894), 113.

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has made new ideas influential has been the fact that considerable numbers of persons have shared in these ways the experiences of the most seminal minds, the exaltation of the most saintly characters, or the delight of the greatest artists.

These innovations that have affected history are probably not unrelated to the thought and to the work of a much larger number of men and women. It would seem that there should be at least a twofold relationship. The innovators derive their ideas not only from solitary reflexion, but in no small measure from their experiences with others, and some of these others, who influence the masters, have experiences of their own which are reflected in the works of the masters. Again, in certain kinds of creative labour, for instance in the founding of a religious order or in the construction and embellishment of a building, such as a cathedral, a church, a town hall or a château, results depend not only on one or a few leaders, but on considerable numbers of associates and followers who conceive and create in the same spirit, but with a large measure of personal initiative.

## I. TOWARDS QUANTITATIVE PRECISION

Today, whether we are concerned with the public, with the administrator, with the business executive, the manager and engineer, or with the learned man, we are struck by the place most people give, almost instinctively, to quantitative statements as a basis for judging their own welfare and that of the groups, societies and nations to which they belong. If the price of shares is rising, if the production of commodities is increasing in volume, if profits and wages are higher than they ever were before, if the labour costs of mining and manufacturing are falling, almost every one who reads about these matters in the daily or weekly papers feels at least momentarily better. If he reads that there has been a fall in these barometers of public health, his spirits are depressed. In the

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modern world hundreds of thousands, even millions, of people are employed to gather, classify and present in a readily understandable form myriads of statistics. This is the result of a growing thirst for quantitative information that began generations ago, and that has recently been increased artificially by the new means of communication, especially by the hurried journalism which, in its search for speed and for short cuts, finds statistical information, provided by numerous accounting firms and bureaux (public and private), the easiest material to consult, because its use requires usually very little thought.

One of my most industrious colleagues, who had spent more than a decade on an historical work of remarkable erudition, sent a copy to a relative of his, a chemical engineer. He showed me the letter of praise which he later received. The engineer went to work and added up all the references in the three huge volumes. He discovered that they ran into five figures. Therefore he concluded the work must be important. Less time, and especially less effort, was required to make this addition than to read the book, and anyway by what criteria could the book of a specialist be judged if it were read by a specialist in another subject?

Like a book, a man is now judged, publicly at any rate, not by his character or the quality of his work, but by the salary he is paid or the total income he receives. Numerical figures occupy a place in the modern vocabulary of values that they have never occupied before.

People's minds have not always worked in that way. When did they begin to do so? And what, in the beginning, had the new emphasis on quantitative values to do with the separation of natural science from faith and art, which enabled scientists to focus their attention on tangible problems, and helped to bring about eventually an unprecedented alliance between scientific knowledge and material progress?

In his recent book, *Le Problème de l'incroyance au 16ème siècle ou La Religion de Rabelais*, Lucien Febvre has suggested

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that the Europeans of Rabelais' times, compared with their descendants today, were little interested in their exact age. It was by no means as universal then as it has since become for people to remember just how old they were, if indeed they had ever known. Rabelais himself perhaps knew less about his age than his modern biographers profess to know, though they disagree among themselves as to the date of his birth. 'People generally, in Rabelais' times,' Febvre wrote, 'do not seem to have felt an imperious need for precision.'<sup>1</sup>

During the hundred years that followed Rabelais' death in 1553, there are many indications that exact time, exact quantities, exact distances were coming to have a greatly increased interest for men and women in connexion with private and public life. One of the most impressive examples of the new concern with precision was the action taken by the Church of Rome to provide a more exact calendar. Throughout the Middle Ages the ways in which the Christian peoples measured the passage of time were based on calculations made before the fall of the Roman Empire. The Julian calendar of A.D. 325 was still in use in the age of Rabelais.

Here we have one of many examples of the ways in which the practical sides of European life at the beginning of the sixteenth century were still based on thinking done in other societies, without any fundamental innovations. The Julian calendar made the year too long by 11 minutes and 14 seconds. Seven or eight days were gained every thousand years. For many generations before the Reformation, certainly as far back as the eighth century, learned men, perhaps first among them the venerable Bede, had realized that the calendar they had inherited would eventually no longer coincide with the seasons of the year.

Projects for a new calendar had been considered before the second half of the sixteenth century. But the actual reconstruction took place during the papacy of Gregory XIII, in the decade of the Spanish Armada. It took place in the midst

<sup>1</sup> *Le Problème de l'incroyance*, pp. 158, 429.



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of the religious civil wars in France and the Low Countries. It was in March 1582 that the Pope issued the brief abolishing the ancient Julian calendar.

Six months later the year was straightened out and brought almost into focus with the exact passage of time, by dropping out ten days and reckoning the day following the feast of St Francis, 5 October, as 15 October. This was done simultaneously in Spain and Portugal, as well as in Rome and other parts of Italy. In France the ten days were suppressed in December; in the Catholic states of Germany in the following year, 1583.

The Gregorian calendar is not the greatest experiment in accuracy of its kind, for the Mayan calendar was apparently more precise. But the Europeans in the late sixteenth century were only on the threshold of those enormous advances in precision which today have subjected human life to a control by exact calculations such as no societies of the past ever experienced. As a symptom of the growing efforts at accuracy which have done so much to transform the rhythm of life and the habits of human beings in more recent times, the Gregorian calendar is enormously impressive. It was about three hundred times as accurate as the calendar which it replaced. The Gregorian calendar is sufficiently accurate to satisfy us today when our standards of accuracy in general have become much more exacting. Twenty thousand years hence, if any of our species are still alive, our descendants should be less than a day out; if we had stuck to the old system of reckoning they would be finding themselves in winter when the calendar registered summer. The change effected in methods of calculating the passage of time in the late sixteenth century was sufficient to relieve us from bothering about this matter of measurement. The societies that are competing for dominion in the twentieth century can hardly hope to survive unless a world civilization based on Christ and the example He set us is achieved. If it is not achieved, there will be no need for calendars. If it is achieved, the

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Gregorian calendar will be good enough for a very much longer time to come than seems to concern any practical man today.

Is not this prodigious advance in accuracy indicative of an immense intellectual and administrative effort? Do not things of this kind get done because a growing number of persons feel the desire to do them intensely enough so that a few go about actively getting them done? While the need for a reform of the calendar grew increasingly obvious with the passage of the generations, that seems insufficient to explain why the decisive correction of this wide error in calculation should have occurred in the last quarter of the sixteenth century, rather than fifty or a hundred years earlier or later. Is it not reasonable to suppose that a novel concern arose at this particular time over getting the length of the year straightened out?

The history of the calendar suggests that a greater emphasis then began to be laid on quantitative accuracy than ever before. The quantitative-mindedness that was destined to become a characteristic and distinguishing feature of the contemporary world was so accentuated that Europe came to occupy for the first time a place apart from both the Near and the Far East. Europe began to give a greater importance to the quantitative sides of human experience and speculation than any great societies of the past.

The Europeans were striving after a higher degree of quantitative accuracy in many domains during the span of the eighty years or so that followed. Some of them attached a novel importance to the amassing of statistics, and notably of statistics concerning rates of increase, as guides to economic policy, at the very period when, with Bodin, Malynes, Laffemas, Montchrétien and Mun, economics first emerged as a separate subject of human speculative inquiry, independent both of housekeeping, the concern of each of us in his daily active life, and of moral philosophy, the concern of us all for the guidance of our inner lives.