The Smith of the Gods

36 - « Thus equipped with the “New Alliance” of Isabelle Stengers, the “Anti-psychiatry” of Jean Oury, the “radical imaginary” of Cornelius Castoriadis, and the sagacity of Jacques Derrida, we obtain the “French Theory”. »

« each period forges its own human material, and if our epoch really needed theoretical works, it would itself create the forces necessary for their satisfaction. » (Rosa Luxemburg)

360-We could cite Mitchell Feigenbaum and Victor Klemperer as two great discoverers of what the universality of Theory means, the one in the physiological dimension of the world, the other in the recurring psychophysiological structures of authoritarian language.

1- The constancy of Mitchell Feigenbaum

Put yourself in the situation. A few tens of meters upstream from a waterfall, a river flows quietly. It begins to accelerate, to become agitated. Small streams of water swell and pulsate like large veins. Mitchell Feigenbaum is standing on the bank, slightly sweaty in his sports jacket and his corduroy trousers. He smokes a cigarette. The friends accompanying him have continued upstream, toward calmer stretches of water. Suddenly, as if he were imitating without reason a tennis spectator, he begins to turn his head rapidly from one side to the other. « Fix on any detail, some foam, whatever you want. By moving your head fast enough, you can abruptly discern the whole structure of the surface and feel it right down to your guts ». He took a puff of his cigarette. « But if you have some mathematical knowledge and if you observe this current, or clouds piled upon one another, or if you find yourself on a dike in front of a raging sea, all you know is that you know absolutely nothing ». It had been a few years since Feigenbaum had haunted the corridors of the atomic research and strategy center of Los Alamos without producing anything for the atomic center. Order in chaos. That is the oldest cliché of science. This idea of a hidden unity and of an underlying form, omnipresent in nature, was attractive in itself, but it had the unfortunate destiny of having inspired pseudo-scientists and eccentrics. When Feigenbaum arrived at the National Laboratory of Los Alamos, in 1974, at twenty-nine years old, he knew that if physicists wanted to do something with this idea, they would need a practical framework, a means of transforming it into calculations. The first approach to this problem was far from obvious.

361-Carruthers, the scientific director of the atomic research center of Los Alamos, and Feigenbaum had indeed spoken about turbulence, but time passed and Carruthers himself no longer quite knew toward what Feigenbaum had oriented himself. « I believed that he had given up and that he had thrown himself into another problem. I was far from suspecting that this other problem was the same problem, the one with which numerous disciplines had collided: the aspect of the nonlinear behavior of systems. In quantum field theory, there was this structure called the renormalization group. Nobody knew that one had to understand in it the general theory of stochastic processes, as well as fractal structures. In the sixties, magnetic phase transitions constituted an intellectual enigma. Consider a block of metal undergoing magnetization. In entering an ordered state, it must make a decision. The magnet can have two orientations. It is free to choose. But every particle of metal must make the

same choice. In making this choice, the atoms of the metal must, one way or another, communicate information to one another. He divided the metal mentally into cubic cells, each communicating with its immediate neighbors. This communication was of the same nature as that existing between an atom and its neighbors. Hence the interest of scale invariance. The best way to think of the metal is to think of it in relation to a fractal-type model, with cells of all sizes.

362-In practice, the renormalization group was far from infallible. It required a strong dose of ingenuity to choose the right operations allowing one to trap scale invariance. But it worked well enough and often enough to give physicists, Feigenbaum included, the idea of applying it to turbulence. Was this invariance not the signature of turbulence, fluctuations within fluctuations, eddies within eddies? What about the threshold of turbulence – that mysterious instant when an ordered system becomes chaotic? Nothing indicated that the renormalization group had anything to say about this transition. Nothing indicated, for example, that this transition obeyed scale invariance. At the same time, Feigenbaum was thinking about color. One of the dilemmas of science in the 19th century was the one which opposed Goethe and the English disciples of Newton on the nature of color. According to Newtonian physics, Goethe's ideas were only pseudo-scientific rambles. Goethe refused to consider color as a static quantity whose value had to be determined with the help of a spectrometer. He claimed that color was tied to perception (a depressive person sees the blue of the sky as gray). « Using light weights and counterweights, Nature assigns itself limits within which it oscillates, and yet engenders all the varieties and conditions of phenomena that are presented to us in space and time ».

363-The cornerstone of Newton's theory was his famous prism experiment, a prism dividing a beam of white light into a rainbow of colors spread over the whole visible spectrum. Newton concluded from this that these colors in their pure state were the elementary components that had to be mixed in order to obtain white light. If Newton's optics were confirmed thousands of times, Goethe's treatise on color sank into obscurity. When Feigenbaum undertook to find it again, he discovered that the single copy of Harvard had disappeared. When he finally managed to unearth one, he realized that Goethe had in fact carried out, during his study of colors, an exceptional set of experiments. Like Newton, Goethe had started with a prism. Newton had exposed this prism to the light and projected the divided beam upon a white surface. Goethe, for his part, placed it in front of his eye. He noticed no color, no rainbow, no particular shade. But if a small spot interrupted the surface or if a cloud appeared in the sky, he then observed a sheaf of colors. It is « the alternation of light and shadow » which engenders color. This is how he lit a candle at dusk in front of a sheet of white paper and placed a pencil between them. In the light of the candle, the shadow was a brilliant blue. How then does a shadow divide white into a blue region and a reddish-yellow region? Color is a degree of darkness tied to shadow according to Goethe. Color results from the existence of boundary conditions and phenomenological singularities. Whereas Newton was a reductionist, Goethe was a holist.

364-Feigenbaum persuaded himself that it was Goethe who was right. The colors we perceive vary according to moments and persons. But according to Feigenbaum, Goethe's ideas were more scientific than they appeared. Goethe insisted upon the reproducibility of his experiments. For him, it was the perception of colors which was universal and objective.

Feigenbaum came to wonder what mathematical formalism could correspond to human perception, in particular to a perception which set aside the disorderly multiplicity of experience and discovered universal qualities. – Red is not necessarily a particular band of light. It is a region in a chaotic universe, and its boundaries are not so easily describable; however, our brains agree to recognize the color red with a regular and verifiable coherence. One certainly had to understand how disorder can engender universality through collective consciousness. When Feigenbaum began to think about nonlinearity, at Los Alamos, he became aware that his studies had taught him nothing useful. Solving a system of nonlinear differential equations over multiple bodies was impossible. Applying the perturbative technique, with its successive corrections of a soluble problem which one hoped to be very close to a real problem, seemed senseless to him. After reading texts by Theodor Schwenk on flows and nonlinear oscillations, he declared that they contained nothing, or almost nothing, likely to help a physicist worthy of the name.

365-With nothing but paper and a pen as his material, he then decided to begin with an analogue of the elementary equation that Robert May had studied in population biology. It happens that this equation is the one students use in geometry to draw a parabola. It can be written: $y = r (x – x^2)$. Each value of x gives a value for y and the resulting curve expresses the relation between x and y for every value of x. The curve shoots up; if x takes a median value, y is then large. The parabola then reaches a maximum and comes down again: if x is large, y becomes small again. This corresponds, in ecological models, to the collapse of populations, preventing unlimited and unrealistic growth. Feigenbaum had the idea of carrying out this calculation not just once, but of iterating it to infinity, like a « feed-back » loop: the result of one step served as data for the following step. The parabola was a great help for seeing what was going on. Take an initial value on the x-axis. Go up to the parabola. Read the resulting value on the y-axis. Carry it over to the x-axis and then start the operation again. The sequence of points bounces upon the parabola, then, sometimes, moves toward a stable equilibrium where x and y are equal and where their values therefore no longer vary. Nothing was further from the spirit of the complex calculations of standard physics. Instead of a labyrinthine problem to be solved all at once, it was a simple calculation to be inserted over and over. Here, the result was only a series of numbers which did not always converge toward a stationary state. It could end up oscillating between two values or, as May had explained to population biologists, vary in a chaotic manner for as long as anyone would care to observe it. The choice between these different possible behaviors depended upon the value of the control parameter « r ». Like May, Lorenz first examined what happened by iterating this equation for various values of the parameter. For small parameters, the system reached a fixed, stable point: one was certainly dealing with a « climate » in the most banal sense of the term, the weather never changed. For higher values, Lorenz observed an oscillation between two points, and here again, the system converged toward a simple average. But beyond a certain value, he saw chaos appear. Since he was thinking about climate, he wondered whether this continuous feed-back not only engendered a periodic behavior, but also what the interpretation of its average value would be. He understood that this average, too, fluctuated permanently. He concluded from this that the climate of the Earth can never settle lastingly into an equilibrium possessing a long-term average behavior.

366-When the inspiration came, it was in the form of a drawing, a mental image composed of two small undulating shapes and a third, larger one (later known by the term Sierpinski

sieve). It concerned scale invariance and it opened for Feigenbaum the way he was looking for. He was studying strange attractors and the diagrams of convergence toward chaos. It was from such figures that Feigenbaum elaborated his theory. He began to think in terms of recurrence: in terms of functions of functions, then in terms of functions of functions of functions, and so on: maps with two maxima, then four. Universality made a difference between the beautiful and the useful. Universality meant that different systems behaved in an identical manner. Everyone knew that turbulence corresponds to a continuous spectrum of frequencies and everyone wondered about the origin of these frequencies. And suddenly, one began to see them emerge one after the other. The physical consequence of this fact was that real-world systems had the same recognizable behavior, and this behavior was the same at the level of measurements. Feigenbaum's universality was not only qualitative, it was quantitative: not only structural, but also metric, gravitational. It does not apply only to forms, but to precise numbers. This universality is the « scale constant », the Feigenbaum constant! And like all constants, it drifts.

2- The constant of Victor Klemperer

367-Victor Klemperer was born in 1881. A philologist, a specialist of 18th-century French literature, he taught at the University of Dresden before being removed from his post in 1935 by the anti-Jewish laws. V. Klemperer kept a diary well before Hitler came to power. But, from 1933 on, for this man who would have liked to « absorb himself exclusively in science and avoid that damned politics », the diary became a means of intellectual survival. After the war, V. Klemperer retained in his diary the passages written between 1933 and 1945 concerning Nazi discourse. He completed his notes and published the whole in 1947 under the title « Lingua Tertii Imperii » (the language of the Empire). In it he recorded everything he had observed and heard the previous day. « I said to myself: you listen with your ears and you listen to what happens in daily life, just daily life, the ordinary and the average ». V. Klemperer listens with his ears and reads with his eyes everything within his reach: newspapers, military communiqués, speeches of Nazi leaders heard on the radio, books and pamphlets, conversations overheard here and there... V. Klemperer notes everything that relates to words: the Germanization of place names, given names given or imposed upon children (names supposedly Germanic or supposedly Jewish according to the case), the affixing of the mention « J » then « Jew » upon more and more numerous supports as the oppression grew, the flowering of acronyms and abbreviations, these procedures which « establish themselves everywhere one technicizes and organizes », when, « in accordance with its demand for totality, Nazism precisely technicizes and organizes everything ». V. Klemperer observes the setting up of the LTI, the « language of the Third Reich », its rise to power, and its desperate hardening from 1943 on. The LTI, writes V. Klemperer, is a language whose « poverty » is its « fundamental quality ». He notes: « Constant repetition seems to be a capital stylistic effect in their language ». Everything in it « had to be harangue, summons, galvanization ». Klemperer notes in the LTI the words whose frequency increases « spontaneous, instinct, fanatic and fanaticism, blindly, eternal, pure, alien to the species », and of course the word « total », designated by V. Klemperer as the « key word of Nazism ».

368-The philologist also observes segments which freeze, like the war imposed upon a supposedly peaceful Führer, or the unfathomable hatred of the Jews, a cliché heard daily. V. Klemperer also notes the words whose lexicological productivity increases: the prefixes Welt

(world) and gross (great), as well as Volk (people), another master word of Nazism, whose protean buddings V. Klemperer records. The LTI likes neologisms; it creates some such as Untermenschentum (sub-humanity), entjuden (to de-Judaize), arisieren (to Aryanize), aufnorden (to make more Nordic). But in fact, according to Klemperer, the LTI invents few words. It prefers to seize existing words, to change their meaning, to reverse their sense and to stiffen them with its discursive starch. « Everything is borrowed and yet everything is new and belongs forever to the LTI ». When a speaker of the LTI speaks of the system, one must understand the Weimar parliamentarism, the democratic process. The words fanatic and fanaticism, until then pejorative, begin to designate jointly all the qualities of courage, of will and of devotion. « On days of ceremony, there was not a single newspaper article, not a single message of congratulation, not a single appeal to some part of the troops or to some organization, which did not include a « fanatical praise » or a « fanatical profession of faith » and which did not testify to a « fanatical faith » in the permanence of the Third Reich ». Few words swallowed up by the LTI are safe from a change of meaning. And the LTI seeks precisely to seize them all, even the most common ones. Perhaps, writes V. Klemperer after the war, one should put the words of the Nazi vocabulary « for a long time, or forever, into the common grave ». V. Klemperer has stupefying intuitions. In his diary, under the date of October 29, 1933, while the Nazis had already set up camps intended for political opponents, he writes: « I believe that in the future, wherever one pronounces the words « concentration camp », one will think of Hitlerian Germany and only of Hitlerian Germany ». Discursive memory sets itself up before the eyes of the attentive observer. From 1933 on, the already-said begins to weigh upon expression which forever gives off, par excellence, « the carrion stench of the Third Reich ». Who manufactures the LTI? V. Klemperer sees in Goebbels its principal forger, and in Hitler, Göring and Rosenberg its accomplices. Who speaks the LTI? « All, literally all, spoke one and the same LTI ». Nazism made the language of the party the language of all. It made a particular good into a general good. It accomplished its totalitarian design. Everywhere, even « in the houses of Jews, one had adopted the language of the victor ».

369-Words circulate, from the party to the army, from the party to the economy, from the party to sport, from the party to the kindergartens. The word Weltanschauung (world view), at its departure a « clan term », begins to circulate upon all lips: « Every petit-bourgeois and every most uncultivated grocer speaks at every occasion of his Weltanschauung and of his attitude founded upon his Weltanschauung ». One recalls that Klemperer's diary is one of the multiple materials from which Jean-Pierre Faye elaborated the notion of totalitarian language (Langages totalitaires, Paris, Hermann, 1972). The little-known paradox of history is that it constitutes a space where the narrative of action acts upon action itself. And changes its face. In the interwar period, the « ideological narratives » of the Italian and German extreme right tell history on the basis of certain terms: the Stato totalitario and the totale Staat. Discourses which articulate themselves in a material way, in the contexts of the gravest crises for the world economy. It brings to light « the transformations which operate under the cover of jargon or of the Novelanguage » (Rauschning). These lay their hand upon the formulas of power. What is at stake: the rendering acceptable of Nazism or of other formidable shocks in history and of its « criminal novel ». The writings of Faye and of Klemperer lead us both to this conclusion: since the Greek Sophists, there exists a power of words (rather, a power of men inasmuch as they use words) to corrupt the political, to disguise, to lie, to deceive, to

make people's unhappiness. « If it is possible to analyze the discourses of unhappiness which take place before our eyes, then we have a means of defusing their formidable powers. » (Alice Krieg).

Dada undertook this work; its first movement is characterized by a calling into question of all ideological, aesthetic and political conventions and constraints. Dada stems from an expressionist filiation and gives birth to a literary Manifesto, published in the form of a tract, in February 1915, by Hugo Ball and Richard Huelsenbeck. These assert: « We are not naive enough to believe in progress ». It puts forward a mutinous and caustic spirit, a play with proprieties and conventions, its rejection of reason and logic, and marks, with its extravagance, its derision of traditions and its very engaged art. Close to socialist, even anarchist, ideology. For Tzara, or even Hausmann, Dada stands out at the time by its proximity to radical activism. The artists of Dada wanted to be disrespectful, extravagant, displaying a total contempt toward the « old things » of the past. They sought to reach the greatest freedom of expression, using every possible material and support. Their aim was to provoke and to lead the spectator to reflect upon the foundations of society. They also sought a freedom of language, which they rendered lyrical and heterogeneous.