

Between La Mancha and Babel

I would like to begin by expressing my gratitude to this University for the honor it confers upon me¹, and my delight at the fact that this Ceremony takes place at La Mancha, just as we are celebrating Jorge Luis Borges.

For in this region, in a village whose name could not be recalled, there was (and perhaps there still is) a library. This library, full of nothing but adventure stories, was a library *from where one sets out*. And in fact, the story of the divine Don Quixote starts just at the moment our hero decides to leave the place of his book-inspired reveries and venture into life. He did so because he was basically convinced that in those books he had found the truth, so that all he had to do was to imitate them, to reproduce their deeds.

Three hundred and fifty years later, Borges will tell us the story of a library *from where one cannot exit*, where the search for the true word is never-ending and hopeless.

There is a profound analogy between these two libraries. Don Quixote tried to find in the real world the facts, adventures and ladies his library had promised him and hence he wished and believed that the universe would be like his library. Less an idealist, Borges decided that his library was like the universe. We can understand, then, why he never had seen any need to leave it. Just as one cannot say "Stop the world, I want to get off", one cannot get out of the library.

There are many stories of libraries. Lost libraries, like the Library of Alexandria. Libraries one enters and leaves at once, realising that they

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contain nothing but absurd stories and ideas, like the library of Saint-Victor, visited by Pantagruel some decades before Don Quixote was born. Although gratified by the hundreds of volumes promising ancient wisdom, as far as we know, Pantagruel leaves the library rather quickly to do something else. And we remain, nostalgic and curious to know what those volumes were about, and savouring the pleasure of repeating their names like in a litany: *Bragheta juris, De babuinis et scimiis cum commento Dorbellis, Ars honeste petandi in societate, Formicarium Artium, De modo cacandi, De differentiis zupparum, De optimitate tripparum, Quaestio subtilissima utrum chimera bombinans in vacuo possit comedere secundas intentiones, De baloccametis principum, Balocculatorium Sorboniformium, Campi clysteriorum, Antidotarium animae, De patria diabolorum...*

From the library of Rabelais, as well as from that of Cervantes, we can mention titles because those were complete libraries, restricted by the very universe they talked about, Roncesvalles and Sorbonne respectively. From Borges' library, on the contrary, we cannot mention titles because the number of books is infinite and because, more than by the subject of the books, we are concerned here by the framework of the library itself.

Libraries of Babel were dreamed of even before Borges. One of the characteristics of the Borgesian library is that it not only contains an infinite number of volumes along an unlimited and periodical display of rooms, but can also exhibit volumes containing all the combinatorial possibilities of twenty-five orthographical symbols, so that it is impossible to conceive any combination of characters that the Library has not foreseen.

This was the old dream of the Cabalists. They actually expected that just by infinitely combining a finite series of letters, it should be possible, some day, to formulate the secret name of God. And if, against all expectations, I do not mention here Raymond Lull's wheels, it is because although he wanted to produce an astronomical number of propositions, he intended to save only the true ones, discarding the others. Anyway, during the XVII century, by putting together Lull's wheels and the combinatorial Cabalists' utopia, there was expectation of success in finding not only the name of God, but also the name of every individual in the world, escaping thus the damnation of language, which compels us to designate individuals by means of general terms, *haecceitates* through *quidditates*, always leaving in our mouths the

bitter taste of the *penuria nominum*, as it happened to mediaeval scholars.

For this reason Harsdörffer, in *Matematische und Philosophische Erquickstunden* (1651) proposed to arrange on five wheels 264 units (prefixes, suffixes, letters and syllables) in order to generate, through combinatorics, 97,209,600 German words, including the non-existing ones, which could have been employed for creative-poetic purposes. If this can be done for German, why not conceive a machine capable of generating all possible languages?

The problem of combinatorics was taken from Christopher Clavius' commentary *In Spheram Ioannis de Sacro Bosco* (1607), where, after having discussed the limited combination of the four primary qualities (Warm, Cold, Dry and Wet), he asked how many *dictiones*, or terms, might be produced using the 23 letters of the alphabet (at the time there was no distinction between u and v) combining them two by two, three by three, and so on up to words containing 23 letters. He supplied a number of mathematical formulae for the calculations, yet he soon stopped before the infinite number of possible results –especially considering that repetitions were also allowed.

In 1622 Pierre Guldin wrote *Problema arithmeticum de rerum combinationibus*, in which he calculated the number of possible terms generated by 23 letters, without taking into account the question of whether those terms had any meaning or could be pronounced at all, but not allowing repetitions. He arrived at the conclusion that the number of words (their length varying from two to twenty-three letters) was higher than 70,000 billion billion. To write out all these terms would require more than a million billion billion letters. In order to grasp this number, let us imagine writing all these words in note-books of 1,000 pages, with 100 lines per page and 60 characters per line: 257 million billion such books would be necessary. Guldin carefully calculated the disposition, the room needed for circulation and the width of an imaginary library that might store them. If the notebooks were housed in cubic buildings of 432 feet long per side, each of them hosting 32 million volumes, the number of such libraries would be 8,052,122,350. But what kingdom then would shelter so many buildings? Even calculating the total available surface on the entire planet, we would still find room for only 7,575,213,799!

In 1636, Father Marin Mersenne, in his *Harmonie universelle*, reconsidered the same problem, but taking into account, besides the *dictiones*, the possible “songs”, that is, the musical sequences. Into this concep-

tion already seeps the notion of universal language, which would potentially contain all possible languages, and this alphabet would include "millions more words than the earth has grains of sand." (Letter to Peiresc, 1635).

In *Harmonie*, Mersenne proposes to generate only pronounceable words in French, Greek, Hebrew, Arabic, Chinese and every other possible language; but even with this limitation one feels the shudder provoked by the infinite, and by the Brunian infinity of possible worlds. The same can be said of the musical sequences that can be generated upon an extension of three octaves, comprising 22 notes, without repetitions (a foretaste of future dodecaphonic series!). Mersenne observes that to write down all these songs would require more reams of paper than those needed to fill in the distance between heaven and earth, even if every sheet contained 720 of these 22-note songs and every ream were so compressed as to be less than one inch thick. In fact, the number of possible songs (and here I am rounding the figures) amounted to twelve thousand billion billion (1,124,000,727,777,607,680,000). By dividing this figure by the 362,880 songs contained in each ream, one would still obtain a 16-digit figure, whilst the number of inches between the centre of the earth and the stars is only a 14-digit figure (28,826,640,000,000). Anyone who wished to copy out all these songs, a thousand per day, would have to write for almost twenty-three thousand million years.

Are there more names than things? And how many names would be needed if we were to give more than one name to each individual? - Mersenne asks. And if Adam had really had to name everything, how long would his stay in Eden have been? After all, human languages limit themselves to the naming of general ideas, species, whereas for individuals an indication with a finger is usually sufficient. And if we wished to give a particular name to each hair of each man, if one man had 100,000 hairs on his head and 100,000 more on the rest of his body, we should need 200,000 words to name them. Considering that since the time of Mersenne the population of the globe has almost reached five billion, we would now need a million billion names.

In this dizziness lies the consciousness of the infinite perfectibility of knowledge so that man, the new Adam, throughout the centuries has had the chance of naming all those things his ancestor has lacked the time to baptise. Yet such an artificial language aims at competing with this capability of knowing individuals, which is a privilege of God. Mersenne had led a battle against the Cabala and occultism, but the

cabalistic giddiness seems to have seduced him: there he is, turning Lullian wheels at full speed, incapable by now of distinguishing between divine omnipotence and the possible omnipotence of a perfect combinatorial language handled by man, so much so that in his *Quaestiones super Genesim* he considers this presence of infinity in human beings as a manifest proof of the existence of God.

It was precisely to make fun of these combinatorial dreams, that Swift proposed his anti-library, i.e. a perfect, scientific, universal language, in which there would no longer be need of books, words, alphabetical signs:

We next went to the School of Languages, where three Professors sate in Consultation upon improving that of their own country.

The first Project was to shorten Discourse by cutting Polysyllables into one, and leaving out Verbs and Participles, because in reality all things imaginable are but Nouns.

The other, was a Scheme for entirely abolishing all Words whatsoever; and this was urged as a great Advantage in Point of Health as well as Brevity. For it is plain, that every Word we speak is in some Degree a Diminution of our Lungs by Corrosion, and consequently contributes to the shortning of our Lives. An Expedient was therefore offered, that since Words are only Names for Things, it would be more convenient for all Men to carry about them, such Things as were necessary to express the particular Business they are to discourse on. And this Invention would certainly have taken Place, to the great Ease as well as Health of the Subject, if the Women in conjunction with the Vulgar and Illiterate had not threatened to raise a Rebellion, unless they might be allowed the Liberty to speak with their Tongues, after the manner of their Ancestors; such constant irreconcilable Enemies to Science are the common People. However, many of the most Learned and Wise adhere to the New Scheme of expressing themselves by Things, which hath only this Inconvenience attending it, that if a Man's Business be very great, and of various kinds, he must be obliged in Proportion to carry a greater bundle of Things upon his Back, unless he can afford one or two strong Servants to attend him. I have often beheld two of those Sages almost sinking under the Weight of their Packs, like Pedlars among us; who, when they met in the Streets, would lay down their Loads, open their Sacks, and hold Conversation for an Hour together; then put up their Implements, help each other to resume their Burthens, and take their Leave. (*Gulliver's Travels*, III, 5).

Let us consider that even Swift could hardly avoid conceiving something very similar to the Library of Babel. Actually, in order to be able to name all things in the universe, human beings would need a vocabulary made of things, whose extent would equal the entire universe. Again, there would be no difference between Library and universe.

According to Swift's project we would be *in* the library, or rather a part of the library, without any possibility of getting out or even speaking about it, since, just as in the Library of Babel one cannot be in more than one hexagon at a time likewise in the world we live, we can only speak, depending on our position, about what surrounds us closely enough that we can point at it with a finger.

Let us now suppose that Swift's project was successful and, consequently, human beings gave up speaking. Even in that case, Borges warned us, the library would contain the autobiographies of the arch-angels and the detailed history of the future. Taking inspiration from this Borgesian hint, Thomas Pavel -in his book *Fictional Worlds* (Harvard U. P., 1986)- invites us to a fascinating mental experiment. Let us assume that an omniscient being is able to write or read a *Magnum Opus*, containing all the truthful statements about both the real world and all the possible worlds. Obviously, since it is possible to speak about the universe in various languages, and each language defines it differently, there exists a huge collection of *Magna Opera*. Now let us assume God commissions some angels to write for each human being some Daily Books, in which the angels record all propositions -about the possible worlds of their client's wishes or hopes and about the real world of his actions- corresponding to a truthful statement in one of the books in the collection of *Magna Opera*. The collection of Daily Books of each person would have to be shown on Doomsday, together with the collection of the Books evaluating the life of families, tribes and nations.

Anyway, the angel who writes a Daily Book does not only lay out truthful statements, he also links them, evaluates them, builds them up into a system. But since on Doomsday, every individual and group shall have a guardian angel, each guardian shall rewrite for his client another astronomic series of Daily Books, where the same statements will be linked differently, and differently confronted to the statements of some of the *Magna Opera*.

Since each infinite *Magnum Opus* includes infinite alternative worlds, the angels shall write infinite Daily Books combining statements that are true in one world and false in another. Considering now the possibility that some angels are clumsy and mix statements that a single *Magnum Opus* records as reciprocally contradictory, the result will be a series of Compendia, Miscellanies, Compendia of Fragments from Miscellanies which will combine layers of books of different origins. It will then be very difficult to say which books are true and which fictitious, and in reference to which original book. We will have an astronomical

infinity of books, each of them bridging different worlds, and we would happen to consider fictitious some stories that others have considered true.

Pavel's sample leads us to think that we are already living in such a universe, except that the books, instead of by archangels, have been written by us, from Homer to Borges. It also means that the spurious ontology of fiction is not an exception to the "pure" ontology of the books that tell about the real world. Pavel insinuates that his legend quite well portrays our situation before the universe of statements we are used to accept as "true". Our shudder in the face of the ambiguous boundaries between fiction and reality is similar not only to the one we feel as we face the books written by the angels but also to the one we should feel in front of the series of books that authoritatively represent the real world.

The idea of the Library of Babel is by now coupled with the other dizzying idea of the plurality of Possible Worlds, and Borges' fantasy has partially inspired the formal calculation of modal logicians. Furthermore, the Library Pavel describes -to which belong, of course, Borges' works as well, including his own story of the Library- would be very similar to Don Quixote's library, which was made of impossible stories taking place in possible worlds, where the reader lost all sense of frontiers between fiction and reality.

There is another story which, though invented by an artist, has also influenced the imagination of scientists -if not of logicians, certainly of physicists and cosmologists: Joyce's *Finnegans Wake*. What Joyce did was not to plan a possible library, but to put into practice what Borges later would suggest. He used the twenty-six symbols of the English alphabet to produce a forest of non-existing polysemic words; he proposed his book as universal model and he certainly meant that its reading should be unlimited and periodical, so much so that he predicted for his work an *ideal reader affected by an ideal insomnia*.

Why have I mentioned Joyce? Perhaps, and most of all, because he was, together with Borges, one of the two contemporary authors I have most loved and who most influenced me. But also because it is now time to examine the parallels and differences between these two authors, who choose language and universal culture for their playground.

I would like to place Borges within the frame of contemporary experimentalism, which, according to many authors, occurs when literature

explores and questions its own language, or even ordinary language, dismantling it down to its deepest roots.

That is why when we think of experimentalism we think of Joyce and, precisely, of the Joyce of *Finnegans Wake*, where not only English but the languages of all peoples -reduced to a whirl of free fragments- are reassembled and then disintegrated again in a vortex of new lexical monsters, which coagulate for a while and then dissolve again, as in a cosmic dance of atoms, where writing crashes down to the etymon; and it is not an accidental phonic analogy between etymon and atom what induced Joyce to define his work as *abnihilation of the ethym*.

Borges does not seem to have brought language into question. We just need to read the plain prose of his essays, the grammatically traditional structure of his short stories, the relaxed and conversational clearness of his poems. In this sense, Borges is as far from Joyce as one can be.

Obviously, like any good writer, Borges renews and revitalises language, but he does not treat it as the scene of a *jeu de massacre*. If Joyce's linguistic experimentalism is to be considered revolutionary, Borges should be taken for a conservative, a delirious archivist of a culture of which he declares himself to be a respectful guardian. Yet, this oxymoron ("delirious archivist"²) precisely provides the key to interpret Borges' experimentalism.

Someone, perhaps Joyce himself, said that the Joycean project was to take universal culture as his playground. In fact, this was also the project of Borges. It is true that in 1925 he found some difficulty in reading *Ulysses* (see *Inquisiciones*) and in 1939 (*Sur*, November) he regarded the *Joycean calembours* with cautious curiosity, yet, according to Emir Rodríguez Monegal, Borges wrote in those years at least one exquisite Joyce-flavoured calembour: *whateverano* ("what a summer" and "whatever is summer"). Nevertheless, in at least two subsequent poems (*Elogio de la sombra*), he declared, besides his admiration, his debt to Joyce:

Qué importa mi perdida generación,
ese vago espejo,
si tus libros la justifican.
Yo soy los otros. Yo soy de todos aquellos
que ha rescatado tu obstinado rigor.
Soy los que no conoces y los que salvas.

² "Delirious", etymologically, is: "who goes out of the furrow", who deviates from the right line. (*Ed.*)

What, then, links these two authors whose chosen playground was -for their salvation or their damnation- universal culture?

I find that literary experimentalism has to do with the place we live, i.e. languages. But a language, as linguists know, has two faces: the signifier and the signified. The signifier organises sounds; the signified, ideas. It does not mean that the organisation of ideas -which constitutes the form of a given culture- is independent of language; actually it can only be known through the way language organises the otherwise shapeless data coming from our contact with the continuum of the world. Without language, there would be no ideas, but just a mere flux of un-thought and un-experienced experiences.

Working experimentally on language, and on the culture it conveys, means then working on two fronts: the front of the signifier, by playing with words (since it is through the destruction and reorganisation of words that one reorganises the ideas), and the front of the signified, by playing with ideas, letting words insinuate new and unexpected horizons.

Joyce played with words; Borges, with ideas. The infinite segmentability of the object of manipulation thus won a new perspective.

The atomic elements of a word are roots, syllables and phonemes. We can rearrange sounds and obtain a neologism or a pun; we can also rearrange letters and obtain the anagram -a cabalistic procedure whose magic Borges mastered.

On the other hand, the atomic element of ideas (of "signifieds"), is always an idea or another signified. One can decompose "man" into "animal - human - male" and "rose" into "flower - with fleshy petals"; one can chain up ideas in order to interpret other ideas, but one cannot go "underneath".

Working on the signifier takes place at a sub-atomic level, whereas working on the signified affects atoms, which cannot be further decomposed to be rearranged into new molecules.

Borges took the second option, different from Joyce's, but equally rigorous and absolute, carried out to the limits of what is possible and thinkable. He admits to have had some teachers in this matter (and this could justify the apparently irrelevant quotations I made a while ago). One of them was Raymond Lull, in whose *Ars Magna* Borges had correctly discerned the forerunner of modern *computer science*. The other one, less famous, was John Wilkins, who in his *Essay Toward a Real*

Character (1668), tried to build the perfect language envisaged by some of his contemporaries, like Mersenne, Guldin and others. But instead of combining meaningless letters to give each individual a name, Wilkins tried to combine what he and others called "real characters", inspired by Chinese ideograms, where to each elemental sign corresponds an idea, so that, the combination of signs into names should reveal and describe the very nature of things.

As I tried to explain it in my book *The Search for the Perfect Language* (1993), Wilkins' project was impracticable.

Now, the most interesting point in this story is that Borges had never read Wilkins, as he confesses in his essay "The Analytical Language of John Wilkins" (*Otras inquisiciones*); he just found some second-hand information through the *Encyclopædia Britannica* and a few other books. Yet he succeeded in grasping the essence and picking out the weaknesses of Wilkins' thought more than many other scholars who spent their lives reading the enormous volume of 1668. Moreover, on discussing Wilkins' ideas, Borges perceived that he shared them with other XVII century scholars who had formulated the problem of alphabetic combinatorics.

Borges, who took delight in other universal and secret languages, realised that Wilkins's project was impossible because it presupposed an inventory of all the objects in the world as well as of the ideas they referred to, and also a unitary principle of regulation for our atomic ideas. This is in fact the point where stumble all utopians who aspire to a universal language.

Let us now consider the advantage Borges took of his remarks.

After having inferred the impossibility of a unitary classification of the universe, Borges was fascinated by the exactly opposite project, i. e. to jumble up and multiply the classifications. It is actually his essay on Wilkins that contains the improbable Chinese Encyclopædia (*Celestial Emporium of Benevolent Knowledge*), where we find the most astonishing sample of chaotic and incongruous taxonomy (this would later inspire Michel Foucault's preface to his *Les mots et les choses*).

The conclusion Borges draws from the failure of classifications is that we do not know what the universe is. He even said that "we must suspect that there is no universe in the organic, unifying sense inherent in that ambitious word." However, immediately afterwards, he remarks that "the impossibility of penetrating the divine scheme of the universe cannot dissuade us from outlining human schemes". Borges knew that

some schemes like the one by Wilkins and many others in science attempt anyway to reach a temporary and partial order. He himself made the opposite choice: assuming the plurality of the atoms of knowledge, he conceives the task of the poet as an inversion and re-composition of those atoms *ad infinitum*, following the infinite combinatorics not only of linguistic etymons but even of ideas, millions of new Chinese Encyclopædias, of "Benevolent Emporiums", whose never-ending sum is precisely the Library of Babel. A library storing the millenary culture and the Daily-books of all archangels, which Borges found and explored, playing, in addition, at putting into contact different hexagons, at inserting the pages of a book into those of another (or, at least, at tracking possible books in which this disorder could have been present).

In current discussion there is much about contemporary experimentalism, post-modernism and intertextual games. Borges, however, had transcended intertextuality and anticipated the era of hypertextuality, where not only one book tells about another but it is also possible to penetrate one book from inside another. Borges had outlined in advance the World Wide Web, not so much by drawing the shape of his library but by prescribing in each page the way to surf on it.

Borges had to choose between devoting his life to the search for the secret language of God (a search whose story he tells) and assuming the tasks and possibilities of Babel's librarians, i. e. celebrating the ancient universe of knowledge as a dance of atoms, as an interlacing of quotations, as an agglomeration of ideas tending to produce not only whatever has been or is, but also whatever will be or could be.

Only in the light of this Borgesian experimentalism (applied to ideas and not to words) one can understand the poetics of the *Aleph*, from where one can see, simultaneously, the heavy-laden sea and the multitudes of America and a silver-plated cobweb at the centre of a black pyramid, a labyrinth in London, all the mirrors in the planet and every grain of sand in every equatorial desert and the colour of a rose in Bengal, the Caspian Sea at dawn and the delicate bone structure of a hand, tigers, bisons and ants and the atrocious relic of what deliciously had been Beatriz Viterbo. It must be possible to see everything at the same time and then, changing the combinatory rules, to see something else, each new sight providing a new Celestial Emporium.

At this point, the problem whether the Library is infinite or of an indefinite width, and whether the number of books in it is finite or unlimited and periodic, becomes of secondary importance. The real hero

of the Library of Babel is not the Library itself but its Reader, a new Don Quixote -restless, adventurous, tirelessly inventive, alchemically combinative- able to master the windmills that will keep on turning, indefinitely.

To this Reader, Borges suggested a prayer and a profession of faith, right in the other poem he dedicates to Joyce:

Entre el alba y la noche está la historia
universal. Desde la noche veo
a mis pies los caminos del hebreo,
Cartago aniquilada, Infierno y Gloria.
Dame, Señor, coraje y alegría
para escalar la cumbre de este día.

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