The Periodic Table: encryptions and decipherings

Le Système périodique : cryptages et décryptages

Het Periodiek systeem versleuteld en ontcijferd

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The Periodic Table: encryptions and decipherings

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A glance at the title – *The Periodic Table* – of this collection of 21 stories, each of which bears the name of an element, informs the reader at once that chemistry and literature are linked. The collection, which came together over a long period – some stories probably dating back to 1943 (see Mesnard 2011, 351) – and whose final structure was established in the 1970s, is not Levi's only work that demonstrates his desire to create a dialogue between his two "professions", but it is the one in which that goal acquires a formal visibility and a unique design, explained and commented. Reflecting on *The Periodic Table* presents us with the challenge of complementing the vast literature about Levi the "centaur", the "doppelganger", or the "bridge builder", which also is fed by a number of statements on the subject by the author himself.¹ While we cannot hope to contribute substantially to the study of chemistry in Levi's work, we will attempt to question certain dimensions of the literary device employed in *The Periodic Table*, as opposed to texts in which it remains in the background. Forays into other works that directly or indirectly echo certain fragments of the Table will be required to grasp the issues at stake in this elaboration of the device. The structure inspired by Mendeleev's periodic table will however be the subject of a specific inquiry, divided into three movements: the construction of the table, resulting notions of form and device, and its fundamental issues.

THE SCIENTIFIC MODEL

The sixties and seventies were decades in which European literatures, following the humanities and in dialogue with structuralist thought, were very open to the idea of classification and borrowed from scientific discourse, often playfully, models that allowed for the emergence of a metatext elucidated through an attempt at systematization. The idea of a system or structure – the legacy of Russian formalism that sought to raise literary criticism to a science and to consider the text as a universe in itself – was pursued by certain literary works and conceptualized in particular by semiotics, for which Italy revealed itself to be fertile ground with the work of Umberto Eco and Paolo Fabri.² The literary aspects of the scientific discourse are brilliantly explored by Italo Calvino, who offered, in 1957, in his *The Baron in the*

(1) Not to mention the huge critical corpus dedicated to scientific discourse in literature.

(2) On the evolution of semiotics in Italy from the 1950s, see Pedullà 1992.

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Trees, a fictional and parodied version of the binary opposition between nature and culture as it is presented in Claude Levi-Strauss's *Tristes tropiques*, which was published two years earlier³ (towards the end of his life, Primo Levi set to work translating two texts by Levi-Strauss). Until Perec developed a literary synthesis of the art of classification, in *Thoughts of Sorts*, Oulipian experiments, among other formal exercises, were an example of how literary form makes itself explicit and considers itself in its relationship to its "material" – and no longer to its "content", a notion already undermined by formalism – by borrowing instruments from science. The idea of structure, from which a new analysis of prose is invented, implicitly leads to that of law (in this case internal to the text) and order, which must be both imposed and deconstructed: paradoxically, that literature of form is a subversive literature.⁴ So it is not surprising that many texts introducing into their structure a notion of classification exhibit (or hide) a link to various cosmological, mythological, or scientific models. That is certainly the case of Queneau's *La Petite cosmogonie portative* which, published in 1950, was certainly not entirely foreign to Calvino's initiative that consisted of playfully describing the evolution of the universe in the twelve stories in his *Cosmicomics* (see Pilz 2005). We could much more thoroughly retrace this movement of the model through various literatures, in particular French and Italian, but let us limit ourselves to those three names. While Levi was only to encounter Queneau's *Cosmogonie* later, in 1982⁵ – through, in fact, the translations with which Calvino associated him as a chemist (see Bertone 1994) – it is clear that the idea of a formal organization introduced to the literary universe from scientific concepts had already been in the air for a while when he composed the Table. Moreover, *Storie Naturale* (*The Sixth Day and Other Tales*), published in 1966 under the pseudonym Damiano Malabaila, already presents a sketch of parodied classification, in dialogue with Calvino's discourse on nature, following not so much in Buffon's footsteps as in Pliny's, of whom both were avid readers.⁶ It is not a question of borrowing nor of influences, but rather of an encounter between an emerging new form and a singular literary destiny. Levi had a score to settle: to him who modestly believed that the chemist in him cast a shadow over the writer, the evolution of the literary process offered an opportunity for formal experimentation and innovation that legitimated his writer's identity *as a chemist*. Yet, while he affirmed in his interviews in the 1960s that he was above all a "chemist, and a writer by chance", or only a halfway – "dimezzato" – writer, he was already announcing his desire to combine both: "oggi forse mi diverte più scrivere che faré il chimico e tuttavia un'altra aspirazione da coltivare in segreto sarebbe quella di trovare un punto di congiuntamento", "writing amuses me perhaps more today than chemistry, but I secretly harbor another desire, which is to find a meeting point between the two" (interviews with Paoletti and Fadini in Levi 1997; translation JG). Indeed, beyond his statement that there are no books about the chemist's profession, in the new formal landscape he had a unique "material" to offer: his experience of the camp, which the chemical metaphor would configure in an echo of the literary discoveries of the time. In the words of Shklovsky, "form creates its content" (Shklovsky 1990). If the organization by "element" at first seems

(3) Let us also recall, among the many instances of dialogue between literature and semiotics, Calvino's participation in *Exigences et perspectives de la sémiotique. Recueil d'hommages pour A.J. Greimas. / Aims and Prospects of Semiotics. Essays in honor of A.J. Greimas* (1985).

(4) The system reveals itself to be an anti-system. We see this in the rather reserved reception of Calvino's first texts.

(5) Though nothing forbids us to think that he had read other works by Queneau or that he had access to Alain Renais' film *Le Poème du styrène* (1958).

(6) And that Levi included in his questioning of meaning and memory. The poem "Plinio", dated 23 May 1978 (*Opere* II, 552), presents the scholar heading off to observe the eruption of Vesuvius that was to cause his death. See Ribatti 2012 and Mirna Cicioni's article in Dei 2007.

to work as a mere pretext for ordering the “sad tatters” or “trophies” (Levi 1984, 224) from a professional background, it is clear that through that formal constraint, chemistry is a way of including the Table in a literary tradition. With *The Periodic Table*, “chemistry takes [...] the meaning and function of a protean metaphor for writing” (Mesnard 2011, 348). So the task of that text was to unite its author to the literary tradition of constraint and thereby guarantee him the position in the literary world he had denied himself for a long time, as well as a genealogy other than the camp. For Levi was a chemist before his arrest, and the chapters prior to the camp that recount his confrontation with matter build a bridge between the literary work from afterwards and its sources. It is for that purpose – marrying the before and the after (but also the testimony and the fiction, as we shall see below) – that Levi here exhumes two fictional tales, “Lead” and “Mercury”, written, he tells us, when he was working at the nickel mine.

Moreover, we can also presume that the status of chemistry in Levi’s work changed not only for him, but for his entourage. When, in 1985, Calvino sought his assistance in translating Queneau’s *Chant du Styrene* (1958),⁷ it was certainly not only because he recognized Levi’s skill as a chemist, but also because, since *The Periodic Table* and the lines it contains on polyethylene, Levi had acquired an undeniable authority on the “poetics” of plastic – a literary authority. What is more, one might wonder if in his translation, Calvino, while describing the chemist – a quasi-divine figure who, through thought, makes it possible to understand what has gone up in smoke (a dimension of understanding absent in Queneau) – is not smuggling in a portrait of Levi. Translation, as we know, allows for such adjustments. Indeed, in Queneau’s poem we read:

Et pétrole et charbon s’en allaient en fumée
Quand le chimiste vint qui eut l’heureuse idée
de rendre ces nuées solides et d’en faire
d’innombrables objets au but utilitaire.

Which in Calvino becomes:

Communque è sempre in fumo che la storia finisce.
Finché non viene il chimico, ci pensa su e capisce
Il metodo per rendere solidi e malleabili
Le nubi e farne oggetti resistenti e lavabili. (Queneau 1985, 16)

“Making smoke solid and malleable”: one cannot help but see there the summary of Levi’s project as he expressed it in “Iron”: “vincere la materia è comprenderla, e comprendere la materia è necessario per comprendere l’universo e noi stessi”,

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– Primo Levi cycling along the Italian lakes in 1941.

(7) On the subject of that collaboration between Calvino and Levi, see Bertone 1994, 177-179.

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“conquering matter is to understand it, and understanding matter is necessary to understanding the universe and ourselves” (Levi 1990a, 466; 1984, 41).

THE PROCESS: FORM AS “WRAPPING”

Now in Italian “comprendere”, the term Levi prefers to “capire”, means both to understand and to contain. Chemistry permits, in the Table, a reflection on subject and form. Though it is as old as thought itself, this reflection here extends to new objects. The relationship between literary material and form is questioned: how does form shape experience, how does experience seek its form? If on the macro level form is metaphorized by the very notion of the system, universal container, and matter by the elements, on the micro level we encounter it through representations of recipients that must contain and limit the shapeless matter and, conversely, of building materials that must yield to a certain form.

Thus, in “Cerium”, the search for packaging – needed to transport chemicals – is linked from the start to the question of the human and presented, in a humorous style, as one of the problems God asked Himself when creating life.

È il grande problema dell’imballaggio, che ogni chimico esperto conosce: e lo conosceva bene il Padre Eterno, che lo ha risolto brillantemente, da par suo, con le membrane cellulari, il guscio delle uova, la buccia multipla degli aranci, e la nostra pelle, perché liquidi infine siamo anche noi. (Levi 1990a, 559)

This is the great problem of packaging, which every experienced chemist knows: and it was well known to God Almighty, who solved it brilliantly, as he is wont to do, with cellular membranes, eggshells, the multiple peel of oranges, and our own skins, because after all we too are liquids. (Levi 1984, 140-141)

In God’s image, humanity defines itself by its ability to make recipients, and their absence in the camp (“Cerium”) rightly attests to its regressive, dehumanizing nature. Inventiveness where recipients are concerned will be mobilized during the fruitless attempts to create a laboratory after the war, narrated in a comic tone in “Tin”:

Poiché la cristallizzazione era lenta, occorreavano molti recipienti, e poiché l’acido cloridrico intacca tutti i metalli, questi recipienti dovevano essere di vetro o di ceramica. Nei periodi in cui le ordinazioni erano molte, bisognava mobilitare i recipienti di complemento, di cui del resto la casa di Emilio era ricca: una zuppiera, una pentola Regina di ferro smaltato, un lampadario stile Novecento e un vaso da notte. (Levi 1990a, 604)

– In this caricature of Primo Levi “flying” off to his work in Milan (1942), he is depicted with his chemical instruments and his mountaineer pickaxe. The drawing was made by Eugenio Gentili Tedeschi.

Since the crystallization was slow, it required many receptacles, and since hydrochloric acid corrodes all metals, these receptacles had to be glass or ceramic. In the period when there were many orders, we had to mobilize reserve receptacles, in which for that matter Emilio's house was rich: a soup tureen, an enameled iron pressure cooker, an Art Nouveau chandelier, and a chamber pot. (Levi 1984, 187)

Later, in the story "A Bottle of Sunshine" (1986), Levi would go so far as to define humanity through its ability to make recipients, objects "characterized by their form": "l'uomo è costruttore di recipienti; una specie che non ne costruisce, per definizione non è umana", "man is a maker of recipients; a species that does not make them is, by definition, not human" (Levi 1986, 130; translation JG). The future therefore depends on the ability of man to build an intangible container – a magnetic field – that is completely resistant. That discarnate form of the future, pure energy, can be interpreted as a metaphor for the form that, both invisible and infinitely resistant, shapes literary matter.

Constraint can therefore be seen as the equivalent of a recipient that makes it possible to give form to that which, a priori, has none. That is how, in the story "Rima alla riscossa" Levi sings the praises of constraint in literature. Rhyme possesses, in his view, an essential virtue: it makes it possible to carry good verses, "portarseli dietro" (Levi 1986, 116), that is to learn them by heart, playing the role of a solidifying wrapper. In the mysterious shop of our memory, he says, we sometimes choose less well-made "wares" as long as they rhyme, to the detriment of more subtle texts. This reminds us how the prisoner makes choices among the products he plans to steal, according to their solid form. The expression used in "Cerium" is analogous: "me li portai", "I took them away".

Furthermore, any rule, any code, any formal constraint also reveals poetic personality:

La rima, e in generale la regola, acquistano [...] la funzione di rivelatori della personalità di chi scrive [...]. Di fronte a l'ostacolo metrico, l'autore è costretto (si costringe) a un volteggio che è acrobatico, e il cui stile è strettamente suo: firma ogni verso, che lo voglia, che lo sappia, o no. [...] Il vincolo della rima obbliga il poeta all'imprevedibile: lo forza a inventare, a "trovare"; [...] insomma, a innovare. La sua situazione è simile a quella del muratore che accetta di usare mattoni irregolari, poliedrici o prismatici, commisti a quelli comuni. (Levi 1986, 117)

Rhyme, and in general, rules [...] reveal the writer's personality [...]. Confronted with the obstacle of meter, the author is forced into freestyle aerobatics in a style that is entirely his own: he signs each of his verses, whether he likes it or not, whether he knows it or not. [...] The constraint of rhyme pushes the poet into the unpredictable: it forces him to invent, to "find" [...] in short, to innovate. His position is that of a mason who agrees to use uneven, polyhedral or prismatic bricks mixed in with the regular ones. (JG)

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Yet Levi also uses the metaphor of the brick with regard to developing a chemical:

You have the bricks (molecules), and then you need to find the right combination, the points of equilibrium and resistance, the play of forces and the supports to erect your building. If you find them, the house gets built and is solid, the product is designed and can be produced. (Mesnard 2011, 346)

The code, in poetry as in chemistry, allows the material to acquire a form; it is the basis of creation, including that of the Universe.

To that praise for codification Levi nonetheless contributes a nuance that complicates the role of the creator: “è significativo che i codici vengano quasi sempre formulati a cose fatte, cioè quando una determinata poetica ha già dato frutto”, “It is significant [...] that codes are almost always formulated once things are complete, when a poetics has already borne its fruit” (Levi 1986, 146). He was clearly interested then in the process by which new literary codes emerge. “La rima [...] è una di quelle invenzioni che stanno nell’aria, e poi si materializzano in diversi luoghi”, “Rhyme [...] is one of those inventions that are in the air, then materialize in different places” (*Ibid.*, 148), he wrote in “Rima alla riscossa”. Levi very likely saw himself, as he wrote those lines in 1985, at the origin of a new literary code that “was in the air”. And it is perhaps no coincidence that, several months after having called for the restoration of standards, he found himself involved in the translation – with Calvino, who did it in alexandrines – of Queneau’s text, but with this particularity: while Queneau’s excessively weak rhymes in fact proclaimed the disappearance of the code of which the only possible use henceforth is as parody, Calvino’s, while restituting the playfulness, draws on the richness of classic Italian poetry.⁸

Moreover, in the chapter “Iron”, the organization of the elements in Mendeleev’s system is compared to a poetic constraint: “il Sistema Periodico di Mendeleev, [...] era una poesia, più alta e più solenne di tutte le poesie digerite in liceo: a pensarci bene, aveva perfino le rime!”, “Mendeleev’s Periodic Table [...] was poetry, loftier and more solemn than all the poetry we had swallowed down in liceo; and come to think of it, it even rhymed!” (Levi 1990a, 466; 1984, 41) Almost ten years after the publication of *The Periodic Table*, and one year before “Rima alla riscossa”, Levi clarifies in an interview with Tullio Regge:

[...] la rima c’è proprio. Nella forma grafica più consueta della tavola del systema periodico, ogni riga termina con la stessa “sillaba”, che è sempre composta da un allogeno più un gas raro [...]. (Levi & Regge 1984, 10)

[...] the rhymes are actually there. In the periodic’s table most common graphic form, every line ends in the same way with a hallogen plus a rare gas [...]. (Levi & Regge 1992, 9)

Codification, the organization of the elements of matter as of the writing, is therefore not only a question of science, but also of aesthetics: according to Levi,

(8) Let us note that another major witness of the violence of the 20th century, Varlam Chalamov, attributes to rhyme the virtue of capturing the real. On 24 December 1952, he wrote to Boris Pasternak: “Rhyme is not only the cement and the lock of verses [...]. It is – and there lies its fundamental importance – an instrument of the search for comparisons, metaphors, thoughts, turns of phrase, and images, a powerful magnet that emerges in the darkness and before which passes the entire universe, leaving within the poem only the tiniest part of what was grasped there. It is the tool of choice, the mechanism of poetic thought, of knowledge of the world, the hook of the poem.” (translation JG)

Mendeleev must have felt emotion – aesthetic, poetic emotion – “quando intuì che il caos dava luogo all’ordine”, “when he intuited that [...] chaos gave way to order” (Levi & Regge 1992, 9-10).

THE SEQUENCE AND THE WHOLE

Even the layperson knows that Mendeleev’s periodic table provides a classification of the chemical elements known at his time, with the intention of underlining the periodicity of their properties, of identifying elements remaining to be discovered, and of predicting their properties. It is thus a question of describing the world – matter – on the basis of combinations of atoms. The relationship between the fragment and the whole is resolved here through both metaphor and metonymy: the scientific model to which this mosaic refers includes it in a representation of the totality. The narrated episodes describe by default a whole of which they are the visible part. The Table wards off emptiness: Levi indicates as much in his dialogue with physicist Tullio Regge in 1984, which can serve, in many ways, as a commentary on *The Periodic Table*. “[D]iventava possibile [...] individuare caselle vuote che avrebbero dovuto essere riempite, dato che ‘tutto ciò che può esistere esiste’”, he said, “it became impossible [...] to identify empty slots that had to be filled, since ‘all that can exist exists’” (Levi & Regge 1984; 1992, 10).

Consequently, the greatness of the periodic table reveals itself above all in its ability to superimpose a continuity – reconstituted through intellection – over incomplete representations. At stake for Levi is not only a mastery of nature, but equally that of his own biography, which is drawn in dotted lines through the stories of his ancestors and a few sequences about childhood, progressing through episodes related to the rise of fascism, his experiences in the resistance and the camp, and ending post-camp. The empty space is therefore captured and made legible.⁹

Is it a question of saving from oblivion an experience that – nearly 30 years after *If This is a Man*, and written “like a tape recording of a story come from outside”¹⁰ – is at risk of crumbling, by using a cognitive model that introduces a supra-textual coherence? The Table justifies and reduces the unsaid and the gaps: it ensures that nothing can be lost. Its elements, and the episodes associated with them, reveal a memory that has fully retained the experience of the camp. “Ora, degli incontri fatti in quel mondo ormai remoto io conservo memorie di una precisione patologica”, “now I conserve pathologically precise memories of my encounters in that by now remote world”, Levi affirms in “Vanadium”, and he insists a few pages further along: “la mia memoria di quel periodo, come ho detto, è ottima”, “my memory of that period, as I have said, is excellent” (Levi 1990a, 213; 1984, 220). That feature of memory, also noted by other survivors about their memories of the camps, seems to indicate that the deviations from factual details, which we sometimes encounter in Levi’s works of testimony, are due not so much to forgetfulness as to the work of shaping the modelled material from text to text.¹¹ While that total memory is claimed by Levi up to the end of his life, it follows the path of literary elaboration:

(9) The aims of *The Periodic Table* seem to be expressed perfectly by a short poem from Heine that Levi translated into Italian: “The world and life are too fragmentary. I’m off in search of a German professor. He knows how to summarize life and draw from it an intelligent system. With his tattered sleeping cap and dressing gown, he fills the gaps of the world’s structure.” (Levi 1990b, 559; translation JG) We must note that Levi removes the word “German” in his translation.

(10) Comments made to Giuseppe Graziano in 1981. We know, however, that this comparison does not altogether correspond to reality, see Mesnard 2011, 141 ff.

(11) Memory making is at play in several of his tales, see “I Mnemagoghi” in Levi 1990b, 5-13.

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(12) This project of self-creation is presented through the blacksmith character in "Iron", which also explains its inclusion in *The Periodic Table*.

(13) Through the adventures of an atom of life, he presents, in "Carbon", a retrospective look at the status of his book, which "non è un trattato di chimica [...] Non è neppure un'autobiografia, se non nei limiti parziali e simbolici in cui è un'autobiografia ogni scritto, anzi, ogni opera umana: ma storia in qualche modo è pure." It is "not a chemical treatise [...]. Nor is it an autobiography, save in the partial and symbolic limits in which every piece of writing is autobiographical, indeed every human work; but it is in some fashion a history." (Levi 1984, 224) On this investigation of genre, see the chapter "[Auto]-biographie", in Mesnard 2011, 339-344.

(14) In his preface to the complete collection of stories, Marco Belpoliti indeed postulates that Levi affirmed himself as an author of short texts as early as *If This Is a Man*, "short texts put together thanks to a two-fold structure: thematic – testimony – and narrative, the beginning and end of his concentration camp experience. The story does not possess a true chronological structure, but develops from one Levi himself later defined as a 'dotted line of intuition', typical of science fiction." (Belpoliti 2005, V; translation JG)

A volte, ma solo per quanto riguarda Auschwitz, mi sento fratello di Ireneo Funes "el memorioso" descritto da Borges, quello che ricordava ogni foglia di ogni albero che avesse visto, e che aveva "più ricordi da solo, di quanti ne avranno avuti tutti gli uomini vissuti da quando esiste il mondo". (Levi 1986, 83)

At times, but only for what concerns Auschwitz, I feel I am the brother of Ireneo Funes, "el memorioso" described by Borges, the man who remembered every leaf of every tree he had ever seen, and who "by himself had more memories than all the men who ever existed since the world began". (Levi 1989, 69)

The reference to Borges masks others – that to himself, as well as to Calvino, to whom the story "His Own Blacksmith" (1971), in the collection *The Sixth Day and Other Tales*, is dedicated. Levi depicts a man endowed with total memory, who remembers everything that has happened on Earth from well before his birth. He recounts his origins, as Calvino did in *Le Cosmocomiche*, from the appearance of life on Earth to the beginnings of the human adventure. But the character, as the title indicates, invents and creates himself, adapting to evolution, moulding his own body according to changes in the environment, and organizing the history of life as he pleases through his journal. The intertextual maze demonstrates that total memory is used for the benefit of self-creation.¹² The writer is his own golem: he imitates God, who was the first to break his own commandment in creating Adam.

However, that memory does not show itself at all times, and chemistry also appears to be the support for a literary mnemonic. "Non ha che da sfogliare un qualsiasi trattato, e le memorie sorgono a grappoli", Levi writes, "he has only to leaf through any treatise and memories rise up in bunches" (Levi 1990a, 641; 1984, 225). This associative technique is not presented as individual, however, but specific to the trade, gathering personal experiences under the insignia of an "us" – no longer the us of deportees, but the one of chemists – and relating this book to all of Levi's stories in which the notion of trade serves as a "coagulant" holding together scattered pieces and shedding light on the dimension of transmission and sharing. It is a question, through this method of gathering experiences under the collective label, of building for himself an identity as a free man and not only as a prisoner, of plotting a continuity between the Levi of before imprisonment and the Levi of after.

Levi thereby affirms the unity of his story by explaining the device already implicitly present in other texts. He also allows a glimpse of a complex generic unity among the various components of his work.¹³ Indeed, while writing short stories allowed, retrospectively, to discover the fragmented aspect of *If This Is a Man*,¹⁴ we must also see that that sequentialization makes a system. Unlike Belpoliti (2005), we think that the way Levi's stories coagulate and unravel around specific details is not related, or not exclusively related, to a chemist's way of thinking, used to solving delimited problems, but constitutes a strategy for inserting himself into the contemporary literary process.

Levi is interested in the complex arrangement that is somewhere between

encyclopedia (open structure, arbitrary inventory, according to Umberto Eco) and dictionary (organized system). He is a self-creator to the extent that he seeks to produce autonomous languages within the language, by systematizing disparate elements. We will not dwell here on the place that scientific discourse, mobilized for that purpose, occupies in the demand for intelligibility that Levi constantly poses, as that question has already been discussed extensively.¹⁵ However, we can pause to examine the political dimension of that discourse: “la chimica e la fisica [...] oltre che alimenti di per sé vitali, erano l’antidoto al fascismo [...] perché erano chiare e distinte e ad ogni passo verificabili”, “the chemistry and physics [...] besides being nourishments vital in themselves, were the antidote to Fascism [...] because they were clear and distinct and verifiable at every step.” (Levi 1990a, 466-467; 1984, 42) Conversely, an esoteric language is, according to Levi, an “antico artificio repressivo” (‘Dello scrivere oscuro’ in Levi 1990c, 638). The reference to a system emerges as an act of resistance, but not only to fascism. The creation story that is the foundation of Levi’s personal cosmology substitutes itself for and opposes the one in Genesis, as the language of chemistry does that of the Bible, called irrational in the *Conversations* with Tullio Regge that, paradoxically, begins with considerations about Hebrew. Irrational, specifically because the vowels have to be guessed at – whereas the notation of chemistry is “vocalized”. The Table is therefore an alphabet from which the world is recreated, but, unlike the Hebrew alphabet – which Jewish mysticism also endows with that cosmological function – it has the advantage of being clear even in its lacunae. We may note that, while any system of classification encourages comparison with the alphabet, it proves effective here and led to a literary posterity. One can in fact wonder if Calvino’s *Libro della Natura di Galileo* does not in turn owe *The Periodic Table* its reflection on the function of the alphabet taken on by nature through its capacity to break down into tiny elements, a way of rethinking the medieval vision of the world seen as a language (on the *Libro*, see Bertone 1994, 170).

WHO IS BEHIND IT?

And yet, for the world in itself to be an act of communication, its message must be attributed to an author, and the decipherer would be the receiver. Levi appears, however, to choose the opposite view, which instead sees it as machinery, “macchina”,

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– Primo Levi and Giovanna Balzaretti at the Società Industriale Vernici e Affini, in 1952.

(15) See the chapter “Le travail du chimiste, le travail et la chimie”, in Mesnard 2011, 345-371.

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a term that he also used to refer to the camp. In 1983, he confided to Giuseppe Grieco:

Mi viene il sospetto che dietro a questa enorme macchina dell'universo ci sia pure un macchinista che ne regoli il moto se non l'ha addirittura inventata lui. Ma tale sospetto, sia ben chiaro, non mi esonera dalla convinzione che questo macchinista, se c'è, è indifferente alle cose degli uomini." (Levi 1997, 287)

I begin suspecting that behind the enormous machine of the universe, there might be a driver who controls its movements, maybe even built the machine itself. But rest assured, my suspicion does not effect my conviction that the driver, if he exists, is indifferent to the matters of mankind. (Levi 2001, 276)

This formulation recalls that of the founder of modern absurdist philosophy:

The world? What is the meaning of the world? [...] How did I get involved in the big enterprise called actuality? [...] If I am compelled to be involved, where is the manager – I have something to say about this. Is there no manager? To whom shall I make my complaint? (Kierkegaard 1983, 200)

If the world is premeditated, and if it is not language, then would it be not only machinery, but also machination? In the *Conversations*, Levi reveals to Tullio Regge one of the motivations that presided over his study of chemistry:

[A]vevo una curiosa sensazione : che ci fosse una congiura ai miei danni, che la famiglia e la scuola mi tenessero nascosto qualcosa, che andavo cercando nei luoghi che mi erano riservati : per esempio la chimica, ma anche l'astronomia. (Levi & Regge 1984, 13)

I had a curious sensation: that there was a plot at my expense, that family and school kept something hidden from me, which I went looking for in the places that were reserved for me: for example, chemistry or also astronomy. (Levi & Regge 1992, 13)

It was a frame of mind that made him hope to discover the key to the universe: the plot of the world can only be unlocked through knowledge, based on the study of the infinitely small or the infinitely large:

[C]ercavo un'altra chiave per i sommi veri: una chiave ci doveva pur essere, ed ero sicuro che, per una qualche mostruosa congiura ai danni miei e del mondo, non l'avrei avuta dalla scuola. [...] Capirò anche questo, capirò tutto, ma non come loro vogliono. Troverò una scorciatoia, mi farò un grimaldello, forzerò le porte." (Levi 1990a, 449)

[I] searched for another key to the highest truths: there must be a key, and I was certain that, owing to some monstrous conspiracy to my detriment and the world's, I would not get it in school. [...] I [would] understand everything, but not the way *they* wanted me to. I [would] find a shortcut, I [would] make a pick-lock, I [would] push open the doors. (Levi 1984, 23)

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– Dmitri Mendeleev's
Periodic table of elements
(1869).

That attitude was based on the idea that there is a reason for things, a root cause:

Io ero sostanzialmente un romantico, e anche della chimica mi interessava l'aspetto romantico, speravo di arrivare molto in là, di giungere a possedere la chiave dell'universo, di capire il perché delle cose. (Levi & Regge 1984, 13)

I was substantially a romantic, and also in chemistry it was the romantic aspect that interested me. I hoped to go very far, to the point of possessing the universe, to understanding the why of things. (Levi & Regge 1992, 13)

In 1984, Levi saw the utopian nature of the project: “Adesso so che non c'è il perché delle cose”, “Now I know it doesn't exist, the why of things” (*Ibid.*) In fact, already in 1983, in his interview with Giuseppe Grieco, Levi denounced the temptation to substitute science for God:

La grande illusione che la scienza potesse, in un certo senso, prendere il posto di Dio, è tramontata da un pezzo. La scienza, se la si interroga sui ‘fini’ della vita, risponde: ‘Non è affar mio’. E la pianta lì.” (Levi 1997, 288)

The grand illusion that science could, in some sense, take God's place faded some time ago. If you ask science about the “aims” of life, it will reply: “Nothing to do with me.” And leave it at that. (Levi 2001, 277)

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Like the universe of Kafka's *The Trial*, which Levi had only a few years earlier translated into Italian, and that he called a terrifying book,¹⁶ the world is revealed to be without reason, without a key.

But that assessment did not date from *The Trial*. The lack of reason refers back to the camp, as the following phrase suggests: "Adesso so che *non c'è il perché* delle cose", a perfect replica of the famous "*hier ist kein Warum*" ("there is no why here", in *If This is a Man*). Is the world ultimately as inexplicable as the camp?

It may seem risky to compare the "why" of the scientist, a mental operator that presides over all learning, with the "why" of the distraught prisoner. However, Levi connects the two by extending the notion of "curiosity" – an essential component of the scientist's frame of mind that inhabits, in his view, every human being¹⁷ – to his experience of the camp. It is, moreover, certain that his very survival was due in part to his ability to feel curiosity, and therefore to question the world around him: the aptitude to question is certainly one factor that made adaptation to the Lager possible.

Può stupire che in Lager uno degli stati d'animo più frequenti fosse la curiosità. Eppure eravamo, oltre che spaventati, umiliati e disperati, anche curiosi: affamati di pane e anche du capire. (Levi 1986, 43)

It might be surprising that in the Camps one of the most frequent states of mind was curiosity. And yet, besides being frightened, humiliated, and desperate, we were curious: hungry for bread and also to understand. (Levi 1987, 99)

That particular kind of "hunger" always leads him to seek the "primary cause."¹⁸ In this case, it is a question of finding the key to the unnatural world of the Lager:

Il mondo intorno a noi appariva capovolto, dunque qualcuno doveva averlo capovolto, e perchè essere un capovolto lui stesso: uno, mille, un milione di esseri antiumani, creati per torcere quello che era diritto, per sporcare il pulito. (Levi 1986, 43)

The world around us was upside down and so somebody must have turned it upside down, and for that reason he himself must have been upside down: one, a thousand, a million antihuman beings created to twist that which was straight, to befoul that which was clean. (Levi 1987, 99)

We can note that the reasoning is essentially the same as when he postulates the existence of a machinist: it is a question of seeking a cause by starting from the effects. But this time, Levi gives free rein to his creative imagination. Of course he qualifies that mental operation as simplistic,¹⁹ probably of the same nature as the one that makes it possible to postulate a cruel or absurd God:

[Se] Dio [...] può ribaltare il bene in, o soltanto lasciare che il male dilaghi per la Terra,

(16) See 'Translating Kafka' in *The Mirror Maker* (1989) and 'An Assault Called Franz Kafka' in *The Voice of Memory* (2002).

(17) "...each one of us, even the peasant, even the most modest artisan, is a researcher." (Levi 1989, 175)

(18) Levi uses that same term, "curiosity" to describe his attitude with regard to God. See 'God and I' in Levi 2002.

vuol dire che è un Dio cattivo. E quella di un Dio cattiva è un'ipotesi che mi ripugna. (Levi 1997, 286)

If God [...] can change good into evil or simply allow evil to spread on Earth, then God is bad. And the hypothesis of a bad God repels me. (Levi 2001, 276)

Yet Levi's thought is constantly wandering in search of those responsible, and he admits to having maintained his curiosity about the "lords of evil."²⁰ That curiosity is at the centre of "Vanadium", whose main character is Müller, one of the chemists of the Buna-Monowitz factory under whose orders Levi worked. In fact it was Ferdinand Meyer, whom he found not through a chance incident at the chemical factory where he worked, but because he had sought to make contact with him by sending *If This is a Man* through the intermediary of Hety Schmitt-Mass.²¹ He received a letter in response:

Arrivò datata 2 marzo 1967, su elegante carta intestata in caratteri vagamente gotici. Era una lettera di apertura, breve e riservata. Sì, il Müller di Buna era proprio lui. Aveva letto il mio libro, riconosciuto con emozione persone e luoghi; era lieto di sapermi sopravvissuto; [...] sembrava che l'uomo aspettasse qualcosa da me. (Levi 1990a, 633)

It arrived dated March 2, 1967, on elegant paper headed with vaguely Gothic characters. It was a preliminary letter, brief and reserved. Yes, the Müller of Buna was indeed he. He had read my book, recognized with emotion persons and places; he was happy to know that I had survived; [...] it seemed that the man expected something from me. (Levi 1984, 216-7)

In reality, the opposite seems to be true. It is Levi who wants to know whether Meyer was aware of the extermination that was taking place while he was at Monowitz. Behind that curiosity looms a general "why" directed at the camp. "Avevo io molte domande da porgli: troppe, e troppo pesanti per lui e per me. Perché Auschwitz? Perché Pannwitz? Perché i bambini in gas?", "I had many questions to ask him: too many, and too heavy for him and for me. Why Auschwitz? Why Pannwitz? Why the children in the gas chambers?" (Levi 1990a, 634; 1984, 217) To his questions, he of course received no clear answers, only muddled and general observations about humanity.

"Understanding the Universe" implies for the post-Auschwitz Levi, among other things, understanding the Germans (see Levi 1988). Whence his admiration for Hermann Langbein – whom he turns into a character in his *Search for Roots* – and his *People in Auschwitz*.

[N]on si è contentato di consultare i memoriali e di interrogare i pochi superstiti fra i prigionieri, ma ha spinto l'indagine dall'altra parte, ai colpevoli di allora, e si è sforzato di capire (e di farsi capire) per quali vie l'uomo possa indursi ad accettare certi "doveri". Il

(19) "Era una semplificazione illecita, ma a quel tempo e in quel luogo non eravamo capaci di idee complesse.", "It was an unpermissible simplification, but at that time and in that place we were not capable of complex ideas." (Levi 1986, 43; 1987, 99)

(20) "Per quanto riguarda i signori del male, questa curiosità, che ammetto di conservare, e che non è limitata ai campi nazisti, è rimasta pendente." "As regards the lords of evil, this curiosity, which is not limited to the Nazi chiefs, still lingers." (Levi 1986, 43; 1987, 99)

(21) On this correspondence, see the chapter "Sind Sie der Doktor Müller von Auschwitz?", in Mesnard 2022, 521-525.

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risultato sorprende; non ci sono demoni, gli assassini di milioni di innocenti sono gente come noi, hanno il nostro viso, ci assomigliano. (Levi 1981, 221)

[...] he wasn't content only to consult memoirs and to interview the few survivors among the prisoners, but he carried the inquest as far as concerning himself with the perpetrators, forcing himself (and us) to understand the way men can be induced to assume certain "duties". The result is surprising; they are no demons, the assassins of millions of innocents are people like us. (Levi 2001, 207)

It seems that it is precisely a form of normality that is responsible for the "inversion":

Non hanno sangue diverso dal nostro, ma hanno infilato, consapevolmente o no, una strada rischiosa, la strada dell'ossequio e del consenso, che è senza ritorno.

They don't have different blood to ours but, consciously or not, they have chosen a dangerous road, the road of submission and acquiescence from which there is no return.

In reality, that discovery had accompanied Levi for a long time, and clearly remained a source of confusion, since in his essay "The Commander of Auschwitz" (in Levi 1989, 85-88), written in 1960, he already stated about Richard Baer, Höss's successor, that he was the most dangerous human type of this century:

[S]enza di lui, senza gli Höss, gli Eichmann, i Kesserling, senza i mille altri fedeli e ciechi esecutori di ordini, le grandi belve, Hitler, Himmler, Goebbels, sarebbero stati impotenti i disarmate. (Levi 1986, 96)

[W]ithout him, without the Hösses, the Eichmanns, the Kesselrings, without thousands of other faithful and blind executors of orders, the great savage beasts, Hitler, Himmler, and Goebbels, would have been impotent and disarmed. (Levi 1989, 86)

The distorted and defiled world of the camp is therefore only an extreme incarnation of "rectitude" and "purity" taken literally: "Per questo sono pericolosi gli uomini come Baer: gli uomini troppo ligi, troppo fedeli, troppo proni.", "This is why men like Baer are dangerous: men who are too loyal, too faithful, too docile." (Levi 1989, 87) That is the reason, in fact, that Levi praises impurity in the first chapter of *The Periodic Table*. We encounter the same words in "The Quiet City", the main character of which, the Oberingenieur Mertens – met briefly in Monowitz and rediscovered upon reading Langbein – also appears as an example of the kind of human that participates in crime through obedience:

[G]li ho scritto una lettera: gli dicevo che si Hitler è salito al potere, ha devastato l'Europa e a condotto la Germania alla rovina, è perché molti buoni cittadini tedeschi si sono com-

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– Primo Levi with
Franca Tambini, secretary
of the company.

portati come lui, cercando di non vedere e tacendo su quanto vedevano. (Levi 1986, 47)

I wrote him a letter; I told him that if Hitler had risen to power, devastated Europe and brought Germany to ruin, it was because many good German citizens behaved the way he did, trying not to see and keeping silent about the way they did see. (Levi 1987, 105)

Can thinking be satisfied with such an answer? Throughout this investigation, it encounters only itself, because reason, which Levi calls to the rescue to make sense of Auschwitz, is also what caused Auschwitz: “il Lager, per me, è stato il più grosso dei ‘vizi’, [...], il più minaccioso dei mostri generati dalla ragione.”²² The attempt to communicate with the world has failed. Consequently, in “Translating Kafka”, Levi claims to have no trouble deciphering the last sentence of *The Trial*, which has in fact been the focus of so many contradictory commentaries. The court that sentences Josef K. is a human court: “E finalmente un tribunale umano, non divino: è fatto di uomini e dagli uomini, et Josef, col coltello già piantato nel cuore, prova vergogna di essere un uomo.”, “It is in the end a human, not a divine, tribunal: it is composed of men and made by men, and Joseph K. with the knife already planted in his heart is ashamed of being a man.” (Levi 1989, 109). A shame that Levi shares, because Auschwitz is also a creation of man.

(22) Quoted in the preface to *Storie naturali* (*The Sixth Day and Other Tales*), attributed to Calvino, Einaudi, 1966.

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THEFTS AND ENCRYPTIONS

Is the world, in the end, as incomprehensible as the camp? And if scientific discourse turns out to be incapable of detecting a technicality in the progress of the “trial” that is always being brought against us, what more can be done? In Levi’s life, as in his fiction, the conspiracy of the world is usually thwarted through cunning. We have seen that already in “Cerium”, when the lack of packaging forced the theft of solid chemicals. Moreover, that theft is presented as a challenge to God who has created man fragile and perishable:

Ora, a quel tempo non esisteva il polietilene, che mi avrebbe fatto comodo perché è flessibile, leggero e splendidamente impermeabile: ma è anche un po’ troppo incorruttibile, e non per niente il Padre Eterno medesimo, che pure è maestro in polimerizzazioni, si è astenuto dal brevettarlo: a Lui le cose incorruttibili non piacciono. (Levi 1990a, 559)

Now, at that time, there did not exist polyethylene, which would have suited me perfectly since it is flexible, light, and splendidly impermeable: but it is also a bit too incorruptible, and not by chance God Almighty himself, although he is a master of polymerization, abstained from patenting it: He does not like incorruptible things. (Levi 1984, 141)

What is not given must be stolen in one way or another. “Hydrogen”, the story of initiation that follows on “Argon” and that Levi wrote first, in 1968 (see Mesnard 2011, 349), begins with an experiment conducted in the company of a certain Enrico – a character whose prototype it would be vain to seek in Levi’s biography – in a laboratory whose keys the teenagers stole. Throughout Levi’s work, cunning and theft – committed in the camp or on the road home by a prisoner or a former prisoner whose life situation has freed him from the commandment “thou shalt not steal” – have provided, always through the same initiation ritual, that promethean metaphor.²³

And yet, the key does not only open, it also closes. The only defence against the absurdity of the world probably consists of taking control of the machine, this time literary. A magical gesture reminiscent of the domineering will of Mario, the hero of the story “I sintetici”.²⁴ And of constructing a language, perfectly clear in appearance, but in reality obscure to the uninitiated. Is it not, in fact, a defence mechanism to which the persecuted community has always resorted? It is no coincidence that the first chapter of *The Periodic Table* is dedicated to the description of an encrypted language, that of the Piedmontese Jewish community (see also “The language of chemists’ I and II in Levi 1989, 110-121). It is the trick of those who are separated from the rest of the population by “a wall of suspicion, of undefined hostility” and who, in turn, have erected “a symmetrical barrier” against all Christianity (1984, 3-4). That “language within a language” is constantly threatened by a hostile outside world. Levi mentions in “Argon” his fear of his grandmother’s second husband, a doctor (and a “goy”) who, when brought children afflicted with stammering, cut the frenum under the tongue with scissors. It was the same threat in Canetti, let us

(23) Several stories, in various collections, are devoted to the initiation to theft, a subject worthy of its own study.

(24) Persecuted by his comrades because he is “not like the others”, Mario takes that fiction as his own to build a utopia of a perfectly organized and programmed world in which the “synthetics” will be in power. He finally ends up turning back to normality: a failure of the organizing and self-creating power of fiction or a renunciation of the dictatorial aspect of literary power?

recall, that compelled the child to remain silent for ten years (Canetti 1980, 11). As for child Levi, he does not keep quiet, and learns that the coded language is full of trickery and will use it to build a literary space in which he reigns supreme, like the circle drawn in chalk in “Titanium” that recalls the magical dimension of political power, but also of the power of fiction.

In his foreword to the *Conversation*, Tullio Regge recounts his attempts – as his meetings with Levi progressed – at deciphering the biographical framework on the basis, specifically, of the characters described by Levi. It is clearly Primo Levi himself who encourages such an interpretation, asking his reader to undertake an exegesis of several of his works, identifying bridges between experience and fiction, for example in *Other People's Trades*: “he challenged me to tell him which of the short stories in the book had been completely fabricated.” (Foreword in Levi & Regge 1992, xv) A game that began, in fact, with a very clumsy remark by Tullio Regge about Levi's tattoo: “I take it to be the original”, to which Levi replied: “What else? Nobody goes around buying fake Nazi tattoos.” (*Ibid.*) And that continues with Regge's deciphering, at Levi's suggestion, of the complex autobiographical and fictional web presented by *The Periodic Table*. “I tried to guess but failed miserably, and probably I shall never know the answer.” Indeed, the autobiographical sequences – “moments” – are inserted in a narrative device that requires fictional articulations: condensations and displacements, changes of name, invention of characters or their words. Levi has indeed hidden the key, which he knows how to use to lock up meanings, and that will feed his thinking about the “forger's dilemma” (see Mesnard 2011, 551 ff on this matter). “He admitted that he had also faked other stories a bit, particularly the one in *The Periodic Table* about a German Nazi chemist who had been his boss in the concentration camp.” (Levi & Regge 1992, xv)

That “falsification” is the subject of a *mise en abyme* of the fictional device. Levi imagines two variants of the letter from Müller for which he waits:

At that point in my tale, if that story had been invented, I could only have introduced two types of letter: one, humble, warm, Christian, from a German redeemed, the other wicked, proud, icy, from the stubborn Nazi. But this story is not invented, and reality is always more complex than invention [...]. (Levi 1984, 218)

The “real” letter is no less invented: Levi has Müller say that “I. G. Farben [...] employed prisoners, but only to protect them” and that “the entire Buna-Monowitz factory, eight square kilometres of giant buildings, had been constructed with the intention of ‘protecting the Jews and contributing to their survival’” (Levi 1984, 220), an affirmation that the narrator qualifies as “insane”, and which is. His attempt at elucidation is ridiculed to the point of absurdity, and the sudden death of the German chemist ends their dialogue (events that in fact correspond to reality). But via this subterfuge, the key is stolen from the machinist and the author runs his own machine, which also leaves readers with the illusion that they could understand everything.

Admittedly, this vision of the author as supreme schemer – who, to defend

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himself against the intrinsic opacity of the world or in despair before it, negotiates a prime position in the great “grey zone” of the universe and in turn dupes his readers – contrasts with the image of Levi as defender of clarity, widely promoted by the author himself.²⁵ Though he does reconsider his positions in his review of Queneau’s *Cosmogonie*:

Ho sempre pensato che si deve scrivere con ordine e chiarezza; [...] Dopo aver letto la Piccola Cosmogonia portatile di Raymond Queneau [...] mi vedo costretto a rivedere questi principi; penso [...] che Queneau abbia fatto benissimo a scrivere nel suo modo, che è esattamente opposto al mio, e che mi piacerebbe scrivere come lui se ne fossi capace. (Levi 1990c, 732).

In fact, he may have that ability more than he wants to admit, and the transparency he claims reveals itself to be an illusion.²⁶

CONCLUSION

Levi’s “creation story”, in both senses of the word creation (of the world and of the text), aims to stem the chaos, to lay the foundations of a new Genesis of which clarity, the product of the scientific method, would replace the opacity of biblical language. But that post-Auschwitz founding tale is in fact the tale of Auschwitz, and we shall see in *If This Is a Man*, that that original dimension, attributed to the “painful, cruel, and touching” stories of the victims, already arises in the camp, where it comes to be narrated out of a kind of “tragic necessity”:

We tell them to each other in the evening, and they take place in Norway, Italy, Algeria, the Ukraine, and are simple and incomprehensible like the stories in the Bible. But are they not themselves stories of a new Bible? (Levi 1959, 72)

Whoever transmits them has appropriated the key that makes it possible to recreate a universal language. But doesn’t that language, despite the desire for communication emphatically affirmed by Levi, conceal a non-communicable dimension? *The Periodic Table* appears, from that perspective, as a pivotal book in which is manifested, in the clearest possible way, the intention to construct an “addressed” universe, an intention that from then on confronts – and will not cease to come up against – its own limits. Indeed, the encounter with the Other, so desired by the writer, the chemist, the witness: is it really possible through the act of writing? That question might orient our interpretation of the phrase “I am not a prophet”, commented by Tullio Regge in their *Conversations*. Levi fails to make himself a mediator, an instrument of communication between an incomprehensible world and a recipient seeking to understand, that reader he postulates, and vis-à-vis whom he means to be loyal, and to whom he attributes his own quest for meaning: the self-appointed Moses who, not having received his tablets of law, invents them,

(25) In “Dello scrivere oscuro”. The demand for clarity is presented there by Levi as if dictated by his loyalty to the reader.

(26) We also know that the claim of clarity must not be taken at face value. See the chapters “Conjurer l’obscurité” and “La poésie, entre greffe et rejet”, in Mesnard 2011, 398–407.

will never see the promised land and “Mount Sinai” will remain shrouded in that indefinite cloud that the law and order “attorno a me e nel mondo”, “around me and in the world” (Levi 1990a, 448; 1984, 24) were called to dissipate. ■

Translation: Jennifer Gay

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