

Primo Levi's "Small Differences" and the Art of *The Periodic Table*:
A Reading of "Potassium"

Murray Baumgarten

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The brief narratives that make up Primo Levi's masterful account of a young man's modern education take the reader through 21 elements of Mendeleev's Periodic Table, from which the book takes its name. Each episode—Primo Levi calls them "moments"¹ -- focuses on one element: we begin with Argon – the inert, noble gas echoing the passivity and accommodation of his Italian Jewish ancestors – and conclude more than 230 pages later with Carbon, whose ability to join with many other elements in what some have thought of as impure combinations, powers life, and generates the kinesthetic action of writing, with which the book concludes.

Discourses of Science and of Art: The Two Primo Levis

Playing the building blocks of the scientific elements against the personal experience of the narrator, Primo Levi constructs an interactive account. Here scientific analysis and technological know-how engage social observation and psychological

description—a combination discussed by several scholars – and noted in Rothberg and Druker’s account in *Shofar*.² The impact of the combination, as Pierpaolo Antonello notes, defines central features of the writing: “The kind of virtues that Levi fosters through his work in the lab” and seeks to lead the reader to engage are “multifold: his is a form of distributed, holistic intelligence, in which mental reasoning is combined with the sagacity of smell, touch, and the intuitiveness of the eye.” They build on the “other virtues . . . required [in the laboratory] humility, patience, method, manual dexterity and, also, why not, good eyesight, keen sense of smell, nervous and muscular stamina, resilience when faced by failure.”³

In this text the discourses of science and of art are subtly intertwined, reciprocally illuminating – to the point that it is hard to distinguish which is the tenor and which the vehicle of the metaphorical discourse that emerges from their conversation. In such a hybrid narrative each word counts, and if Hayden White is right in calling Primo Levi a poet,⁴ then we must take this work as a prose-poem, and thus attend to each and every word and phrase.

Like all great poems these repay study, their richness yielding veins of thought, metaphors for everyday life, paradigmatic analyses. What has not been often enough noted by its readers⁵ is how the writing — an action itself embedded as a

theme and image throughout – is part of the unfolding understanding of the situation of the protagonist. As I argue in an earlier essay, the character Primo Levi in the text needs to be distinguished from the narrator, Primo Levi, the writer of the text.⁶ The two Primo Levis – scientist-character and narrative-artist -- play against each other, generating much of the narrative tension that drives the book.

In this brief account, I look first at the connections between the discussion of technological know-how and the evocation of personal histories, and how these intertwine in *The Periodic Table*. I will examine the mixtures of literary conventions in this book, attending to Primo Levi's comment that "the book goes beyond simple autobiography. Rather, it contains the story of a generation."⁷ Attending to the texture of his writing, which is also evident in the serviceable English translation of Raymond Rosenthal, I will then explore the ways in which the action of writing constitutes a central trope that links Holocaust witnessing and narrative strategy in this book.⁸

Note that putting the writer into the story and making his writing process part of the account are among the characteristics of modernist texts; by so doing Primo Levi, usually characterized as an Enlightenment writer drawing on realist conventions situates his writing in a mode that echoes the insights of the Romantics as well as the famous uncertainty principle of Werner

Heisenberg -- for the observer is now part of the observed, and his work reframes as it transforms that which is being looked at. That is, Primo Levi, writer, is inseparable from Primo Levi, Holocaust witness.

Words and Language Systems

Consider then the ways in which Primo Levi treats language. The opening section of *The Periodic Table* begins, for example, with Primo Levi's description of the arrival of Jews and members of his family in southern Piedmont as the result of rejection or "a less than warm welcome in Turin." Introducing the "technology of making silk," always an "extremely tiny minority," these Jews were "never much loved or much hated," but were always kept behind a "wall of suspicion, of undefined hostility and mockery." Even "several decades after the emancipation of 1848" and their "consequent flow into the cities" that wall kept them isolated: "substantially separated from the rest of the population," Primo Levi notes.⁹

His phrasing is echoed in Giorgio Bassani's comment on the reception of the Jews in Ferrara early in *The Garden of the Finzi-Continis* as "the ancient offense of rejection and separation,"¹⁰ which is even sharper in the original Italian phrasing: "*l'antico sgarbo del disconoscimento e della separazione.*"¹¹ One of the nuances of *disconoscimento*, which Bassani evokes is the Ferrarese refusal to

acknowledge the presence of the Jews, a habit well-known to many majority host cultures, and a response that festers in the “dis-known” minority, implicit also in Primo Levi’s account.

In describing his childhood, Primo Levi comments that his father told of how he used to be mocked “without malice” by his contemporaries, “greeting him with the corner of their jackets gathered in their fists to resemble a donkey’s ear and chanting, “Pig’s ear, donkey’s ear, give ‘em to the Jew that’s here.”¹² Primo Levi’s understanding of how words and things are related leads him to observe that “the gesture was originally the sacrilegious parody of the greeting that pious Jews would exchange in synagogue when called up to read the Torah, showing each other the hem of the prayer shawl whose tassels, minutely prescribed by ritual as to number, length and form, are replete with mystical and religious significance.”¹³

What these mocking children did not remember — of how their gesture originated — Primo Levi the analyst of social practices and connoisseur of irony could comprehend.¹⁴ And he could also understand “in passing, that the vilification of the prayer shawl is as old as antisemitism” – And here he adds a telling contemporary detail: “from those shawls, taken from deportees, the SS would make underwear which then was distributed to the Jews imprisoned in the Lager.” (*Periodic Table*, 4 – 5).¹⁵

Linking the SS effort to humiliate the Jews in the Lager to the mockery his father underwent at the hands of his schoolmates years before connects these two antisemitic incidents into a continuum. The result is implicit: there is a continuous antisemitic pressure on Primo Levi's family and people, with degrading acts and events arrayed along a spectrum of hate. They range from schoolyard mockery to Nazi concentration camp oppression and murder, as Primo Levi implicitly charts the polar extremes of this antisemitic spectrum with these two examples.

Primo Levi's fascination with the intersections, cross-fertilizations, and adaptations of language systems, both within the Jewish community and external to it, marks and informs his writing. We can recognize the ways in which this interest grows from his situation as a member of an oppressed and marginalized minority. In *The Periodic Table* he underlines the ways in which such encounters of meaning systems, both linguistic and cultural, as in the prayer shawl annotation, raise fundamental problems of understanding and construction of identity within a text.

Note how the narrative of a recounted paternal experience, which is expected in an autobiographical narrative, leads not to a personal anecdote but to the telling of a collective experience of humiliation and oppression. This is another marker of how this book relies not only on personal anecdote and biographical material for historical contextualization but as well on probing

social, psychological, and technological observation. It is an account of over-determined layers of personal and generational experience, of interconnected phenomena honored in a nuanced telling. A family saying and anecdote turns into a moment in the life-histories¹⁶ of a generation.

This is not, then, just an autobiography, though autobiographical events serve as its narrative spine. We follow the narrative turns of representative situations that outline — with small differences — the experiences of his Italian Jewish cohort.¹⁷ Its subtext is the scientific notion of replication, of reproducibility of events, brought into an understanding of mass society. It carries forward the analysis of the effects of the “gigantic biological and social experiment” of Nazism central to *Survival in Auschwitz* in a narrative mode that charts personal experience on Mendeleev’s map of the periodic elements.

This unusual and elusive blend puts matter-of-fact accounts of the process of laboratory experimentation into conversation with autobiographical moments; together they generate a range of situations and plots — from the slapstick comedy of “Potassium,” the heroism of “Iron,” and the ironic resistance and small victory of “Zinc” — that yield fundamental structures of meaning.

In *Survival in Auschwitz* Primo Levi turned to religious language, invoking what Nathaniel Deutsch has called “the

people's Torah"¹⁸: Resnyk "told me his story, and today I have forgotten it, but it was certainly a sorrowful, cruel and moving story; because so are all our stories, hundreds of thousands of stories, all different and all full of a tragic, disturbing 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?" (*Survival in Auschwitz*, chapter 6, pp. 65 – 66). In *The Periodic Table*, by contrast, Primo Levi seeks the algorithm that would evoke and contain this generation's experience. This narrative will not have religious but scientific force.

This kind of understanding is ethnographic, and opens the observer to acknowledging contradictory experiences. As Primo Levi's text unfolds, we discover the ways in which this effort to engage the resulting cognitive dissonance helped him navigate the dire currents of the Holocaust. Amid the swirl of Italian fascism the narrator throughout *The Periodic Table* tells of his familial experiences as a native of Turin and Piedmont. The reader will discover in this narrative what is happening and will happen to Primo Levi as a Jew about to be caught in the monstrous jaws of the Third Reich's "gigantic biological and social experiment" called Auschwitz.

Cognitive Dissonance

“Potassium,” the fifth chapter of Primo Levi’s *Periodic Table*, begins in January 1941, with the Nazis victorious throughout Europe and launched on their invasion of the Soviet Union: “the fate of Europe and the world seemed to be sealed,” Primo Levi’s narrator begins. “Only the deluded could still think that Germany would not win; the stolid English ‘had not noticed that they had lost the game,’ and obstinately resisted under the bombings” (p. 50).

Note how the episode begins with German certainty that “in January 1941, the fate of Europe” has apparently been sealed. Here Nazi actions function as one of the apparent “sources of certainty” (52) for which Primo Levi, scientist-character, and his student compatriots are searching in their studies of chemistry and their personal lives. [The Nazi conquest is a *fait accompli* but for whom will it – can it be -- a “source of certainty”? How, without allies and lacking the stolid English temperament and geographical distance from Nazi Germany, could Primo Levi and his colleagues find “the strength to resist?”

Nevertheless, the narrator notes in a subtle use of free indirect discourse, “if we wanted to live, if we wished in some way to take advantage of the youth coursing through our veins, there was indeed no other resource than self-imposed blindness; like the English, ‘we did not notice,’ we pushed all dangers into

the limbo of things not perceived or immediately forgotten” (51). And Primo Levi, the narrator, speaking in the voice of his protagonist-character, notes that they had an additional resource. Reaching back to Biblical traditions, “we gathered in the gym of the Talmud Torah – in the School of the Law, as the very old Hebrew elementary school was proudly called – and taught each other to find again in the Bible justice and injustice and the strength that overcomes injustice.” (52)

Yet even here there was little immediate help, for “He who breaks the slaves’ chains and submerges the Egyptians’ chariots . . . who dictated the law to Moses and inspired the liberators Ezra and Nehemiah, no longer inspired anyone” (52). The evidence of the Nazi blitzkrieg was not to be denied: “the sky above us was silent and empty; He allowed the Polish ghettos to be exterminated.” The narrator ruefully acknowledges that “slowly, confusedly, the idea was making headway in us that we were alone, that we have no allies we could count on,” as he segues into present tense speaking to further the momentary identification of character and reader.

Together we realize that in the absence of allies “neither on earth nor in heaven, that we would have to find in ourselves the strength to resist.” (52) Now that the situation has been clarified, only personal courage, communal and individual resistance will resolve the difficulties the narrator is confronting.

The sequences of this episode and indeed of the book, like its individual sentences, develop a rhetoric of cognitive dissonance. Cognitive dissonance — the discomfort resulting from holding two contradictory ideas simultaneously — generates the energy that moves the narrative forward, phrase by phrase, sentence by sentence, episode by episode, chapter by chapter, element by element.

What I am mapping here is the characteristic gesture – the plot if you will – of the “Potassium” episode. Given the small explosion that punctuates its ending as the result of a minuscule bit of potassium, which bemuses the Assistente, we might think of the plot as slapstick. The protagonist-character Primo Levi has generated the small explosion, and the narrator describes what the character has learned. Primo Levi in this farce is actor in and observer of the situation.

He articulates the lesson at the conclusion of “Potassium” in a deft analogy that illustrates the “small differences” that “can lead to radically different consequences, like a railroad’s switch points; the chemist’s trade consists in good part in being aware of these differences, knowing them close up, and foreseeing their effects. And not only the chemist’s trade.” (p. 60)

Examining the plot, we can chart the larger trajectory of the book, notably the growth of knowledge of the protagonist, in a text that is part bildungsroman, part historical narrative, part

account of initiation. Its generic mixtures remind us of the complexity of the situation and thus the multi-vector analysis that it calls forth. Or, if you prefer, the patient sorting out of the different aspects of the ways in which one person's experience becomes a metaphor for his generation's. Evoking the protagonist's experience, the narrator makes us ask what the grounds of certainty, of truth might be. In the world of fascist propaganda he turns naturally to modern science – to chemistry and then to physics. This is not only academic questioning but a life-defining situation.

For “the impulse that drove us to explore our limits was not completely absurd: to travel hundreds of kilometers on our bikes, to climb with fury and patience up rock walls that we did not know very well, to subject ourselves voluntarily to hunger, cold, and fatigue, to train ourselves to endure and to make decisions.” These are tests and testings of the sources of certainty: “A piton goes in or it doesn't; the rope holds or it doesn't: these too were sources of certainty” (52). Here we have an image of certainty to contrast to fascist propaganda and thus a comparative way of ascertaining the force of the different elements that, conjoined, generate the dissonant challenge to cognitive – to rational -- understanding.

In this situation Chemistry does not satisfy our protagonist, with its exercises “not very much different from following

Artusi's recipes" (52). He thus turns to "the origins, to mathematics and physics . . . [to] the strenuous clarity – [*la strenua chiarezza dell'occidente*']¹⁹ of the West" (53). Amid the crisis of understanding generated by fascist propagandizing Primo Levi scientist-protagonist-character seeks to test the fundamental principles of knowledge. Pursuing this process Primo Levi and his generation engage the apparently quixotic quest to resolve the cognitive dissonance imposed by the "unproven truths" of Fascist Doctrine he and his generation have "been forced [to learn to parrot] in liceo" and the realities of their situation as Italians and Jews.

Unexpectedly, Primo Levi, the narrator in the text, encounters a helper, a young Assistente, to give him his Italian designation, who holds a rank comparable to a beginning instructor or lecturer in American university practice.²⁰ He is "thin, tall, a bit hunched over, polite, and extraordinarily shy, who behaved in a way that we were not used to." Unlike the "true believers," who do not question the meanings of their actions but simply obey what they are told to do, the Assistente is a bit of a skeptic, suggesting a different perspective to his students.

"Our other teachers, almost without exception, showed themselves convinced of the importance and excellence of the subject they taught:" some are true believers, others true egotists

ensconced in their disciplinary fields. That Assistente, “however, almost had the air of apologizing to us, of ranging himself on our side: in his somewhat embarrassed and well-bred ironic smile, one seemed to read” the thought that “these are all marginal futilities, and knowledge lives elsewhere; but this is a trade that you and I too must work at – so please try not to do much damage and learn as much as you can” (53).

Note that the Italian phrasing makes clear the Assistente’s standing. He is one of those who has attained the highest graduate degree but in the hierarchy of Italian learning has not yet passed to the professorial ranks with their supervisory status.

And here Primo Levi’s inquiry into the grounds of knowledge and psychological observation of the narrator swoops over to personal connection. The passage concludes in a witty comment that punctuates the paragraph by eliciting the relationship between knowledge and personal presence. The Assistente’s stance has an impact oblique to epistemological inquiry: “In short, all the girls in the course fell in love with him.” (53) Acuity of observation and understanding is punctuated by humor, by laughter. (The moment recalls for us how in this comedic world – funny though fraught with ominous implications – Mussolini loved the comedy of Laurel and Hardy.)²¹ Personal presence – Primo Levi has already noted its importance in the Zinc episode and the evocation of Sandro

Delmastro's impact on his life, with which the "Iron" episode that precedes "Potassium" concludes.

The relationship of knowledge and presence emerges as Primo Levi, the narrator in the text, articulates what it means to seek scientific and personal understanding. Like his fellow students, Primo Levi seeks the "strenuous clarity of the West – Archimedes and Euclid." In physics and mathematics they seek the certainties falsified by fascist propaganda. Thus his quest to ground himself in the effort to "become a physicist, *ruat coelum*²²: perhaps without a degree, since Hitler and Mussolini forbade it." And here Primo Levi discovers in the Assistente the crucial ally, the figure who will become his guide, his Virgil.

Making "desperate attempts" to continue his education and engage the "sources of certainty" he's been seeking, Primo Levi encounters the passive acquiescence in Fascism of his professors, some of whom refuse "snidely or even arrogantly" (53)" to take him on as a "student assistant," -- for they tell him "the racial laws" prohibit it, while others fall "back on hazy or flimsy excuses" (53). Disheartened, bitter "after . . . the fourth or fifth rejection," Primo Levi has an epiphany riding home on his bike that evening, when he by chance encounters the Assistente on the blacked-out street. Thinking that "I risked nothing but another rejection, and without beating around the bush I asked him whether it would be possible to be accepted for experimental

work in his school.” The Assistente, about whom he knows nothing, “looked at me with surprise; and instead of going into the long explanation I expected, he replied with two words from the Gospel: ‘Follow me.’” (54). Here religious tradition overcomes fascist propaganda – two brief words make a difference.

Small Differences and Chaos Theory

These small, seemingly futile efforts at resistance turn out to have major consequences. They will be paralleled by the chemical work of “Potassium.” In his experimental work as in his personal life, small differences will generate significant results. Since sodium is unavailable to use in purifying benzene Primo Levi turns to potassium, which is available amid the clutter of this laboratory, and thus discovers how important small differences can be.

Note that Primo Levi, writing this in 1975, could have elaborated this idea by referring to chaos theory, which was emerging as a major field of applied mathematics at the time. It would be interesting to see if he knew the work of Benoit Mandelbrot, who by 1960 was making a significant contribution to the field.²³ The notable “butterfly effect” of chaos theory, in which the beating of the wings of a butterfly half a continent away initiates a hurricane, echoes Levi’s notion of “small

differences,” which as scientist-protagonist the character Primo Levi discovers in the experiences he describes in “Potassium.”

When Primo Levi the character notes that these small differences are at work in this episode, the narrator Primo Levi formulates a larger idea, a generalization even: these “small differences” are operating “not only in the chemist’s trade.” Instead of leaping to an allegorical or metaphoric formulation, the narrator Primo Levi indicates the possibility of a larger meaning, and leaves the reader to reflect on it, and even observe its emergence in the course of the narrative of *The Periodic Table*.

The impact of Primo Levi’s phrasing is perhaps most evident when we take the comparison of his “small differences” to contemporary chaos theory a step further. It is, says the mathematician Tabor, “a solution whose outcome is very sensitive to initial conditions (i.e., small changes in initial conditions lead to great differences in outcome) and whose evolution . . . appears to be quite random.” And Rasband says, “The very use of the word ‘chaos’ implies some observations of a system, perhaps through measurement, and that these observations or measurements vary unpredictably. We often say observations are chaotic when there is no discernible regularity or order.” Recall the analogy that is used repeatedly in chaos theory, the butterfly effect: “Due to nonlinearities in weather processes, a butterfly flapping its wings in Tahiti can, in theory, produce a

tornado in Kansas. This strong dependence of outcomes on very slightly differing initial conditions is a hallmark of the mathematical behavior known as chaos.”²⁴

We see here in the efforts of Primo Levi as both character and narrator, the initiative and actions that will undo the apparently destined purpose of the Nazis. Unlike his forebears he will not remain under the sign of Argon; he will not be passive but will resist, even if only through small differences. Yet it is not a plan that he has, but rather a general preparation to seek the sources of the “strenuous clarity of the West” – marvelous idea, remarkable phrase of Primo Levi’s – that he will be able to have the opportunity to take action that changes matters. And, small difference again, it is through his study of chemistry and physics, his effort to discover the sources of certainty, that Primo Levi will learn enough German to survive in Auschwitz, where he will pass a chemical examination and be recruited into the team that is working to discover how to make synthetic rubber to assist in the Nazi war effort – and spending the winter in the friendly confines of the laboratory – will find respite from the random brutality of the Lager and its horrific conditions that are intended to demolish human beings.

Small Differences: Potassium not Sodium

Primo Levi concludes the Potassium episode with an account of his effort to use potassium as a substitute for sodium in the purification of benzene. His work is flawed; “a minuscule particle of potassium” adheres to the glass of the flask and in contact with water initiates a reaction that leads to a small explosion and fire, which is with some difficulty put out. Telling his mentor about what has happened, leads to a concluding crystallization of knowledge for the scientist-character.

Note the difference between the response of the mentor, and the character: The Assistente “looked at me with an amused, vaguely ironic expression: better not to do than to do, better to meditate than to act, better his astrophysics, the threshold of the Unknowable, than my chemistry, a mess compounded of stench, explosions, and small futile mysteries.” Against his mentor’s passivity, Primo Levi discovers a different moral: “ I thought of another moral, more down to earth and concrete, and I believe that every militant chemist can confirm it: that one must distrust the almost-the-same (sodium is almost the same as potassium, but with sodium nothing would have happened), the practically identical, the approximate, the or-even, all surrogates, and all patchwork.”

He has discovered that “the differences can be small, but they can lead to radically different consequences, like a railroad’s

switch points; the chemist's trade consists in good part in being aware of those differences, knowing them close up, and foreseeing their effects." And then he concludes the episode by generalizing on the impact of small differences – "And not only the chemist's trade"(60) he concludes in the narrator's voice.

What he has learned emerges from his engagement with the sources of the "strenuous clarity of the West" – the hard-earned empirical knowledge of his trade. That knowledge has a moral dimension into which this young man has now been initiated. The "Potassium" episode is a moment in the emerging discovery of self-consciousness for Primo Levi, the scientist-character in the text. He is on the way now to becoming a modern Jewish intellectual.

That discovery contrasts to what he has learned from his fellow student, Sandro Delmastro, in the previous episode, "Iron." "If one looked for the bridge, the missing link, between the world of words and the world of things, one did not have to look far . . . it was there in our future trade." (41 – 42). But unlike Sandro's this is not the only trade of Primo Levi, for he is not only an actor with agency but also the writer in and of the text.

The narrator concludes the Iron episode by reflecting on the impossibility, the cognitive dissonance even, of writing – and reading. "Today I know that it is a hopeless task to try to dress a man in words, make him live again on the printed page,

especially a man like Sandro. He was not the sort of person you can tell stories about, nor to whom one erects monuments – he who laughed at all monuments: he lived completely in his deeds, and when they were over nothing of him remains – nothing but words, precisely” (48 – 49).²⁵

Sandro we realize is the unself-conscious hero of epic poetry – the Achilles to the wily Ulysses figure Primo Levi is on the way to becoming. This spare, clear prose that juxtaposes the moments of “Iron” and “Potassium” takes the reader into the writer’s task and the writer’s process, just as it leads us through the learning of the chemist’s trade. And not only that: following Philip Roth’s claim that Primo Levi was a man saved by his skill, it is important to acknowledge the many skills of this man, Primo Levi, scientist, writer, student, Jew, all evident in this text.

We are engaged then not in dressing a man in words as if language were clothing to be taken off and put on depending on fashion and fashionistas. Rather we discover -- through the “strenuous clarity” of this prose -- that Sandro’s actions have generated no monuments -- so beloved of Italian fascist culture -- but definite and clear words spoken now by his compatriot. That is, Primo Levi’s evocation of Sandro is thus not just a matter of “merely communicating information,” but a “speech act, doing something with words,” as Naomi Seidman has expressed it. Primo Levi’s words thus have a performative quality²⁶ – that is,

they evoke and call up the man and his heroic qualities. Like heroic poetry they bring the hero before us as a living Presence. These words of Primo Levi's are a mode of action that have the power to change the world, for their telling engages us in the imagining and re-living of the events and experiences by which we construct meaning in and of the world.

Perhaps that is what character – and narrator -- intended with that lovely concluding phrase of Potassium: “*Non solo il mestiere del chimico*” (63) – “Not only the chemist's trade” (p. 60). These words, this narrative stance, -- constructed in and of the text, -- engage the cognitive dissonance defining the difficult personal, political, historical, and social situation of both Primo Levi, character and narrator.

In the course of *The Periodic Table* the narrative intertwines personal experience with a scientific chemist's understanding of the 21 elements deployed here. It will lead the narrator and with him the reader to a mapping of a crescendo of meaning that is personal and general,²⁷ as the episodes build towards a conclusion with the final carbon trope.

The Carbon atom “it is that . . . issuing out of a labyrinthine tangle of yeses and nos, makes my hand run along a certain path on the paper, mark it with these volutes that are signs: a double snap, up and down, between two levels of energy, guides this hand of mine, to impress on the paper this dot, here, this one.”²⁸

Note how the ending of the “Iron” episode – “appunto” – has prepared us for the conclusion of this remarkable account of personal, historical, and cultural understanding.

Jewishness as Small Difference

There is yet another “small difference” Primo Levi explores in this episode. It is central to “Potassium” and a continuous theme throughout the trajectory of *The Periodic Table*. What he wonders is the impact of Jewishness – on Turin and Piedmont, Italian society, on fascism, on Western culture? What small difference could being Jewish make in Italy where Jews do not, for example, speak Yiddish but Italian?²⁹ Where they have acculturated so fully that their secret language – the *Haverta* that he charts in the first chapter, Argon, has all but disappeared?³⁰

As a citizen of Turin Primo Levi expects us to know that the constitution of Piedmont in the mid-19th century explicitly included the Jews as citizens and equal members of the general community. How different by comparison the more well known French response during the Revolution when *liberte, egalite, fraternite*, leads to the motto, formulated by the Count Stanislas de Clermont-Tonnerre before the National Assembly in 1789: “We must refuse everything to the Jews as a nation and accord everything to Jews as individuals.”³¹

And being Jewish has made a personal “small difference” for Primo Levi. Captured on “13 December 1943” by fascist Militia, he is interrogated and asked to identify himself. “I preferred to admit my status of ‘Italian citizen of Jewish race.’” He notes that he chose to define himself at that moment as a Jew: “I felt that otherwise I would be unable to justify my presence in places too secluded even for an evacuee; while I believed (wrongly as was subsequently seen) that the admission of my political activity would have meant torture and certain death.” (*Survival in Auschwitz* 13 – 14.)

How ironic then, how momentous, this small difference of Jewishness.³² It would lead him to imprisonment in Fossoli, transport to Auschwitz, and the experience he would later call his “university education.” His Jewishness thus is another instance -- a version we might say of the “small difference” he discovers in “Potassium.”

Using that element as a substitute for sodium in purifying benzene, the small difference between them – sodium does not flare up in the presence of water as potassium does generates a charged result. A tiny particle of potassium remains and leads to the messy explosion and flame that will amuse the Assistente. Analogue to Jewishness, this small difference will also be of great consequence. For this small difference – this minuscule difference, this impurity as Primo Levi, scientist-character discovers, is what

generates life, catalyzes reactions, makes a difference. This small difference is what the “strenuous clarity of the west” leads him to chart and explore in this fundamental study.

Small differences – we have encountered them earlier, in the “Zinc” episode, as Primo Levi the character in the text, studied “General and Inorganic Chemistry” with “Professor P.” Unlike true believers – whether of chemistry or fascism – Professor P. “was a skeptical, ironic old man, the enemy of all forms of rhetoric (for this reason, and only for this, he was an anti-Fascist), intelligent, obstinate, and quick-witted with a sad sort of wit.” He introduces Primo Levi, his student, to irony. Professor P., for whom “chemistry was not the motor-force of the Universe nor the key to truth” – shows Primo Levi the possibility of resisting those who brush aside complexity and the problem of competing, contradictory realities. They deal with cognitive dissonance by evasion – and in response P. examines “all those who appeared before him ‘dressed like soldiers’ . . . with ferocious coldness and ostentations prejudice.” (29)

Professor P. also initiates his students into the challenge of engaging the chemical complexity of the materials world. Primo Levi’s task is the preparation of zinc sulfate from the pure form of zinc. His experiment yields a particular and a general lesson. “The course notes contained a detail which at first reading had escaped me, namely, that the so tender and delicate zinc, so

yielding to acid which gulps it down in a single mouthful, behaves, however, in a very different fashion when it is very pure: then it obstinately resists the attack.” (33)

There are two “conflicting philosophical conclusions” that result – “the praise of purity, which protects from evil like a coat of mail; the praise of impurity, which gives rise to changes, in other words, to life.”(33)

Primo Levi refuses the praise of purity, “disgustingly moralistic,” but lingers to analyze the implications of the praise of impurity: “for life to be lived, impurities are needed, and the impurities of impurities in the soil, too, as is known, if it is to be fertile. Dissension, diversity, the grain of salt and mustard are needed.” (34) The “immaculate virtue” – the purity promulgated by Fascism “does not exist . . . or if it exists it is detestable.” For Fascism does not want dissension or diversity, “wants everybody to be the same, and you are not . . . and that’s why you’re not a Fascist.” (34)

Chemistry and the discovery of difference leads him not only to political enlightenment but the discovery of the pleasure of sexual difference through the encounter with his fellow student, Rita. Primo Levi, character in the text, discovers they have different interests and yet a common interest in meeting as they discuss their different readings of Thomas Mann’s *The Magic Mountain*. She “was reading the novel in an entirely different

way. As a novel, in fact: she was very interested in finding out exactly how far Hans would go with Madame Chauchat, and mercilessly skipped the fascinating (for me) political, theological, and metaphysical discussions between the humanist Settembrini and the Jewish Jesuit Naphtha.”

These interpretive differences are grounds “for debate. It could even become an essential and fundamental discussion, because I too am Jewish, and she is not: I am the impurity that makes the zinc react, I am the grain of salt or mustard. Impurity, certainly, since just during those months the publication of the magazine *Defense of the Race* had begun, and there was much talk about purity, and I had begun to be proud of being impure.” (35)

Meeting Rita, a student like himself of chemistry, working with similar materials, encountering the challenges of manipulating the material world, Primo Levi gains a small victory: “I left [the zinc sulfate] to its fate and asked Rita to let me walk her home. It was dark, and her home was not close by. The goal that I had set myself was objectively modest, but it seemed to me incomparably audacious: I hesitated half of the way and felt on burning coals, and intoxicated myself and her with disjointed, breathless talk. Finally, trembling with emotion, I slipped my arm under hers. Rita did not pull away, nor did she return the pressure: but I fell into step with her and felt exhilarated and victorious. It seemed to me that I had won a small but decisive

battle against the darkness, the emptiness, and the hostile years that lay ahead.” (36)

That the Jews, Jewishness, Judaism are fundamental elements of the structure of the civilization of the west becomes an implicit and sustained image and idea of *The Periodic Table*. That the Jew is “the grain of salt or mustard” that generates flavor by its edge, by its difference – this is Primo Levi’s discovery in “Zinc” and generalized in “Potassium.” In those episodes he begins to be initiated into the acknowledgement that “I am the impurity that makes the zinc react.” That realization becomes the deep structure of this narrative.

Out of his exploration of what amounts to an early version of chaos theory emerges his characteristic interrogation of the sources of the cognitive dissonance of his experience. It is what will lead him to evoke one of his most characteristic gestures, which punctuates the narrative throughout *The Periodic Table* – let us call it the irony of small differences.

Notes

- ¹ Primo Levi, "Beyond Survival," *Prooftexts*, volume 4, number 1 (January 1984), [translated by Gail Soffer, pp 9 – 21,] p. 10.
- ² Michael Rothberg and Jonathan Druker, "A Secular Alternative: Primo Levi's Place in American Holocaust Discourse," *Shofar*, vol 28, no. 1 (Fall 2009) pp. 105 – 127. See footnote 40, p. 116. Also see Jonathan Druker, "Levi and the Two Cultures," *Answering Auschwitz*, edited by Stanislao Pugliese, New York: Fordham University Press 2011, pp. 103 – 113, and his book, *Primo Levi and Humanism After Auschwitz: Posthumanist Reflections*, Palgrave Macmillan 2009.
- ³ Pierpaolo Antonello, "Primo Levi and 'man as maker,'" *Cambridge Companion to Primo Levi*, Edited by Robert S. C. Gordon, Cambridge University Press 2007, p. 98, quoting in part "Other People's Trades," p. 88, Oll , 812.
- ⁴ Personal communication. Also see "Figural Realism in Witness Literature," *Parallax*, 2004, vol 10, No. 1, 113 – 124. Also see Anne Goldman, "Questions of Transport: Reading Primo Levi Reading Dante," *The Georgia Review*, vol lxiv, number 1, Spring 2010, pp, 69 – 110, a poetic meditation that elicits central issues parallel to scholarly essays like Scher's.
- ⁵ For an extended discussion of Primo Levi, the writer in the text, see my essay, "Primo Levi's Periodic Art: Survival in Auschwitz and the Meaningfulness of Everyday Life," *Resisting the Holocaust*, edited by Ruby Rohrlich, Berg 1998, pp. 115 – 132, especially pp. 123- 4.
- ⁶ And see James Young, *Introduction and Chapter One: "Art Spiegelman's Maus and the After-Images of History," At Memory's Edge*, New Haven: Yale University Press, pp 1 – 41.
- ⁷ "Beyond Survival," op cit, p. 20.
- ⁸ Putting the writer into the story and making his writing process part of the account is one of the characteristics of modernist texts; so doing Primo Levi usually characterized as an Enlightenment writer drawing on realist habits situates his writing in a mode that echoes Heisenbergian views, for the observer is now part of the observed, and his work reframes that which is being looked at. That is, Primo Levi, writer, is inseparable from Primo Levi, Holocaust witness. For a parallel discussion, focalized through the theme of translation, see Lina N. Insana, *Arduous Tasks: Primo Levi, Translation, and the Transmission of Holocaust Testimony*, Toronto: U of Toronto Press, 2009.
- ⁹ "Respintí o male accetti a Torino, si erano stanziati in varie località agricole del Piemonte meridionale, introducendovi la tecnologia della seta, e senza mai superare, anche nei periodi piú floridi, la condizione di una minoranza estremamente esigua. Non

furono mai molto amati né molto odiati; non sono state tramandate notizie di loro notevoli persecuzioni; tuttavia, una parete di sospetto, di indefinita ostilità, di irrisione, deve averli tenuti sostanzialmente separati dal resto della popolazione fino a parecchi decenni dopo l'emancipazione del 1848 ed il conseguente inurbamento, se è vero quanto mio padre mi raccontava della sua infanzia," "Argon," *ibid* 4.

¹⁰ Knopf, 2005, translated by William Weaver, p. 12,

¹¹ Giorgio Bassani, *Il Giardino dei Finzi-Contini*, Torino: Einaudi 1999, p. 24.

¹² "E cioè che I suoi coetanei, all'uscita dalla scuola, usavano schernirlo (benevolmente) salutandolo col lembo della giacchetta stretto nel pugno a mo' di orecchio d'asino, e cantando: 'Ôrije 'd crin, ôrije d'asô, a ji ebreô ai piasô:' 'orecchie di porco, orecchie d'asino, piacciono agli ebrei.'" *Il sistema periodico* 4.

¹³ "L'allusione alle orecchie è arbitraria, ed il gesto era in origine la parodia sacrilegia del saluto che gli ebrei puîsi scambiano in sinagoga, quando sono chiamati alla lettura della Bibbia, mostrandosi a vicenda il lembo del manto di preghiera, í cui fiocchi, minziosamente prescritti dal rituale come numero, lunhezza e forma, sono carichi di significato místico e religioso: ma del loro gesto quei ragazzini ignoravano ormai la radice." *Ibid*, 4 – 5.

¹⁴ Massimo Giuliani calls him "a master in using irony," "Levi's Struggle with the Spirit of Kafka," *Answering Auschwitz: Primo Levi's Science and Humanism After the Fall*, edited by Stanislaw G. Pugliese, New York: Fordham University Press 2011, p. 137.

¹⁵ "Ricordo quí per inciso che il vilipendio del manto di preghiera è antico come l'antisemitismo: con questi manti, sequestrati ai deportati, le SS facevano confezionare mutande, che venivano poi distribuite agli ebrei prigionieri nei Lager." *Ibid*, 5.

¹⁶ For life-histories see William McKinley Runyan's *Life Histories and Psychobiography: Explorations in Theory and Method* (1982)

¹⁷ Critics have argued that Primo Levi made of autobiography fiction. They have claimed that his efforts as a writer – writing and rewriting passages – call into question the documentary validity of some of his memoir. At the recent AJS conference in Boston Berel Lang has argued that Primo Levi does not follow Ranke's dictum that history tells the story as it was but instead embellishes it. On the same panel Nancy Harrovitz notes the ways in which Primo Levi's "I" turns into a "we" in the course of his telling. Note that Primo Levi claims to be writing not autobiography but a generation's life-history. And in generalizing his experience he is constructing a cultural algorithm. He is performing the scientist's role, in showing that the experiment has been reproduced, replicated [See Jonah Lehrer "The Truth Wears Off," *The New Yorker* December 13, 2010,

pp. 52 – 57.] And in reading Primo Levi’s work we must acknowledge the pleasure of the reading of a writing of mixed conventions and genres that echo and reinforce each other’s discoveries and themes in different registers.

¹⁸ Personal Communication.

¹⁹ See Lawrence R. Schehr, Primo Levi’s Strenuous Clarity,” *Italica*, vol 66, no. 4 (Winter 1989): 429 – 443, which also elicits the ways in which Heisenberg and modern science work together in Primo Levi’s account. A scholarly essay, Schehr’s allusiveness makes his discussion at times personal, even poetic in its presentation.

²⁰ My thanks to Francesco Spagnolo for clarifying the hierarchical levels.

²¹ My thanks to Bruce Thompson for this observation as well as a careful reading of the essay that helped to improve it.

²² “Though the heavens may fall” – i.e., whatever happens.

²³ I list some of Mandelbrot’s important contributions: ^Mandelbrot, Benoît (1963). "The variation of certain speculative prices". *Journal of Business* 36: pp. 394–419.

^ J.M. Berger and B. Mandelbrot (July 1963) "A new model for error clustering in telephone circuits," I.B.M. *Journal of Research and Development*, vol 7, pages 224–236. B. Mandelbrot, *The Fractal Geometry of Nature* (N.Y., N.Y.: Freeman, 1977), page 248. See also: Benoît B. Mandelbrot and Richard L. Hudson, *The (Mis)behavior of Markets: A Fractal View of Risk, Ruin, and Reward* (N.Y., N.Y.: Basic Books, 2004), page 201. Benoît Mandelbrot (5 May 1967) "How Long Is the Coast of Britain? Statistical Self-Similarity and Fractional Dimension," *Science*, Vol. 156, No. 3775, pages 636–638.

²⁴ Wolfram Mathematica, url:wolframaalpha.com . The definition offered in Wikipedia summarizes it as follows: “Chaos theory is a field of study in [applied mathematics](#), with applications in several disciplines including [physics](#), [economics](#), [biology](#) and [philosophy](#). Chaos theory studies the behavior of [dynamical systems](#) that are highly sensitive to initial conditions; an effect which is popularly referred to as the [butterfly effect](#). Small differences in initial conditions (such as those due to rounding errors in numerical computation) yield widely diverging outcomes for chaotic systems, rendering long-term prediction impossible in general.[1] This happens even though these systems are [deterministic](#), meaning that their future behavior is fully determined by their initial conditions, with no [random](#) elements involved.[2] In other words, the deterministic nature of these systems does not make them predictable.[3] This behavior is known as deterministic chaos, or simply [chaos](#).”

²⁵ It is worth attending to the Italian phrasing: “Oggi so che è un’impresa senza speranza rivestire un uomo di parole, farlo rivivere in una pagina scritta: un uomo come Sandro in specie. Non era uoma da raccontare né da fargli monumenti, lui che dei monumenti rideva: stava tutto nelle azioni, e, finite quelle, di lui non resta nulla; nulla se non parole, appunto.” (51)

²⁶(Naomi Seidman, "Diaspora and Translation," *Jewish Literatures and Cultures: Context and Intertext*, edited by Anita Norich and Yaron Z. Eliav, Society of Biblical Literature, 2008, p. 247.)

²⁷ Ian Thomsen describes contemporary responses to Primo Levi's conflation of individuals and situations in *The Periodic Table*.

²⁸ "E quella che in questo istante, fuori da un labirintico intreccio di sí ch la mia mano corra in un cderto ammino sulla carta, la segni di queste volute che sono segni; un doppio scatto, in su ed in giù, fra due livelli d'energia guida quest mia mano ad imprimere sulla carta questo punto: questo." (238)

²⁹ See Sander L. Gilman's essay, "To Quote Primo Levi: "Redest keyn jiddisch, bist nit kein jid" ["If you don't speak Yiddish, you're not a Jew"] *Prooftexts* Vol. 9, No. 2 (MAY 1989), pp. 139-160

³⁰ See the first chapter of *The Periodic Table*, in which Primo Levi comments on some of its more notable locutions, including a gloss on the history and origin of the name of the language.

³¹ And the Wikipedia entry continues: "We must withdraw recognition from their judges; they should only have our judges. We must refuse legal protection to the maintenance of the so-called laws of their Judaic organization; they should not be allowed to form in the state either a political body or an order. They must be citizens individually. But, some will say to me, they do not want to be citizens. Well then! If they do not want to be citizens, they should say so, and then, we should banish them. It is repugnant to have in the state an association of non-citizens, and a nation within the nation..."

³² "The differences can be small, but they can lead to radically different consequences, like a railroad's switch points" -- translates "*le differenze possono essere piccolo*," and then goes on: "*ma portare a conseguenze radicalmente diverse, come gli aghi degli scambi*." *Periodic Table*, 63.