

### **The World As Understood by Chemistry in *The Periodic Table***

Science and art are seen to be two different, nearly mutually exclusive disciplines. Scientists are stereotypically rational beings who seek facts – physical evidence – in their attempt to explain the universe. Artists, by contrast, are creative and passionate; hard facts are not quite as crucial in their understanding of the world around them. They communicate their views of the world through their art. Primo Levi, however, cannot be placed in either one of these broad categories over the other. Simply, Levi was both a chemist and a writer, but beyond that, his study of chemistry was far more important to him than a collection of facts. In his novel *The Periodic Table*, each separate anecdote about his life is inspired by a chemical element. Some chapters explicitly involve more chemistry than others, but throughout the novel, Levi uses chemistry to make sense of both the natural world around him and the human beings he interacts with. Through his study of chemistry, Levi gains a framework through which he views the world. In the book's second chapter, titled "Hydrogen," young Levi's experiments with the element parallel his passionate desire to make sense of his surroundings through the study of chemistry; Levi gives meaning to his own existence through this study.

"Hydrogen," the first chapter in which Levi appears, quickly establishes the difference between his approach to the study of chemistry and a more mundane view of the subject. Levi's friend Enrico is an aspiring chemist himself, but chemistry plays a very different role in his life. This contrast is also seen in their personalities. Enrico is practical with a "slow, foot-slogging imagination: he lived on dreams like all of us, but his dreams were sensible...not romantic, not cosmic" (22) in the way that Levi's are. His

career as a chemist consists of “ten years of boring, prosaic work... Enrico asked chemistry, quite reasonably, for the tools to earn his living and have a secure life” (22) as perhaps any ordinary scientist would. For Levi, however, chemistry is not merely a career, but seems to hold some spiritual value as well:

...for me, chemistry represented an indefinite cloud of future potentialities which enveloped my life to come in black volutes torn by fiery flashes, like those which had hidden Mount Sinai. Like Moses, from that cloud I expected my law, the principle of order in me, around me, and in the world. I was fed up with books...and searched for another key to the highest truths (22-23).

The passion Levi feels for his study of chemistry is communicated through his use of metaphors and allusions. Enrico, and most likely other chemists of his time, probably do not see chemistry coming to them in “black volutes torn by fiery flashes” or compare themselves to religious prophets. An older Levi is also not this ambitious; at the end of *The Periodic Table*, he describes his novel simply as “the history of a trade and its defeats, victories, and miseries, such as everyone wants to tell when he feels close to concluding the arc of his career” (224). In “Hydrogen,” however, Levi is just about to embark on his study of chemistry and sees it as the key to some sort of religious or spiritual enlightenment.

This enlightenment that Levi seeks at a young age in “Hydrogen” is the ability to understand, and perhaps even re-create, the phenomena of the natural world. In later chapters, chemistry allows him to better understand the human relationships in his life, but his focus in “Hydrogen” is on nature. Nature is what inspires Levi to study chemistry in the first place. He states that he “would watch the buds swell in spring, the mica glint

in the granite, my own hands, and I would say to myself: ‘I will understand this, too, I will understand everything, but not the way *they* want me to’” (23). He finds “a mystery pressing to be revealed” (23) in everyday natural phenomena and in objects that he comes in contact with on a daily basis. Even at his young age, Levi has an appreciation for the complexity of the universe – acknowledging that even the most brilliant minds cannot comprehend every detail, let alone be able to recreate it – but is ambitious enough to try to conquer it in some way. Chemistry, therefore, becomes the framework through which he approaches this monumental task.

Even the most simple “experiments” that Levi undertakes in this chapter have some connection to his desire to understand the world around him. He and Enrico spend some time bending glass test tubes by heating them, then pulling them into thin filaments – hardly a true chemical experiment. Levi’s immediate thought upon accomplishing this task is that the filaments are “thin and flexible, like silk. So then silk and cotton too, if obtainable in a massive form, could be as inflexible as glass?” (25). He likens his handling of the test tubes to fishermen’s handling of silkworms in order to obtain silk threads to use as fishing lines. The two physical processes are actually quite similar. Levi is struck not only by the cruel manner in which the silkworms die, but “because of the straightforward and audacious act of ingenuity it presupposed on the part of its inventor” (25). Imitating the killing of a silkworm by heating a glass tube allows Levi to gain insight into the subtle workings of the natural world.

Studying chemistry is not only a means to gaining understanding of the world to Levi, but also to bring meaning to his life. In the chapter preceding “Hydrogen,” titled

“Argon,” he somewhat cheekily details the history of his ancestors, whom he compares to the title element for being “inert in their inner spirits, inclined to disinterested speculation...All the deeds attributed to them...have in common a touch of the static, an attitude of dignified abstention, of voluntary (or accepted) relegation to the margins of the great river of life” (4). He makes another reference to his family history in “Hydrogen” upon his arrival in the laboratory. He feels embarrassed,

an embarrassment tied to an ancient atrophy of ours, of our family, of our caste. What were we able to do with our hands? Nothing, or almost nothing. The women, yes...but we, and our fathers? Our hands were at once coarse and weak, regressive, insensitive: the least trained part of our bodies...they had learned to write, and that was all...If man is a maker, we were not men: we knew this and suffered from it (24).

By working with his hands in the chemistry laboratory, Levi can overcome the embarrassment he feels on behalf of his family. Unlike his inert ancestors, he can train his hands to handle dangerous chemicals and manipulate laboratory equipment. He does not want to live his life on “the margins” but rather as “a maker,” and it pains him to think that anyone that shares blood with him would want to do anything different. Perhaps Levi even feels so compelled to achieve so much in the field of chemistry is due to the fact that his ancestors’ existence made no mark on the world (at least as he describes them).

Just as Levi compares his family members to the inert gas argon, his qualities resemble those of hydrogen, adding another dimension to the interaction between chemistry and his life. Other chapters also contain parallels between the title elements and the characters they feature. For example, Sandro in “Iron” is strong and resilient, but a commoner by birth, just as iron a strong metal but also one of the most abundant

elements on Earth. Hydrogen is a special element to Levi, an element that “burns in the sun and stars, and from whose condensation the universes are formed in eternal silence” (28). It is not exactly “condensation” of hydrogen that forms the stars in the universe, but the fusion of hydrogen to helium that allows stars such as our sun to emit light. This light is essential to life on Earth. Hydrogen is also contained in water, which is “bound to man, indeed to life” (24) as Levi states. Just as hydrogen is so important to human existence, Levi desires to be some god-like figure in the field of chemistry by knowing and understanding all in the natural world. Even after causing a small explosion, Levi feels “a kind of foolish pride, at having confirmed a hypothesis and having unleashed a force of nature” (28). Hydrogen, which is a very volatile element, is unstable as a single atom – exactly the opposite of the noble gases such as argon. Levi fittingly seeks to differentiate himself completely from his stable ancestors and follow his own, unpredictable path in life. In the “Hydrogen” chapter, the title element physically appears in an electrolysis experiment. The element takes on much greater meaning than this, however, by acting as a metaphor for Levi himself.

The brief physical interaction that Levi does have with hydrogen not only teaches him a lesson about its volatility, but also teaches him a life lesson. He attempts to show off his skill and knowledge to Enrico by setting up a cathode jar. When Enrico doubts that Levi’s setup did in fact produce hydrogen and oxygen as it is supposed to, Levi’s pride is hurt. “The objection struck me as insulting: How did Enrico dare to doubt my statement? I was the theoretician, only I: he, although the proprietor of the lab...should have abstained from criticism” (27). In attempting to prove himself correct, Levi causes

“an explosion, small but sharp and angry [where] the jar burst into splinters...and there remained in my hand, as a sarcastic symbol, the glass ring of the bottom” (27). The hydrogen explosion humbles the young, ambitious, arrogant aspiring chemist. As much as Levi articulates his desire to master his understanding of the subtle nuances of the universe, he quickly realizes that he needs to learn the basics before he can conquer all. If a simple cathode jar brings him to the point where his “legs were shaking” (27), what will the rest of his career entail? The explosion could also serve as a reminder to Levi that the universe is so complex that not even he can master its intricacies in the way that he desires to. Even when attempting to prepare nitrous oxide, or laughing gas, he and Enrico manage to create “a choking fog, which was not at all laughable...It was neither simple for very amusing” (26). In later chapters in the book, Levi does not exhibit the same overconfidence that he shows in “Hydrogen.” He studies chemistry in the traditional, tried-and-true manner – in a university. Levi’s chemical experiments in this chapter teach him just as much, or more, about life than they do about the field of chemistry itself.

*The Periodic Table* is not a book about chemistry, and Levi claims that it is not an autobiography. While it may not fit into either category, each story in the book weaves chemistry into some significant moment in Levi’s life. The actual events in each story may seem mundane or trivial, but they carry some subtle importance. In “Hydrogen,” we see Levi’s views of chemistry as a young boy. He sees the study of chemistry as an avenue to conquering the physical world and as a way to attain some sort of spirituality; through this, his life will take on meaning. A few failed experiments, especially his interaction with hydrogen in this chapter, teach him that he is not quite as invincible and

powerful as he might think. Levi himself possesses or seeks to possess many of the same qualities as hydrogen: volatile, unstable, and fundamental to the physical and biological processes in the universe. Chemistry therefore plays many varied and important roles in this chapter and, as we see in other chapters, throughout his life. He is brilliantly able to weave the science that he is so passionate about with the art of telling his most personal stories.