(Primo Levi: "Carbon", from *The Periodic Table*, Schocken Books, 1984, pp. 224-233.)

Ask Gale Rhodes for a copy of the Levi  essay.

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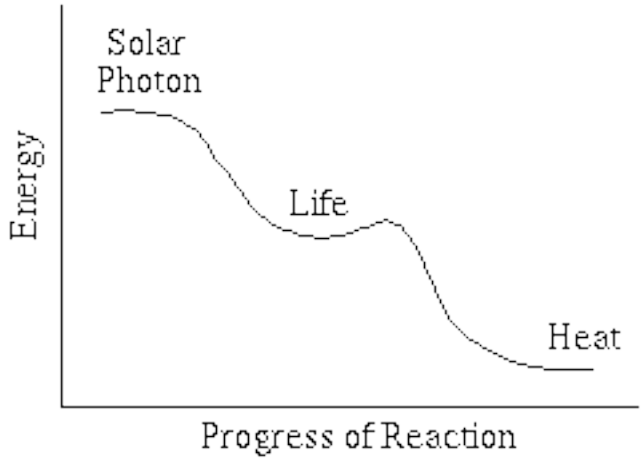
*Images from Chemistry*
Gale Rhodes

Levi's story “Carbon” is a poetic fantasy about the life of a single carbon atom. The story is filled with images that animate the chemist's world. To a chemist, the molecular world is real, and the invisible events that power the world around us may escape our vision, but they do not escape our notice. This imaginary world is busy beneath what we see, giving substances their colors, tastes, smells, shapes, and capacities for change.

One of my favorite images in Levi's atomic biography is in the paragraph that ends at the top of page 230, where he describes life as "an inserting itself, a drawing off to its advantage, a parasitizing of the downward course of energy, from its noble solar form to the degraded one of low-temperature heat. In this downward course, which leads to equilibrium and thus death, life draws a bend and nests in it."

Perhaps only a chemist or student of chemistry will feel the full impact of this metaphor. Each time I encounter this passage, I picture a descending reaction-progress curve, that deceptively simple monster of kinetics, with the solar photon as the reactant at the summit of a sharp downward slope, and heat at the base. Then I picture life as a stable intermediate in the midst of this curve, living its metastable existence in a shallow curl ("... life draws a bend and nests in it"), a valley that briefly interrupts the slope. This valley represents, for instance, the conservation of the photon's energy in the form of NADPH, followed by the NADPH-dependent reduction of carbon dioxide to make glucose, and subsequent oxidation of glucose to carbon dioxide, all of them intermediates that cancel out of the overall balanced equation, all of this powering life:




Levi's metaphor reminds us that the unlikely, energy-requiring process of life and the inevitable, spontaneous decline of the photon's energy are coupled reactions in the metabolism of the earth.