

Primo Levi and the Chemistry of Literature

David Keffer

Computational Materials Research Group

The Department of Chemical Engineering

The University of Tennessee

Knoxville, TN 37996-2200

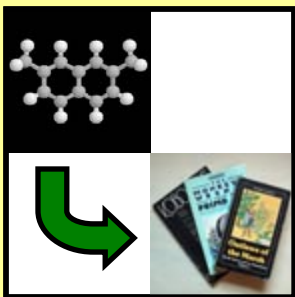
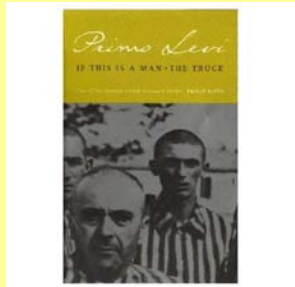
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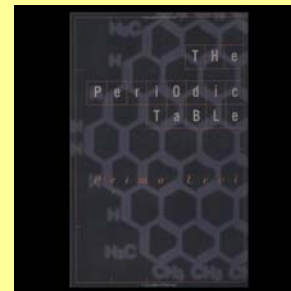
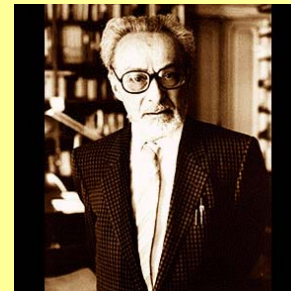
Drew University

September 20, 2006

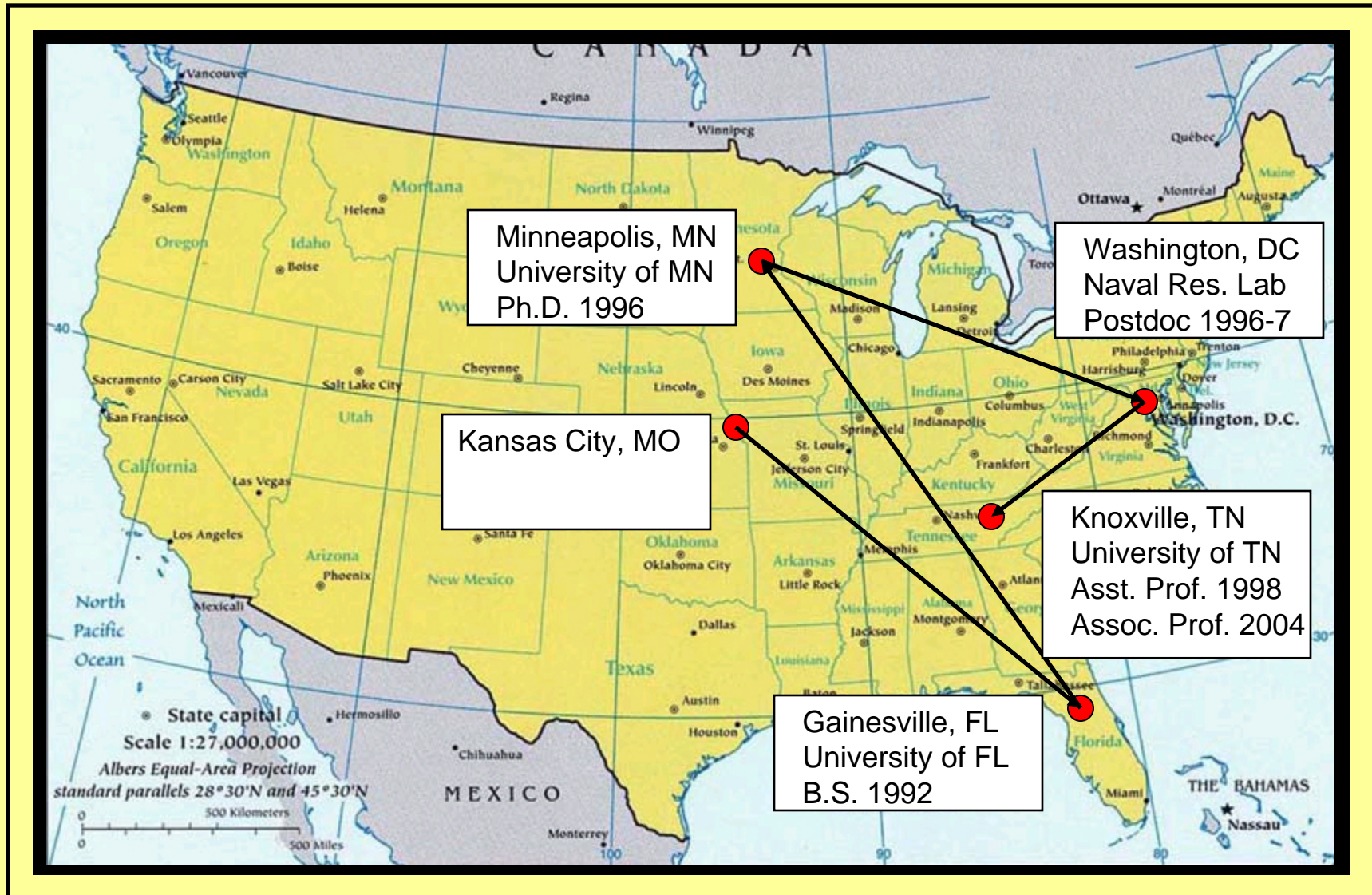
Outline



- A little bit about me
- A brief Levi biography
- Levi's literature
- Science in Levi's Work
- Science in literature
- Literature in Science

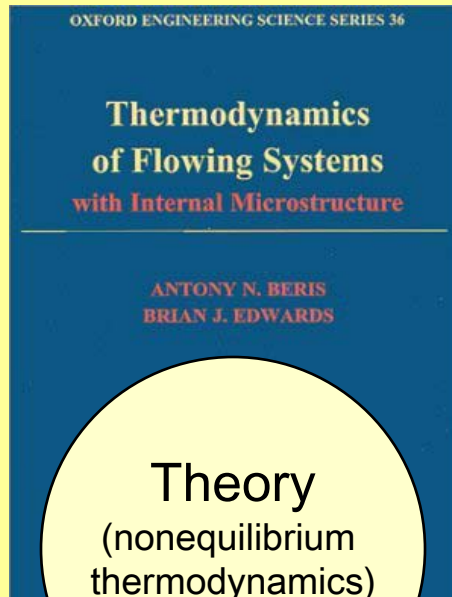


David Keffer

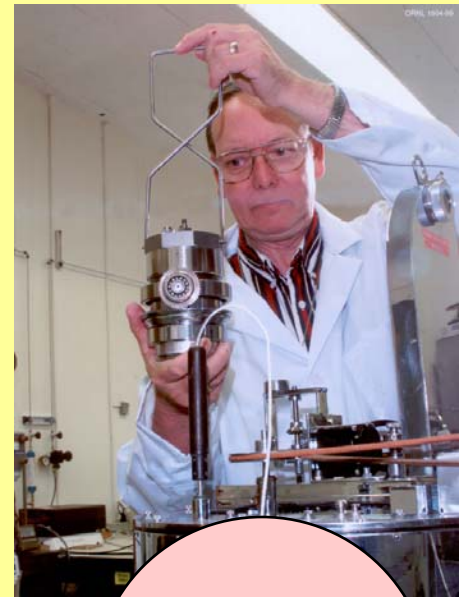




Simulation
(molecular dynamics)
Keffer



Theory
(nonequilibrium thermodynamics)
Edwards



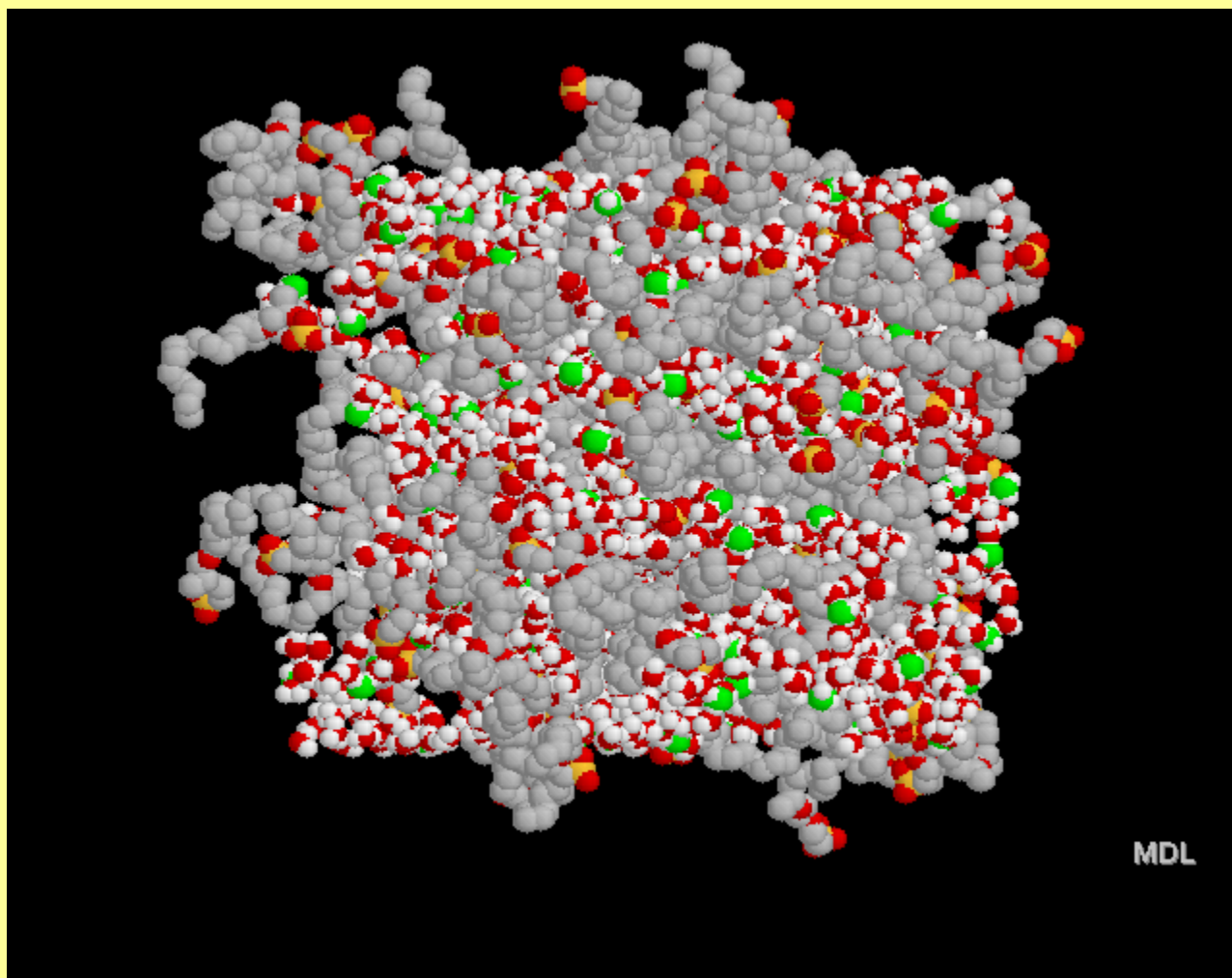
Experiment
(physical property measurement)
Steele

Multiscale Materials Modeling
We develop and apply mathematically rigorous algorithms to probe structure-property relationships of industrially relevant materials.

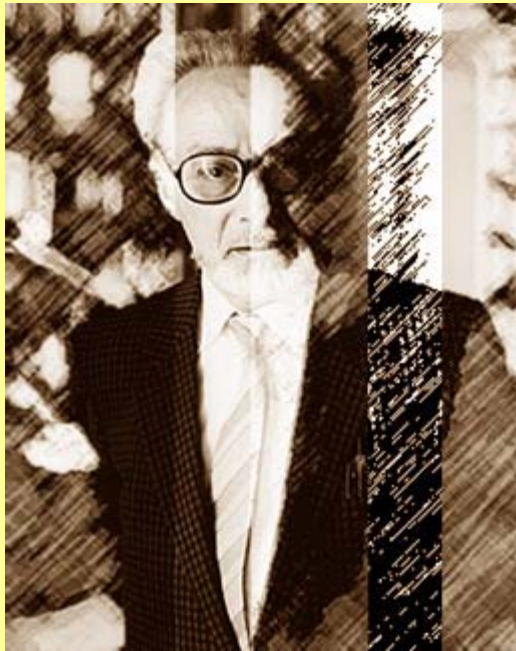
hydrated fuel cell membrane

$$\lambda = 9.63$$

CF₂ = gray
O of H₂O = red
O of SO₃⁻ = red
O of H₃O⁺ = green
S = orange



Primo Levi



Allen Ruch at “The Modern Word”

<http://www.themodernword.com>

A website devoted to international “post-modern” literature

co-author of the Primo Levi article at The Scriptorium

<http://www.themodernword.com/scriptorium/levi.html>

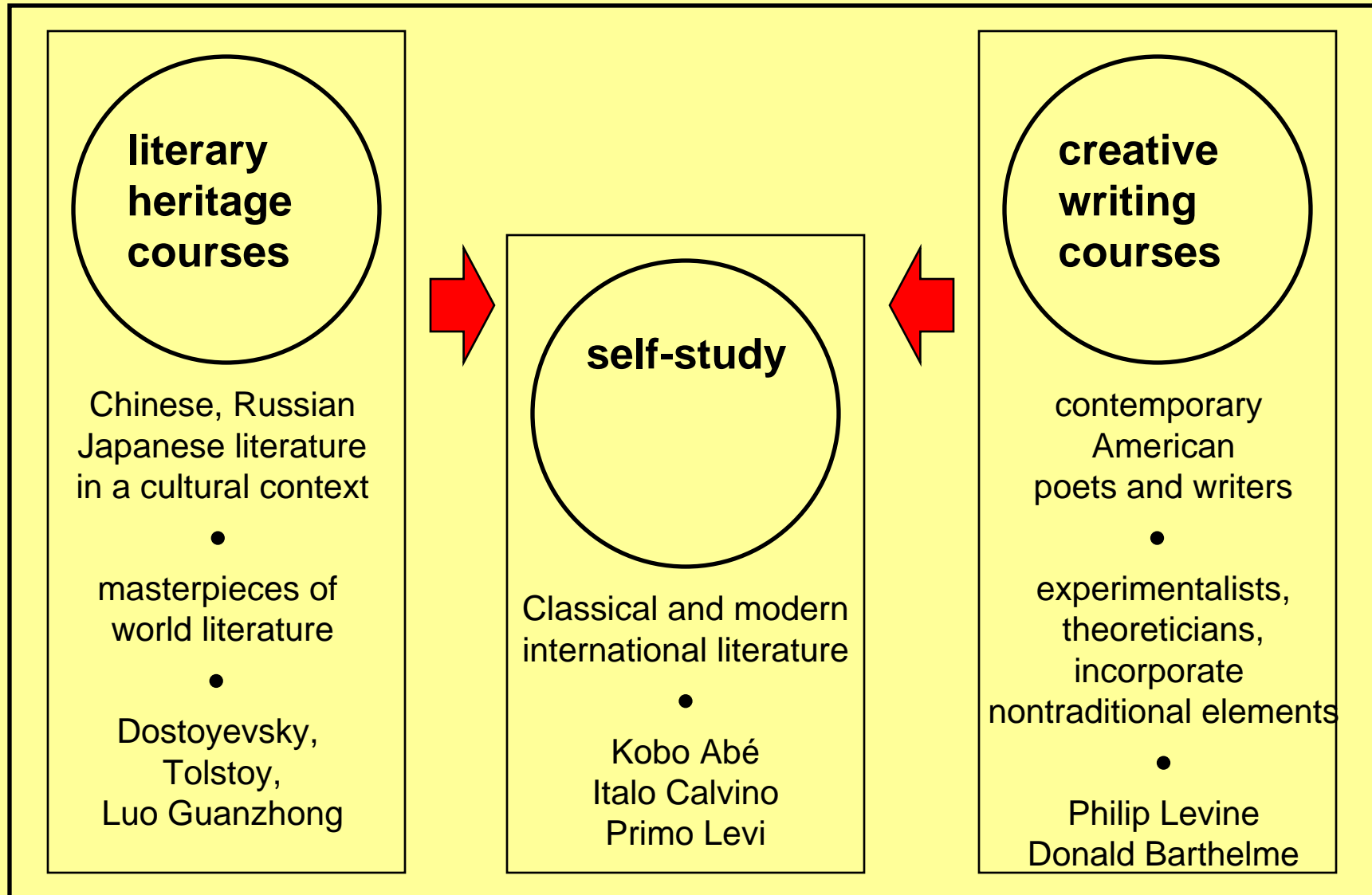
published December, 2001

The Scriptorium is a section of sites devoted to twentieth-century experimental writers

What prompted me to write such an article?

A combination of

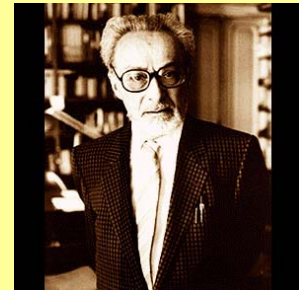
- a life-long interest in world literature as an avocation
- my interest in materials modeling as a vocation
- a curiosity about the intersection and overlap of science and literature



Levi – Biographical Notes

Primo Levi (July 31, 1919 – April 11, 1987)

- born in Turin, Italy of Jewish parents
- studied chemistry at the University of Turin from 1937-41 despite race laws prohibiting Jews from attending state schools.
- attempted to join the partisan movement in 1943 but was arrested by the fascist militia
- February 11, 1944, transported with 650 Italian Jews to the Nazi Concentration Camp at Auschwitz
- survived by working in a synthetic rubber factory in the Monowitz labor section of the camp
- “fortuitously” contracted Scarlet Fever so that he was left behind on the forced death march when the Germans abandoned the camp to the approaching Russian Army
- Auschwitz was liberated on January 27, 1945
- returned to Turin on October 19, 1945



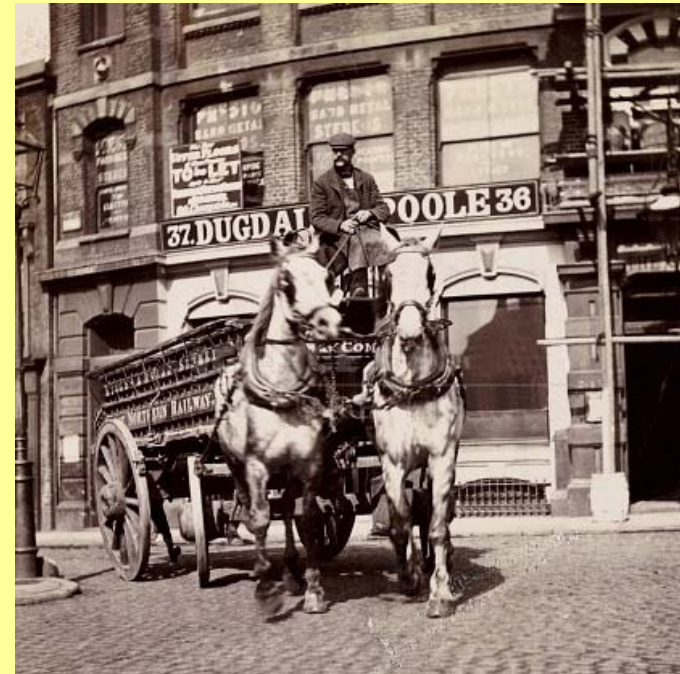
Monday

Monday

Is anything sadder than a train
That leaves when it's supposed to,
That has only one voice,
Only one route?

There's nothing sadder.
Except perhaps a cart horse,
Shut between two shafts
And unable even to look sideways.
Its whole life is walking.

And a man? Isn't a man sad?
If he lives in solitude a long time,
If he believes time has run its course,
A man is a sad thing too.



<http://www.scienceandsociety.co.uk>

--Primo Levi
January 17, 1946
From *Collected Poems*
Faber and Faber, London, 1988.

26 years old
three months after his return to Turin

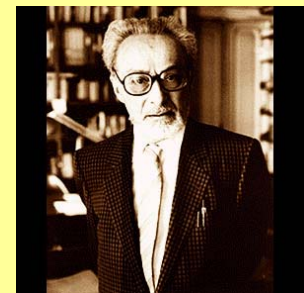
I'm a normal man with a good memory who fell into a maelstrom and got out of it more by luck than by virtue, and who from that time on has preserved a certain curiosity about maelstroms large and small, metaphorical and actual.

Primo Levi
From "Premise" contained in
The Mirror Maker (Schocken, 1989)
translation of Racconti e saccì , 1986

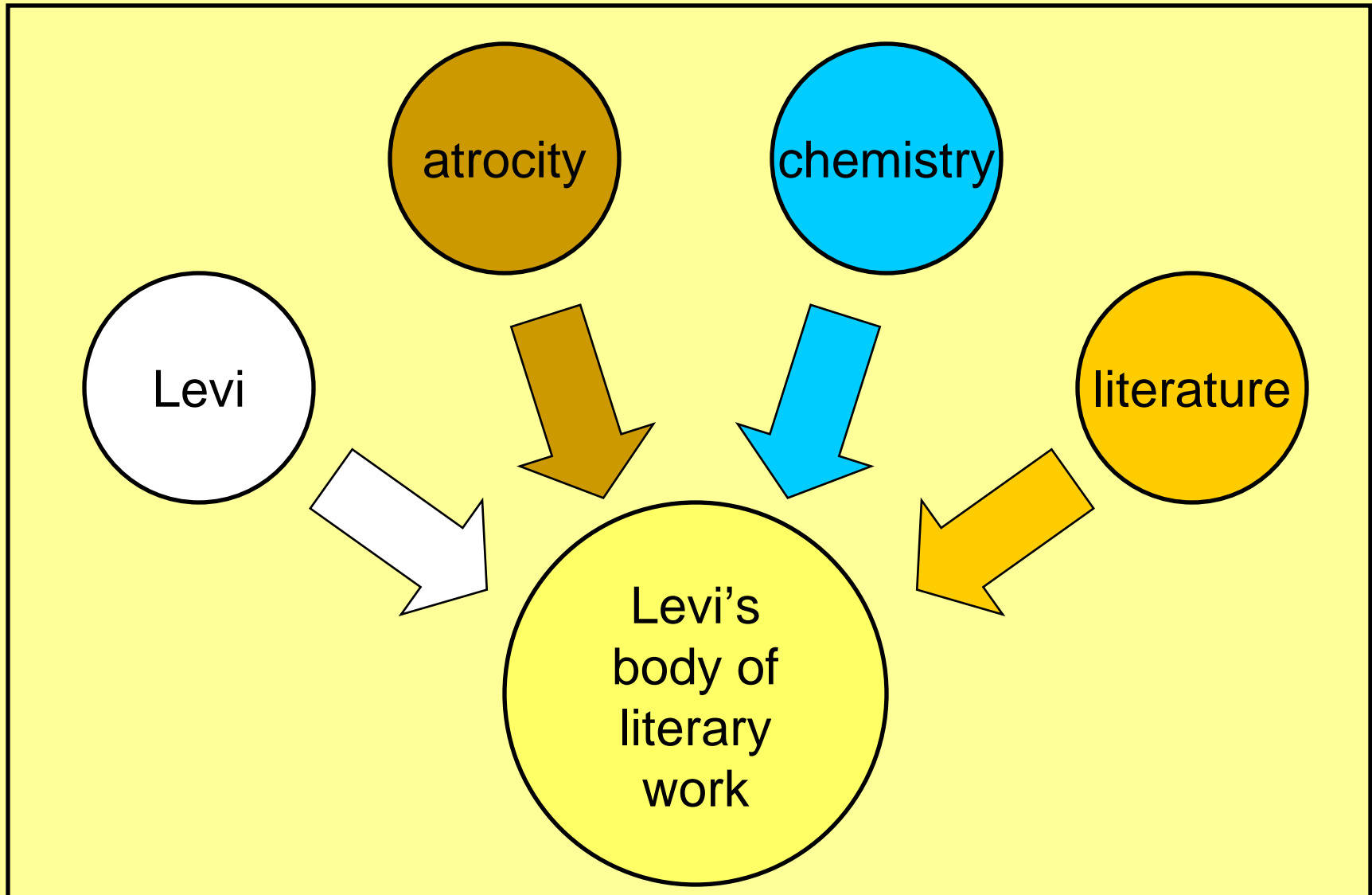
67 years old
41 years after his return to Turin

Levi – Biographical Notes

- Levi became an industrial chemist at the SIVA chemical factory in Turin
- began to write about his experience in Auschwitz almost immediately, but was largely ignored
- in 1958, a change in public attitude led a second publication of his first work, translated as *Survival in Auschwitz*, to critical success
- in 1977, retired from his position as manager of SIVA in 1977 to devote himself full-time to writing
- in 1987, died as a result of accident or suicide, the debate is unresolved



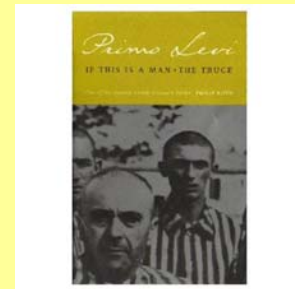
The Ingredients in Levi's Work



Levi's literary work can be divided into two categories.

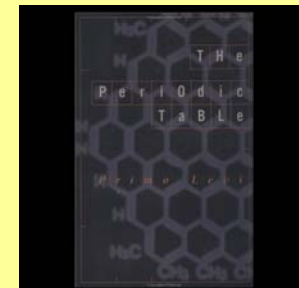
Accounts regarding Auschwitz

- mostly nonfiction, e.g. Survival in Auschwitz
- one novel, If Not Now, When?



All other topics

- mostly fiction, much of it has an influence from chemistry and engineering, e.g. The Monkey's Wrench
- some are nonfiction, essays, columns published and unpublished from *La Stampa*, e.g. Other People's Trades



alloxan

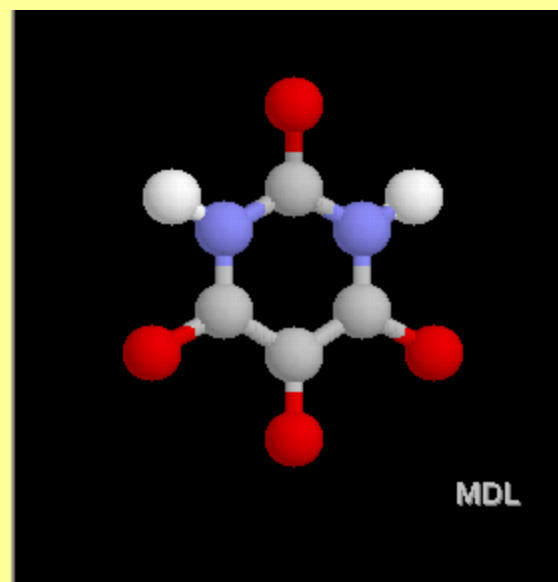
In chemistry, Levi found an avenue for self-determination. If he put in effort to understand a particular material or process, then his efforts would be rewarded. He would gain an understanding, which he could use to improve the material or process.

This gift of self-determination imbues in Levi a delight or reverence (perhaps a delighted reverence) for his work.

He writes of alloxan:

It is a pretty structure isn't it? It makes you think of something solid, stable, well-linked. In fact it happens also in chemistry as in architecture that "beautiful" edifices, that is, symmetrical and simple, are also the most sturdy: in short, the same thing happens with molecules as with the cupolas of cathedrals or the arches of bridges.

from *The Periodic Table*



red = oxygen
gray = carbon
blue = nitrogen
white = hydrogen

The Monkey's Wrench



Libertini Fausson, the fictional protagonist of *The Monkey's Wrench*, is a "rigger;" a type of construction worker who directs the practical assembly of cranes and other equipment used in the construction of bridges, dams, and other industrial structures.

In one sense it is a character study of Fausson, where Levi uses Fausson to describe how work (in Fausson's case rigging and in Levi's, chemistry) provides a sense of self-determination, which ultimately can become a great source of satisfaction.

Fausson is a poor storyteller, digresses and maintains a slow pace. The stories of construction lack any sort of climactic resolution. Within these stories told by a poor narrator and lacking a plot lies a charming uniqueness.

The Monkey's Wrench (Summit, 1986) translation of *La chiave a stella*, 1978

The Monkey's Wrench



We agreed then on the good things we have in common. On the advantage of being able to test yourself, not depending on others in the test, reflecting yourself in your work. On the pleasure of seeing your creature grow, beam after beam, bolt after bolt, solid, necessary, symmetrical, suited to its purpose; and when it's finished you look at it and you think that perhaps it will last longer than you, and perhaps it will be of use to someone you don't know, who doesn't know you. Maybe, as an old man, you'll be able to come back and look at it, and it will seem beautiful, and it doesn't really matter so much that it will seem beautiful only to you, and you can say to yourself, "maybe another man wouldn't have brought it off."

For Faussonne and Levi, work is life and life is work. Faussonne summarizes this perspective when he says, "You have to take what life offers. I mean what the factory offers." And again, when he says, "For me, every job I take is like a first love."

The Monkey's Wrench (Summit, 1986) translation of *La chiave a stella*, 1978

NATCA stories

Four stories ("Order on the Cheap," "The Measure of Beauty," "Full Employment," "Retirement Fund") concern a Mr. Simpson, a salesman for the mysteriously named NATCA corporation. In each of these stories, Simpson approaches the first-person narrator (basically Levi himself; a trend that will continue throughout his work) with a different futuristic instrument. These devices include a mimer, which perfectly duplicates three dimensional objects; male and female Kalometers, which measure beauty; another device that allows Simpson to communicate and make business deals with dragonflies, bees, and ants; and finally the spectator, that allows the user to put on goggles and relive the experiences of others.

This futuristic technology is a kind of science fiction, through which Levi can explore the human reaction to the instruments and how the products might be used, and eventually misused, to the benefit or detriment of mankind.

The Sixth Day (Summit, 1990) translation of *Storie naturali*, 1966

A Scientific Basis for the Will to Exist



"Westward," explores the biological imperative to live with a traditional scientific approach. It begins with a study of lemmings rushing into the sea. It is observed that, within the lemming population, there is a distribution of enthusiasm in the execution of this mass suicide. By capturing individuals across the distribution, the researchers are able to isolate a hormone in the laboratory, which dictates the biological imperative to survive. The researchers next begin to search through the human population for a similar hormone or lack thereof.

During the entire story, Levi uses the investigation as a canvas upon which he can explore his own understanding of the purpose of existence and the motivation of people who continue to exist, even when they no longer perceive an ulterior purpose in their existence. The story is fundamentally a philosophical discussion of whether a biological or chemical imperative is sufficient to convince an existentialist to maintain their existence. On both the philosophical and the fictional level, the story is delightfully unique.

The Sixth Day (Summit, 1990) translation of *Storie naturali*, 1966

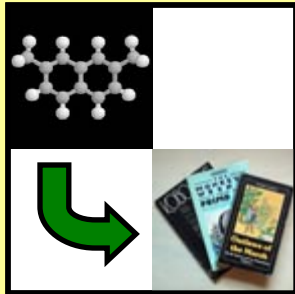
Other People's Trades is a collection of 44 essays written approximately from 1969 to 1985, many of them collected from his published columns in the Turin newspaper, *La Stampa*.

Levi writes:

The future of humanity is uncertain, even in the most prosperous countries, and the quality of life deteriorates; and yet I believe that what is being discovered about the infinitely large and the infinitely small is sufficient to absolve this end of the century and millennium. What a very few are acquiring in knowledge of the physical world will perhaps cause this period not to be judged as a pure return to barbarism.

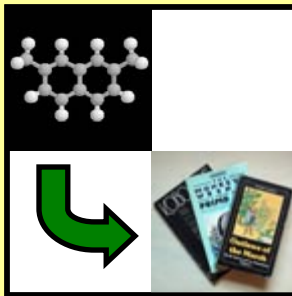
Levi's statement is loaded with flagrantly anti-egalitarian notions -- a trait conspicuously absent in such works as *The Monkey's Wrench*, where the rigger Faussonne is honored for the lowly but pure work that he performs.

Other People's Trades (Summit, 1989) translation of *L'altrui mestiere*, 1985



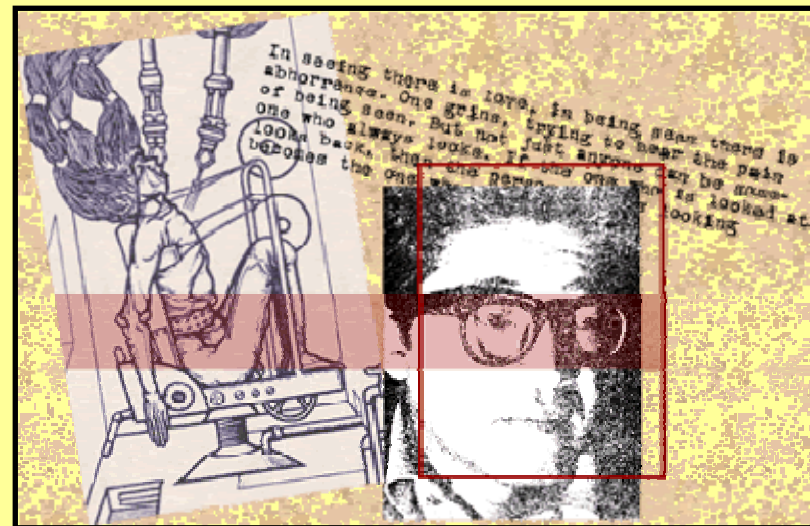
The presence of science in literature.

- **Literature containing futuristic technology**
 - Another kind of magic realism, in which the fantastic is introduced into an otherwise ordinary story to gauge human reaction
 - Levi's NATCA stories
- **Literature employing the scientific process**
 - Levi's "Westward"
 - Most of the body of work of Kobo Abé
- **Literature influenced by scientific progress**
 - the whole of post-modern fiction

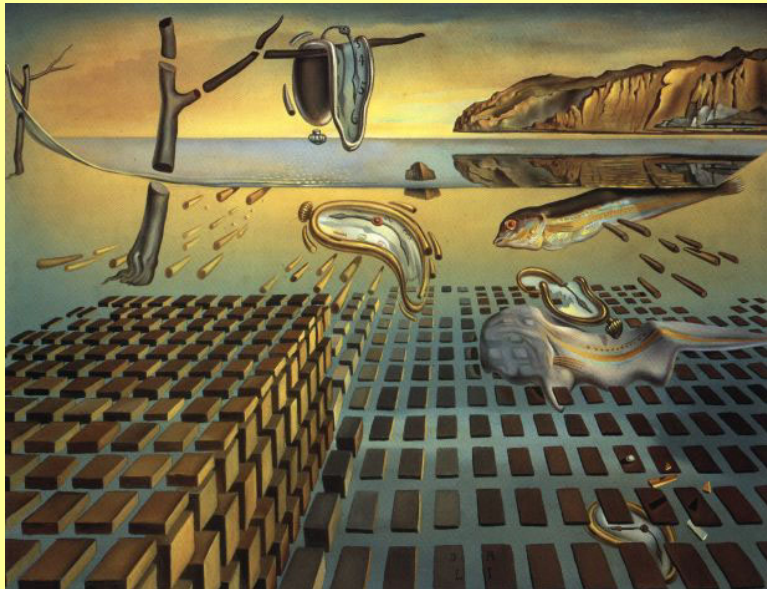


No man or woman is wooed by theory alone.
-- Kobo Abé, *The Woman in the Dunes*

In declaiming the ability to woo by theory, Kobo Abé betrays his desire to do exactly that. Trained as a physician, Abé has a mindset which leans toward the scientific method -- one of hypothesis, experiment, result, and conclusion. In this case, the original hypothesis posed that a man could woo by theory alone, the experiment was the attempt of a wooing guided by theoretical principles, the result a failure, and the conclusion drawn is that such a wooing is not possible, disproving the original hypothesis.



The Woman in the Dunes (Japanese publication *Suna no Onna* 1962, English Publication 1964)



The Disintegration of the Persistence of Memory (1952-1954)

Salvador Dalí (1904-1989)

melting clocks: space-time continuum can be bent by gravity (from relativity)

blocks: quantization of matter (from quantum mechanics)

Scientific progress can result in the destruction of classical human truths.

- distinction and sovereignty of man over other animals
- the indivisibility of the atom
- the special place of the sun and the Earth in the universe

These revelations that long-held truths are not invulnerable, gave strength to the impulse to question everything, which led to the birth of postmodernism and the experimental abandonment of classical literary and artistic forms and formulae.



... chemical engineering is not an isolated subject; . . .it is not limited to applied science, but rather is a significant part of daily life, related to health, to human relationships, to politics and sociology and law, to the way we think and feel about ourselves as individuals and as members of society, to our aspirations, our hopes, and our fears.

Prausnitz, J.M., Chemical Engineering Education, 32(1), 1998, p. 14.



Titian (1488-1576)

Titian's "Sacred and Profane Love", a copy hung in the Mathematical Sciences Institute of the University of Göttingen in the early twentieth century and had been retitled, "Pure and Applied Mathematics".



John M. Prausnitz

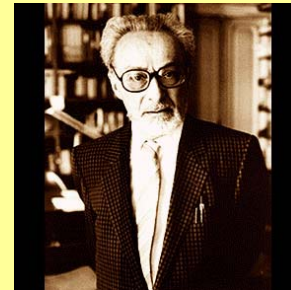


Medical Humanities, in its most basic connotation, deals with the intersection of human experience, medical practice, and scientific technology. The field transcends the disciplinary boundaries of academe and engages all aspects of human culture-science, history, ethics, philosophy, literature, religion, art-in a discursive dialogue centered on what medicine means in relation to the individual and society.

Why does one write?

Why does one write?

Because one feels the drive and the need to do so.
To entertain oneself and others.
To teach something to someone.
To improve the world.
To make one's ideas known.
To free oneself from anguish.
To become famous.
To become rich.
Out of habit.



Other People's Trades (Summit, 1989) translation of *L'altrui mestiere*, 1985

Acknowledgements



Allen Ruch at “The Modern Word”

<http://www.themodernword.com>

co-author of the Primo Levi article at The Scriptorium

My University of Florida literature teachers, especially Dr. Cynthia Chennault

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Dr. Edie Lawler of Drew University for the invitation to speak today.