Science and Judaism

by Roald Hoffmann

(The text that follows come from a talk at a ceremonial function at the Technion in Haifa.)

There are some things to get out of the way. One is the notion that Jews are smarter than other people, the other is that scientists are smarter than other people, two false arms of a bizarre syllogism forming, that all scientists are Jews, or the reverse. That scientists are smart is a construction of our education, perhaps the hammering into us by a teacher of an excessive valuation of mathematical thinking. The way scientists conduct their personal or financial lives should disabuse you of that notion. As for Jews being smart or smarter as a people—well you could imagine a non-Jew thinking that. But then just send him or her for a few years to Israel . . . and ask them again.

How then to account for the disproportionate number of Jews in science and medicine, and their success in these professions? Here are some personal thoughts, some not at all original, some idiosyncratic.

First: There is the background in the period of prevailing observance in the Jewish community (up to ~1900), of respect for learning. Not for nothing did the prophet Muhammad call the Jews the people of the Book. Jewish society valued not only the Book, but its scholars. Look at the heroic figures in exile, the role models—Rashi and Saadia Gaon, Nachmanides and Maimonides.

Second, the mode of religious study in the centuries of exile had (and continues to have today) a curious parallel with what came, later, to be the

method of European science. The Talmud and the fifteen hundred years of commentary and responsa since then are a discourse ingeniously suspended between the real and the hypothetical, with an emphasis on the real. There is little theology as such in the Talmud. Instead, the rabbis debate how one decides whether an edible side of beef found in the street is deemed *kosher* or not, and in the course of a discussion of the material science of *sukkah* construction examine a flight of fancy—can one use a living elephant for the side of a sukkah.

Science, a western European invention,[1] is the channeling of human curiosity into the observation of nature for the purpose of gaining reliable knowledge. In science, flights of inspired theoretical fancy are continually checked with the reality of our senses or instruments. Contact points with the real world and daily experience are what Talmud and science have in common.

Talmudic debate, as recorded 1500 years ago, or as it takes place in the study hall today, has a remarkable dialectical structure, of opposing views evoked and debated, and a logic of citation, of invoking what had been said before. To be sure, there is a vast difference between science and religion in the extent to which the Oedipal drive to—if not kill then at least deny our fathers—is privileged relative to respect for tradition. But in both Talmud and science, I see a parallel working out of a tense, creative balance between tradition and change.

But something more was needed, and here my observant colleagues may be angry with me. To have the potential for science to materialize in a people you need the creative flux of assimilation. If a person is *the other*, an immigrant to a country, a minority group within a country, if one is *out*, and *if* (oh such a big *if*) the society opens up, a little or a lot, then those segments of the population primed with a tradition of scholarship and a family support structure will flourish. Be they Jews, Chinese or Indians.

Let me explain, from my own experience, why being the other helps. When I came into the sixth grade at P.S. 93 Queens, a week after we arrived in America, I knew just a handful of English words. Of course, I learned quickly, as children do. But in the playground at recess, in class as well, I was outside the natural groupings of the kids. I listened, I watched—I observed. I formed hypotheses, often unspoken, about why kids ran or stood still on a base. Or what the teacher found to praise in a paper she read by one of the students. She told the student that he could find a biography of Simón Bolívar in the school library. The idea (where one might look for information) registered. Watching from outside engenders a mindset of reflection and care. Which is a pointer to science.

But there is something else that I see as singularly Jewish (which leads me to an eventual worry). Throughout history, until the mid-nineteenth century (the acceptance of the idea of a secular Jew of course varied from country to country), being Jewish meant only being observant, religious Jewish. This was insured by internal forces, among them the abiding belief in the compact between God and his People. And it was sealed by external forces, the relentless persecution and isolation (with some exceptions) by the nations.

Then things changed. There was an opening in Europe and in America, and here in Israel the people founded a state. Through the now porous walls of the ghetto the Jews flowed out. And assimilated. In the process, most lost their orthodoxy and had to find a new identity to replace their religious belief, for you don't lose millennia of tradition so easily.

I think many Jews found a new spiritual center in the ideal of justice and social service; I am certain that it is this side of socialism (now so sadly lost when we did away with Marxism for its other faults) which attracted Jews.

And the other replacement for the faith that Jews lost was an alternative way of making sense of this beautiful and terrible world. This was science. I think science for many Jews has been a substitute for religion.

I say this not meaning to offend my brothers and sisters who have chosen a still different way, that of Ramban and observant Jewish scientists, the way of *torah u madda, of Torah and secular knowledge.* I admire them. But I speak of the overwhelming majority of successful Jewish scientists who are not observant religious.

This brings me to a concern about engineers and scientists and their education, whether it is at the Technion or my Cornell. A meaningful life always has been a matter of matter and spirit, of *parnuse* and *torah* in its time. Where do your engineers and scientists, our engineers, get an exposure to the spiritual signposts of our world—to the poetry of Solomon ibn Gabirol and Sor Juana Inéz de la Cruz, to the Pillow Book of Sei Shōnagon, to Thucidydes' account of the Peloponnesian War, Ibsen's "Wild Duck," to Caravaggio's paintings? If I look at the education of your scientists, the answer I get is, "Try the *gymnasia,* the *lycées* or the students' spare time." You know, I don't trust our high schools to provide the general education they once did. Moreover, I believe that it takes maturity, the maturity that comes with university age, for these cultural masterpieces to be understood. A precocious student may read Pushkin's *Yevgenyi Onegin* at age 16. But this novel in verse will have a very different impact on them at age twenty-one—the difference is that at twenty-one it is likely that she or he have fallen in love. And out of it.

The world of the transformers of matter of today and tomorrow—engineers and medical researchers and scientists—is hardly the nineteenth century, with its uncritical, almost evangelical valuation of technological progress into which I think Jews (you may disagree) have bought in with a vengeance. It is essential that the engineers and scientists of the future, the Jewish engineers and physicians of the future especially, be inspired by the cultural legacy and social concern of our past. That means actually our religious past, and the broader culture in which we live. It is important for all of us to create the educational structures that educate our technologists and scientists (and not just train them), to help them value the spiritual, literary, artistic sides of the only world we have.

Notes

1. The origins of science are the subject of some debate. My personal view is that there are certainly reliable technological, medical, astronomical, and mathematical practices that originated elsewhere, in Arabic and Chinese cultures. We also admire the mastery of silver, gold, and copper metallurgy and textile dyes in Andean cultures. Non-European societies have also fostered at one time or another the institutionalized skepticism and open exchange of information that are part of the system of science. And simple curiosity underlies it all. But it did really come together in Europe.