Wandering Thoughts on the Migration of Knowledge

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My wife, Earlene Craver, and I became friends of Harald’s a quarter century ago because of our common interest in the prewar migration of economists away from Hitler and Stalin. In reading a variety of sources on the Intellectual Migration, dealing with fields from nuclear physics to classical music, I had formed the belief that the migration had been significant also in enriching American economics and in contributing to its long-lasting domination after the war. But there is one question of some importance that none of the three of us considered at the time, namely: What do migrating scientists carry with them that is not transmitted by their published works?

This is a question about how we communicate scientific knowledge -- or, at a more pedestrian level, just economic knowledge. There are a number of related questions, some of which concerns us in our daily work, such as: Why do all the best graduate students in the world “have to” flock to a small number of Economics Departments, most of them in the United States? After all, the writings -- and by now the very latest writings -- of the faculty members of those departments are easily available at a click of the mouse.

We all understand that the question: ‘Why don’t the ideas migrate just as well without the people?’ is a question best fit for philosophers and cognitive scientists. I don’t fancy myself qualified for either group. But I think it is a

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2Yet another question (which I will not get into): Why is the tendency to cluster in a few locations particularly strong in Economics? Does it have anything to do with the self-sufficiency shown by economists in the last couple of generations, that is, with the strong isolation of economics from neighboring disciplines?
question of the sort that amateurs have good reason to think about and discuss amongst themselves.

On some previous occasions, I have indicated my doubts that the style of publications that present-day journal editors enforce does us any good. What the profession professes to want are explicit formal models with a minimum of verbal commentary. Supposedly, this is in the interest of precision. But, repeating myself (AL, 1997, p. 196) while “Formalism in economics makes it possible to know precisely what someone is saying ... it often leaves us in doubt about what exactly he or she is talking about.”

Earlene has brought Fritz Redlich back among the émigres worth our attention.3 Another, more familiar, refugee whose thought is relevant to these questions is of course Michael Polanyi. Today, he is mostly remembered for the conception of ‘tacit knowledge’ developed in his 1957 book Personal Knowledge. Obviously, this is the contribution that I want to exploit a bit as well. But we economists should at least remember that this Hungarian physical chemist, having left behind a distinguished career in Berlin, to join Manchester University in 1933, had among his many other achievements a macroeconomic treatise, Full Employment and Free Trade (1945). It is a very long time since I read it, but I remember it as an amazingly good book for its time. A couple of years later, Polanyi actually exchanged his chair in physical chemistry for one in social science at Manchester, only to move on a decade later to Merton College, Oxford -- and to philosophy.

In one of the most striking passages of Personal Knowledge (p. 53), Polanyi moves within a single paragraph from the tacit knowledge of artisans to that of research scientists, maintaining that in either instance, the geographic spread of this knowledge requires migration by persons:

“An art which cannot be specified in detail cannot be transmitted by prescription, since no prescription for it exists. It can be passed on only by example from master to apprentice. This restricts the range of diffusion to that of personal contacts, and we find accordingly that craftsmanship tends to survive in closely circumscribed local traditions. Indeed, the diffusion of crafts from one country to another can often be traced to the migration of

3 Cf. her “How Ideas Migrate” in this volume.
groups of craftsmen .... Again, while the articulate contents of science are successfully taught all over the world in hundreds of new universities, the unspecifiable art of scientific research has not yet penetrated to many of these.... and without the migration of European scientists to the new countries, research centres overseas could hardly ever have made much headway.”

Clearly, Polanyi sees no qualitative difference between the craftsman and the scientist here. Most of us, I think, would intuitively feel that the tacit component of the knowledge, say, of a restorer of antique furniture dominates the ‘articulate content’ of his craft to a far greater extent than is the case with restorers of antique mental furniture, such as historians of economic thought. The artisan, after all, works with his hands (and is thus not a ‘gentleman’ by the old European criterion).

Polanyi uses the term “maxims” to denote the ‘articulable content’ of skills such as playing tennis. No matter how much advice about tennis you read, it will do preciously little to improve your serve or your volley game. You do not get “skilled” at hitting a tennis ball until, by long practice, you do it without having to think about it. Quite a bit more is known about this today than was known in Polanyi’s time. For example, we know that our visual cortex is capable of processing about 10 million bits per second and the aural cortex about 1 million, while our conscious rational mind chugs along laboriously at only about 50 bits (Nørretranders 1995). Your rational mind is simply not in the same league as your subliminal capabilities.

For the tennis player or the furniture maker, we have no difficulty accepting Polanyi’s argument that learning these skills is -- has to be -- a personal act of acquisition. This knowledge, therefore, is not a pure public good. Economists will accept this observation for artisanal skills but are often much too quick to assume that academic knowledge is a public good. Polanyi would disabuse us of that notion.

Acquiring the personal knowledge of a tennis player requires in effect the programming of one’s subliminal information processing capabilities. Well and good, but how does this apply to science? Is this not the realm where the conscious rational mind rules supreme? I believe it does apply. To become an economist you have to learn a number of models at one stage of the process. But being an economist does not mean manipulating models. One is not an economist until they have become second nature. One is not mentally free to “theorize” until your subliminal mind can run through the properties of the standard models at a speed some
thousands times faster than you can explain them in the classroom or, better, until it skips all the steps in the conscious reasoning. Recall the famous example Milton Friedman used to justify “as if” methods in economics: In explaining the playing of billiards, the economist may assume that the players play “as if” they solved the differential equations for making the shots observed by the economist. Tacit knowledge for the economist consists in letting go of the formal crutches and acquiring the skill “to play pool”.

This sublimination of analytical reasoning is what graduate students are supposed to accomplish during their apprenticeship at the Ph.D. level. And the apprenticeship is much less about passing formal models from teacher to student than about what to do with models, how to choose among them, how to match them to problems, and how to modify them when they do not work etc. Most of that of course is just talk, not mathematics.  

Economics nowadays seems on the verge of submitting to the conceit that statements made in a natural language are not really understandable. But talk is supremely important in our subject. It is only that we do not seem to know why that is so. Why does mere talk help to convey tacit knowledge that more explicit, formal representations apparently do not convey? If tacit knowledge could be reduced to precisely stated maxims, it would no longer be tacit. The usefulness of “mere talk” lies in the very aspect of natural language that mathematicians and formal logicians shun, namely, its vagueness.

In so thinking, I have recently discovered, I am apparently a true Keynesian!

4We now know that by repetitively exercising some faculty, one builds myelin sheaths around a particular set of nerve fibers and that this myelin insulation greatly increases the speed with which impulses travel. The result is a speed of thought that the plodding rational mind cannot follow. Cf e.g., Coyle (2009).

5I might illustrate with a personal note: During my first year in the United States as a student, I was introduced to several of Franco Modigliani’s papers by James G. Witte. I was so impressed that I chose to go to Northwestern University largely because Modigliani was moving there. Listening to Modigliani-- another of our distinguished refugees, of course --made a very great difference. His lectures were not very systematic and contained many digressions and incidental commentary, and many of my fellow students found this difficult and intimidating. But with the advantage of having read him before, I was captivated because to me his lectures conveyed his mode of thinking about problems
(Who would have thought so?) A very interesting paper by John Coates (1997) documents quite convincingly that Keynes’s suspicious attitude to formalization and his corresponding appreciation for the advantages of natural language (when carefully used, of course) were amplified through his long conversations with Wittgenstein after the latter’s return to Cambridge in 1929. To Keynes, as Coates puts it, “the vagueness of ordinary language was a valued property in simplifying theory of a complex system... [and] without vague terms social theory would be unmanageably cumbersome.” Later philosophers in the Cambridge tradition and fuzzy logicians there and elsewhere have developed this much further. In the present context, I would only note that the very richness of associations, that is often a byproduct of verbal vagueness, can be a source not just of misunderstanding but also of novel ideas.

Although my line of discourse may be in peril of migrating away from migration, I want to bring in one more piece of neuropsychiatry at this point. Oliver Sacks has noted that much attention has been given in this literature to patients with injuries to the left frontal lobe. Damage to this lobe impairs the patient’s logical faculties. Sacks himself has taken a particular interest in patients with damage to the right frontal lobe. His famous essay, *The Man who Mistook His Wife for a Hat*, describes a patient who had lost his capacity for recognizing *patterns*. His visual cortex was presumably grinding away at 10 million bits per second, but the man did not know what he was seeing. This was a highly intelligent, very accomplished individual who, with the help of his wife, managed his daily existence after a fashion, straining exceedingly hard to use his logical faculties to substitute for the faculties he had lost. But his attempts at logical deduction would frequently lead him astray.

I find it very interesting that the organization of the brain separates logical reasoning from pattern recognition. Both, obviously, are vital components of human

\[Coates\text{(p. 256)}\text{ also quotes Keynes’s unabashed common sense: ‘in ordinary discourse, where we are not blindly manipulating but know all the time what we are doing and what the words mean, we can keep “at the back of our heads” the necessary reserves and qualifications’ (General Theory, p. 297).}\]

\[Cf., also O’Donnell (1997, p. 157) who in one of his summary statements of Keynes’s position on these matters notes: “Logical verbal thought is a generally superior medium of understanding in economics to purely formalized thought.”\]
intelligence.\textsuperscript{7} The ‘Ricardian vice’ of which Schumpeter complained may be seen as the over-reliance in Economics on logical deduction. I am reminded of an anecdote about Niels Bohr who in a discussion with a friend became exasperated and blurted out: “But you are not thinking, you are just being logical!”\textsuperscript{8} Bohr, I believe, wanted his colleague to use his right frontal lobe and not only the left.

We should probably recognize recognition of patterns as another tacit component of knowledge that can to varying degrees be transmitted through apprenticeship and perhaps other more fleeting forms of human contact. We use metaphors and analogies both in trying to recognize patterns and in trying to convey them to others. But the use of metaphors is not considered a rigorous procedure.

What is the difference between having an idea and having an insight? I had better not try to define the two terms precisely or I would run afoul of Keynes’s warning against making the discourse “unmanageably cumbersome.” So let us leave them comfortably vague. But we may agree, I think, that insights are not rigorous whereas ideas may at least be rigorously logical. A “new idea” may, for instance, be the realization of a hitherto unrecognized implication of a theory or of a way to test a previously untested implication. A “new insight”, on the other hand, we may think of as the recognition that a number of things already “known” may fit into a novel pattern which alters the “meaning” of some of the things previously known.

Most of our inspirations, of course, turn out not to be valid insights but only transient fancies. Already “established truths” will most often not allow themselves to be fitted into a some new pattern that might occur to us.. All the things we think we know constrain the patterns into which reality might be ordered by “rigorous” modeling, for example. In the same way the texts of an economist constrain the interpretations that intellectual historians may impose on his thought. But the deepest form of originality in science is surely the insight that, while respecting a multitude of the constraints that imprison most minds in the field, casts theory into a novel pattern which then proves productive of new ideas. The mental process of groping around for a novel way of perceiving things is not a logical operation although, in order to result in something of scientific value, it must at least

\textsuperscript{7} …and the second presumably has higher survival value than the first!

\textsuperscript{8} I read this anecdote a long time ago and can no longer trace it. But if it is not true, it ought to be.
subliminally respect all manner of logical and factual constraints. But between the two frontal lobes, it is the right one that is active in scientific discovery.

The stimulus to original thought stems very often -- one suspects most often -- from the inconsistencies, mutual incomprehension and conflict between pre-existing patterns of knowledge. This brings us back to Earlene’s “interlocking circles.” Economics in the 1920's and ‘30's came in a number of quite distinct intellectual “flavors”. In no small part this was due to the fact that local interdisciplinary “weak ties” in Vienna, Stockholm, LSE, Cambridge, Heidelberg, Kiel, or Berlin, were often stronger or at least more active than the more narrowly economic ties between these centers.

It is my subjective belief that economics was at one time much enriched as a result of the forced migrations. But since I also believe that this enrichment was due to the transmission and mingling in the United States and to some extent Britain of many strands of tacit knowledge stemming from several, at one time localized and not altogether compatible intellectual patterns, this belief is difficult to objectify and certainly impossible to quantify. It suggests that the increasing isolation of economics from neighboring disciplines has been a bad thing. It also suggests that the ever more “strong ties” created in the course of the neoclassical “mainstreaming” of economic theory in the last fifty years have ended up impoverishing our subject.

Creativity for an individual is the ability once in a while to break out of accustomed modes of thought – to escape from his or her most myelin-insulated circuitry – and find a path less travelled that actually leads someplace. Analogously, creativity for a scholarly community requires once in a while escaping the strong ties of all like-minded individuals. Once in a very long while, some solitary genius may break those bonds for all. Multiplication of weak ties to other realms of thought and experience will increase the chances for a scholarly collective of ordinary mortals to escape the tyrannies of settled orthodoxies. But we are not likely ever again to see this brought about by the migration of individuals across geographical space.

References

Routledge, pp. 244-257.


Migration is becoming a very important subject for the big cities’ life. The countryside daily life facilities seem unattractive to people when cities include luxury. Educational, social, cultural and financial opportunities of big cities pull...Â To start with, migration brings about economic problems for the government. Most importantly, it leads to a decrease on the quality of workers. The portion of the migrations in U.S. is %12 in the population and %15 in the total labourer population. This worker class forms a layer which is unqualified and the lowest (Immigrants section). The example given above shows that immigrant workers are not of a high quality and this changes the total quality ratio of the country where they have migrated. Migration is a way to move from one place to another in order to live and work. Movement of people from their home to another city, state or country for a job, shelter or some other reasons is called migration. Migration from rural areas to urban areas has increased in past few years in India.Â Suggested Videos. On the Move Again. Habits and Adaptations. Blowing Hot and Cold. Causes of Migration. Movement of people from one place to another in search of work (Source: eiu). Nowadays, many people decide to migrate to have a better life.