

4th IEA International Research Conference, Gothenburg, July 1 - 3

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"The scientific contributions of Torsten Husén and Neville Postlethwaite to the development of international comparative research on educational achievement"

1. Torsten Husén and T. Neville Postlethwaite: Two impressive personalities in Comparative Education

In 2009, the International Association for the Evaluation of Educational Achievement (IEA) has lost two of its most renowned representatives within a period of just a few months: Torsten Husén (1916-2009), late Professor of the University of Stockholm, and T. Neville Postlethwaite (1933-2009), late Professor of the University of Hamburg. Far beyond their importance for the Association, both of them have contributed substantially to the development of international comparative research in education as an academic discipline.

On the occasion of the Conference of the Comparative and International Education Society in Chicago, in March 2010, a small number of Torsten's and Neville's close collaborators and friends gave their very personal accounts of the role that these truly exemplary researchers have played in the scientific community in general and in the IEA in particular. In two separate addresses, Judith Torney-Purta and John Schwille illuminated Torsten's and Neville's "intertwined and extraordinary careers", as Dr. Schwille phrased it; Ingrid Munck highlighted Torsten's exceptional qualities as an inspiring "doctorfather", and I tried to highlight Neville's growing, truly seminal influence on educational thinking and policy-making in Germany and other countries on the globe.

When it is attempted to shed light on the scientific contributions of Torsten Husén as a leading member in the group of IEA's 'architects', and those of Neville Postlethwaite as the 'chief engineer' during key stages of IEA's development, it is, indeed, inevitable to illustrate, if not explain, their significance by resorting to biographic detail. As always, a combination of personal traits and fortuitous circumstance has facilitated the remarkable influence of the protagonists on the Association during its prime years.

Torsten Husén came from a relatively humble background – his father was a sawmill manager, his mother had been trained as a telegraphist; his maternal grandfather was a primary school teacher, his uncle headmaster of a special-education school. It is all the more amazing to note how Torsten, through his remarkable personality and talent, developed this heritage straightforward and very rapidly into a wealth of 'human capital' from which the Association profited for many years.

He obtained access to university-level studies in the traditional environment of the Gymnasium in Växjö in Småland, including very significant investments into mastering three foreign languages. In fact, the only recorded exception from Torsten's habit of attacking supreme challenges via the "*dirrettissima*" was his omission of French studies for a longer period, later made up for through hefty efforts during summer vacation. In any event, Torsten managed to convert these opportunities to learn – and all that followed in subsequent years – into professional resources for educational research in general and for IEA in particular.

The steps in this amazing accumulation of expertise can only be mentioned in passing here.

- First university studies in Lund (1935), beginning with courses in mathematics, history and literature and then moving on to psychology – this breadth of interests is remarkable, indeed;
- involvement with the impressive “Malmö Study” (1938/39), concentrating on the relationship between endogenous and exogenous (*i.e.*, social) determinants of learning achievement (Fägerlind, 1975);
- completion of his studies in developmental and differential psychology by obtaining the licentiate with a thesis on eidetic imagery (1941),
- work on a system of psychological tests for the Swedish Armed Forces (1942 ff)
- completion of doctoral studies with a monumental dissertation on adolescence in Sweden (1944);
- extension of research related to the military, continuation and generalization of investigations of the interaction between ‘nature and nurture’, initiated with, but not limited to the Malmö Study; (A remarkable instance of this type of research is the Twin Study, based on Army data collected between 1948 and 1952 and published in 1953);
- broadening of scope through philosophical and historical studies, namely treatises on Fridtjov and Anders Berg’s efforts to promote a unified compulsory school system (1946. 1948. 1949).

This truly impressive corpus of psychological research, maximally relevant for educational theory and practice, formed the basis for a series of important academic appointments:

- Professor of Educational Psychology (University of Stockholm, 1953)
- Professor of Applied Educational Research (University of Stockholm, 1956)
- Professor of International Education (University of Stockholm, 1971)

Torsten Husén’s renown as an incredibly productive researcher and his academic positions were the assets which could be converted into ‘social capital’ both in the academic and the political arenas.

As early as 1952, Torsten was called upon by the US High Commissioner on Germany as a consultant on educational policy – incidentally one of the few apparent setbacks in Torsten’s career, given the pronounced, but frustrated American interests in establishing a comprehensive school system in that country which had not yet regained full sovereignty after the Second World War. It may also be noted that this initiative led to a co-operation with the German Institute for International Educational Research, the institution which then (and again since 2008) functioned as the German membership holder in the IEA General Assembly.

Visits to the United States – of increasing length and importance – followed, among them a crucial visit to the University of Chicago where, among other leading educators, C. Arnold Anderson represented the field of Comparative Education and where Benjamin Bloom had just begun to systematise and modernise curricula by introducing his famous “Taxonomy of Educational Objectives” (1956), not in the least used as a tool to buttress “mastery learning” (Block, 1971). It was in this intellectual environment that the idea of implementing cross-cultural, output-oriented educational comparisons arose. None other than Torsten Husén cast this approach into the principle of considering the world of education as a natural laboratory in which different countries were experimenting with different strategies of teaching and

learning”, as an experiment, so to speak, allowing to study the effects of the observed variation of ‘treatments’ (cf. Husén 1967, vol. I, 27; Keeves, 2004, 276).

With more than half a century of experience collected from methodological trials and errors – and, of course, with the proverbial wisdom of judgements expressed from hindsight – one may be tempted to consider the early efforts to establish such an innovative strand of research as overly optimistic and to frown upon some of the early simplifications.

Two aspects should be borne in mind, however:

First, it needs to be considered that, from a pragmatic point of view, such optimism was absolutely necessary, if there should be the slightest chance to assemble the required international expertise, to secure the funds needed, to put into place the institutional arrangements, to obtain the necessary political support as well as the compliance of many thousands of teachers and students without whom there would not have been any comparison at all. It is this optimistic trait – Torsten’s refusal to acknowledge seemingly insurmountable difficulties – which according to Neville Postlethwaite was, indeed, the key both to Torsten’s amazing academic career and to IEA’s success.

Second, many of the technical standards which are now considered essential not only for international comparisons, but far beyond in the area of any large-scale assessment of educational achievement, could only be developed on the basis of actual research experience – on board a moving ship, so to speak. The formulation of Technical Standards for IEA Studies (Gregory & Martin, 2001) as well as the International Handbook “Educational Research, Methodology, and Measurement” (Keeves 1988; 2nd ed. 1997) demonstrates the effects which the decision to embark on quantitative international comparisons in education has had. Incidentally, the Handbook was largely compiled from articles written for the monumental “International Encyclopedia of Education” edited by Torsten Husén and Neville Postlethwaite (1985; 2nd ed. 1994).

A word needs to be said here about the institutional steps taken by Torsten Husén and the other “founding fathers” of IEA in the late 1950s and early 1960s to organize internationally comparative research as we know it today:

- 1958 In a famous meeting at the UNESCO Institute of Education (now Institute of Lifelong Learning) in Hamburg, the decision is taken to conduct a respective “Feasibility Study” in Hamburg. (Inasmuch as this is considered the ‘birthday’ of the Association, the General Assembly in Berlin 2008 marks its ‘semi-Centennial’. Therefore, Neville Postlethwaite was invited to reflect on his experience with IEA research. The fact that this turned out to be one of his last public appearances underscores the nature of this speech as the formulation of a heritage to be maintained and developed.)
- 1962 Torsten Husén is elected as Chair of IEA (until 1978).
- 1964 The First International Mathematics Study (FIMS, not yet known by that name at the time), is implemented with key activities already taking place under the auspices of Torsten’s Chair at the University of Stockholm and significant contributions by Neville Postlethwaite (publication of results in 1967).
- 1971 The comprehensive IEA Six-Subject Survey is conducted at Torsten’s new Institute of International Education at Stockholm University. For a summary beyond the thematic volumes, see Walker 1976.

As was true with Torsten, Neville went straight through grammar school, and also like Torsten, he spent some time in military service after school (1951-1953); unlike Torsten's case, however, this was not a matter of obligatory service, but Neville's family background did not allow him to take up university studies right away. To shuttle continuously in slow airplanes between Baghdad and Hong Kong for almost two years in order to save money for university is certainly convincing proof of high educational aspirations. Eventually, Durham University became Neville's Alma Mater, awarding him in 1956 a B.A. in Social Studies and in 1957 a Diploma in Education, which served as a basis for teaching as a lecturer at St Alban's College of Further Education (1957-1961) and to work, until 1962, as a Research Officer in the Test Services group within the National Foundation for Educational Research in England and Wales (NFER, long-standing member institute in the IEA General Assembly).

1963 saw Neville's move to the UNESCO Institute in Hamburg, whence he transferred rather quickly to the University of Stockholm which offered better working conditions. Neville's key role in the actual analysis of the FIMS data is to be noted here. The product from this co-operation was the classical two-volume book on "*School Organization and Student Achievement*" (Stockholm/New York, 1967), with Torsten Husén as the primary author and editor, but also with substantial contributions from Neville's desk. In fact, this type of work formed the basis of his Licentiate in Educational Psychology, obtained from Stockholm University in 1965, complemented by a respective doctoral degree, also from Stockholm University in 1968. When the Six-Subject Survey was implemented, in this period of rapid initial growth of IEA, Neville Postlethwaite was part of the group of key researchers, very much in the function of an Executive Data Manager (although this position in IEA was created – temporarily – only much later).

Based on the success achieved during this period, it is easy to see that Neville possessed stupendous energies which he devoted almost entirely to the IEA. The fact that he not only succeeded Torsten Husén in the Chair of IEA (1978 – 1986), but mastered the respective – even existential – challenges to the Association with complete success bears testimony to the truly remarkable efficiency and effectiveness of his work.

Neville's scientific merits were fully rewarded academically in 1976 by an appointment as Full Professor in Comparative Education at the University of Hamburg

Like Torsten, Neville succeeded in transforming his 'human capital' into 'social capital' within the scientific community, namely by establishing a truly amazing network of friends and professional partners in all fields of education. This helped tremendously in keeping pace with the rapid technical advances in educational research. In this context, it ought to be remembered that on several occasions, Neville took the initiative to save major IEA studies from failing:

- In 1987, he organized the completion of the Second International Science Study (SISS) when there seemed to be neither financial nor human resources at hand to achieve this. It was one key to success, by the way, to assemble a team of students with advanced statistical and computer skills who later formed the nucleus of what is now the IEA Data Processing Center and the joint IEA/ETS Research Institute.
- From 1988 – 1994, Neville served as the International Coordinator for the IEA Study of Reading Literacy.

Even when he was no longer directly involved with IEA studies and after he had retired to southern France, Neville resumed his interest and engagement in developing his own technical skills in new data analytic techniques, often in the context of evaluative studies in less privileged countries, under the auspices of UNESCO/IIEP.

Both scholars, Torsten Husén and Neville Postlethwaite, succeeded to maintain an extraordinary level of productivity throughout their lives. On occasion, Neville characterized Torsten's way of life by the Latin "*nulla dies sine linea*" ("[let] not [pass] any day without [writing] some lines"; 2001), a principle, which is no less applicable to his own working habits.

2. The concept of productivity-oriented international comparisons

As Jack Schwille recalled in his memories of meeting C. Arnold Anderson, another of IEA's 'Founding Fathers' in Chicago, in 1963, some comparativists at the time felt an urgent need for comparable "dependent variables", as Anderson expressed it. Today we would, perhaps, prefer to speak of "output indicators" or "criteria of success in education". Anderson knew, of course, that such evidence was about to be produced – by the FIMS, as it were. The idea seemed straightforward and convincing:

- measure the achievement distribution in a particular domain, in a sample representing the entire target population of a given country (e. g. the students in the school grade preceding the end of compulsory schooling);
- compute one or more meaningful indicators of the aggregate attainment of the selected output measure(s);
- rank order the populations/countries investigated accordingly;
- interpret the figures obtained as sufficient statistics for judgements as to the quality of the investigated systems.

It is easy to see that the overarching idea of this form of argument was some basic notion of educational productivity. It would be a gross simplification to say that the early IEA studies had no theoretical underpinning but such a reduction of the concept of educational quality to bare mean comparisons. In fact, even the very first projects such as FIMS demonstrated that the pioneering researchers felt the need to explain the differences.

One of the aspects of productivity considered can be seen in the attempt to construct and interpret 'yield curves', an aesthetically appealing precursor to the current technique of comparing percentile bands. Another aspect which clearly required consideration was that of population coverage. In a famous critique of the German reluctance to acknowledge irrefutable shortcomings of the German system of education, Neville demonstrated, in 1967, the fallacies incurred by not taking such characteristics of the achieved samples into account (in Husén 1967, vol II, 56 ff).

Nevertheless, it seemed that the available techniques of differentiating the observed achievement distribution according to major stratifying variables such as school track was yet inadequate to obtain a deeper understanding of the quality of systems of education and the underlying mechanisms.

The political context which motivated many educational policy-makers of the time, including significant funders such as Sweden's *Riksbanken*, to authorize and/or fund these early IEA

studies was not in the least defined by the contemporary controversies over comprehensive schooling. There can be no doubt that Torsten in particular, also being a member of Sweden's governmental School Commission had high interest in evidence which would support –or at least not damage – the move for comprehensive schooling which was seen as an essential component of modernising and democratising the country. Arguably, however, the actual findings had only a limited influence on the respective legislation. At the height of the battle in the mid-1960s, the British Minister of Education (Anthony Crosland) who had consulted with Torsten is reported to have argued that supportive evidence would be very welcome, while in case of its absence comprehensive schooling would be a political necessity anyway. It is clear, then, that educational achievement as the hallmark of productivity was not in all quarters considered the ultimate criterion of successful educational efforts.

To merely consider the relationship between the structure of the educational system and its aggregate output can be seen as the final stage of a concept of Comparative Education which was restricted to juxtaposing whole systems as culturally determined *Gestalten*. Beginning with the analyses which took aggregate input measures into account (such as Neville's approach with social characteristics and the system's retentivity as control measures), a line of research emerges which this concept more systematically. It seemed both possible and required now to use IEA-Type research to search for *reasons* – i.e., for quantifiable influence factors – which determined the achievement distribution in the systems to be compared.

Such comparisons were perfected under the label of "Educational Productivity", introduced by Herbert Walberg and his school of thought (see the seminal article Walberg 1984). There was, indeed, quite a substantial amount of cooperation between Walberg's group and researchers in IEA, so much so, that some influential authors accused IEA of being overly, if not exclusively committed to the productivity paradigm.

3. The search for suitable 'manipulable variables': the quest for explanations of systemic success and failure in education

Educational research activities, including IEA studies, have often produced evidence which is highly explanatory in statistical terms (as indicated by a high R^2), yet rather useless for practical purposes, because the respective predictors of achievement are not subject to intervention. In fact, the productivity functions obtained often contain such 'non-manipulable' terms. That is why Neville Postlethwaite has always included the quest for manipulable predictors of educational success in the list of primary aims of educational research.

The borderline between manipulable and non-manipulable variables is not always easy to define, however. Let me use the relationship of gender and reading achievement as an example.

- (1) There seems to exist a near-universal superiority of female students over males in the domain of reading comprehension (for primary schools, see Mullis et al., 2007, 48).
- (2) Gender in itself is generally a non-manipulable variable.
- (3) It seems to follow that little can be done to change the males' deplorable situation.

Obviously, this conclusion is fallacious, if the real cause of the males' inferior performance is to be seen in some covariate which happens to interact with gender, such as quantitative

differences in reading habits and practices, qualitative differences, e.g. gender-specific predilections for certain text genres and the like. It is clear that it is highly desirable to search intensively for such interaction effects which open the way to successful intervention.

In fact, much of the current literature in educational research can be understood as a quest for strategies to transform seemingly non-manipulable influence factors such as socio-economic background, educationally relevant resources in the home or parental support into factors open to intervention.

As has already been implied in passing, such arguments may become particularly heated when the large data sets typically produced by IEA or similar studies are used to identify relevant structural characteristics. It should be noted that almost from the beginning, this tendency has been present and could even be considered part of the legacy of the intellectual pioneers in the field, namely IEA's leaders in that critical phase of the development of the Association. Given the enormous importance of such issues both for the quality of education and for the equity of access to it, it seems well justified to address these issues in as many different ways as possible and to discuss the conclusions obtained in academic settings such as this one.

It is a lasting contribution of both Torsten and Neville to have constantly addressed the relationships between possibly invariant cognitive resources and variable educational outcomes, between educational opportunity and educational achievement/attainment in their teaching and training, their writing and in their public appearances. Thus, it is not by coincidence that the great American sociologist James Coleman was a close friend of Neville's who, despite his more sceptical views on education had a great deal of theoretical depth to add to the primarily psychological frames of reference to which Torsten and Neville were used.

It would seem that IEA would gain significantly if the Association could intensify its efforts to secure the interest of outstanding scientists from adjacent fields such as Economics of Education – theory-guided researchers whose analyses could in turn profit greatly from the 'evidence added' by IEA studies over and above that obtained from competing programs.

4. Conceptual foundations and technical advances

Many of the technical innovations which have facilitated a lasting interest in the conduct of IEA studies are related to the activities of outstanding doctoral students who have been advised by Torsten and Neville and meanwhile have turned into a new generation of great contributors to progress in education. The following is a very small selection of key words referring to advances in the analysis of IEA data which were contributed by their graduate and doctoral students:

- (1) *Confirmatory factor analysis (LISREL)*: Ingrid Munck – application to IEA Six-Subject Survey (1979)
- (2) *Soft latent trait models (PLS)*: Norbert Sellin – application to Classroom Environment Study (1991)
- (3) *Multilevel analysis (HLM)*: Petra Lietz – application to the Reading Comprehension Study (part of the IEA Six-Subject Survey 1970/71) and the IEA International Reading Literacy Study of 1990/91 (1996)

There are, of course, many others who could have been named here – Torsten Husén's and Neville Postlethwaite's direct or indirect 'academic descendants' who have used IEA and other data to refine the methodology of this line of research. The exponential growth of such 'pedigree' corresponds to the increase in knowledge and expertise which is needed to improve education and its prerequisites worldwide.

References

- Block, J. H. 1971 *Mastery Learning: Theory and Practice*. New York: Holt, Rinehart, Winston.
- Bloom B. S. 1956 *Taxonomy of Educational Objectives, Handbook I: The Cognitive Domain*. New York: David McKay Co Inc.
- Fägerlind, I. 1975 *Formal Education and Adult Earnings: A Longitudinal Study on the Economic Benefits of Education*. Stockholm: Almqvist & Wiksell International.
- Gregory, K. D. & Martin, M. O. 2001 *Technical Standards for IEA Studies*. Delft: IEA.
- Husén, T. 1941 *Studier rörande de Eidetiska Fenomenon* [Studies concerning Eidetic Phenomena]. Series: *Lunds Universitets Aarskrifter*, N.F. Avd 1, Vol. 41, nr. 7.
- Husén, T. 1944 *Svensk ungdom* [Adolescence]. *Psykologiska undersökningar av ynglingar i aldern 17-20 ar*. Stockholm: Gebers.
- Husén T. 1946 *Fridtjuv Berg, folkskollärkåren och stavningsreformerna*. *Pedagogiska skrifter*, 192.
- Husén, T. 1948 *Fridtjuv Berg och enhetsskolan*. *Pedagogiska skrifter*, 199.
- Husén, T. 1949 *Anders Berg under folkskolans pionjärår*. *Pedagogiska skrifter*, 205.
- Husén, T. 1953 *Tvillingstudier* [Studies on the Psychology of Twins]. Stockholm: Almqvist & Wiksell.
- Husén, T. (ed.) 1967 *International Study of Achievement in Mathematics. A Comparison of Twelve Countries*. 2 vols.. Stockholm / New York: Almqvist & Wiksell / John Wiley & Sons.
- Husén, T. & Postlethwaite T. N. (eds.) 1985 *The International Encyclopedia of Education*. 10 vols.; 2nd ed. 12 vols. 1994. Oxford: Pergamon.
- J.P. Keeves (ed.) 1988 *Educational Research, Methodology and Measurement: An International Handbook*; 2nd ed. 1997 Oxford: Pergamon.
- Keeves, J. P. 2004 *Monitoring the Learning and Teaching of Science in a Changing World*. *International Education Journal* Vol 5, No 3, 275-293.
- Lietz, P. 1996: *Changes in reading comprehension across cultures and over time*. Münster / New York: Waxmann.
- Munck, I. M. E. 1979 *Model Building in Comparative Education. Applications of the LISREL Method to Cross-National Survey Data*. Stockholm / New York: Almqvist & Wiksell International.
- Mullis, I. V. S., Martin, M. O., Foy, P. & Kennedy, A. M. 2007 *PIRLS 2006 International Report. IEA's Progress in International Reading Literacy Study in Primary School in 40 Countries*. Chestnut Hill, MA: TIMSS & PIRLS International Study Center,

Postlethwaite, T. N. "Torsten Husén" 2001. In: J. A. Palmer (ed.) *Fifty Modern Thinkers on Education: From Piaget to the Present*, London and New York: Routledge, pp. 96-102.

Sellin, N. 1991 *Statistical Model Building in Research on Teaching: The Case of a Study in Eight Countries*. Unpublished doctoral thesis. Hamburg: Faculty of Education.

Walberg, H. J. (1984). Improving the productivity of America's schools. *Educational Leadership* Vol. 41, No 8, 19–27.

Walker, D. A. 1976 *The IEA Six Subject Survey: An Empirical Study in Twenty-one Countries*. Stockholm / New York: Almqvist & Wiksell / John Wiley & Sons.