LEADERS IN EDUCATIONAL STUDIES

Leaders in Educational Research

Intellectual Self Portraits by Fellows of the *International Academy of Education*

María de Ibarrola and D.C. Phillips (Eds.)

On Behalf of a Committee of the International Academy of Education: Lorin Anderson, María de Ibarrola, Denis Phillips, Gavriel Salomon, Ulrich Teichler

SensePublishers

Leaders in Educational Research

LEADERS IN EDUCATIONAL STUDIES

Volume 7

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Scope:

The aim of the *Leaders in Educational Studies* Series is to document the rise of scholarship and university teaching in educational studies in the years after 1960. This half-century has been a period of astonishing growth and accomplishment. The volumes in the series document this development of educational studies as seen through the eyes of its leading practitioners.

A few words about the build up to this period are in order. Before the mid-twentieth century school teaching, especially at the primary level, was as much a trade as a profession. Schoolteachers were trained primarily in normal schools or teachers colleges, only rarely in universities. But in the 1940s American normal schools were converted into teachers colleges, and in the 1960s these were converted into state universities. At the same time school teaching was being transformed into an all-graduate profession in both the United Kingdom and Canada. For the first time, school teachers required a proper university education.

Something had to be done, then, about what was widely regarded as the deplorable state of educational scholarship. James Conant, in his final years as president at Harvard in the early 1950s, envisioned a new kind of university-based school of education, drawing scholars from mainstream academic disciplines such as history, sociology psychology and philosophy, to teach prospective teachers, conduct educational research, and train future educational scholars. One of the first two professors hired to fulfil this vision was Israel Scheffler, a young philosopher of science and language who had earned a Ph.D. in philosophy at the University of Pennsylvania. Scheffler joined Harvard's education faculty in 1952. The other was Bernard Bailyn, who joined the Harvard faculty in 1953 after earning his Ph.D. there, and who re-energized the study of American educational history with the publication of *Education in the Forming of American Society: Needs and Opportunities for Study* (University of North Carolina Press, 1960). The series has been exceptionally fortunate that Scheffler provided a foreword to the volume on philosophy of education, and that Bernard Bailyn provided one a foreword for the volume on the history of American education. It is equally fortunate that subsequent volumes have also contained forewords by similarly eminent scholars, including James Banks of the University of Washington, who has been a creative force in social education for decades and the prime mover in the field of multi-cultural education.

The *Leaders in Educational Studies* Series continues to document the growing and changing literature in educational studies. Studies conducted within the established academic disciplines of history, philosophy, and sociology comprised the dominant trend throughout the 1960s and 1970s. By the 1980s educational studies diversified considerably, in terms of both new sub-disciplines within these established disciplines and new interdisciplinary and trans-disciplinary fields.

Curriculum studies, both in general and in the particular school subject matter fields, drew extensively from work in philosophy, history and sociology of education. Work in these disciplines, and also in anthropology and cultural studies among others, also stimulated new perspectives on race, class and gender.

This volume, like previous volumes in the series, brings together personal essays by established leaders in a major field of educational studies. Subsequent volumes in the series will continue to document other established and emerging disciplines, sub-disciplines and inter-disciplines in educational scholarship.

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MARÍA DE IBARROLA & D. C. PHILLIPS

INTRODUCTION

This volume contains intellectual self-portraits, or autobiographical sketches focussing upon major factors influencing their professional development, of fourteen fellows of the International Academy of Education. All these contributors have international reputations, based on their respective research careers; they come from many different countries and many different social and cultural backgrounds; the paths that led them to their present professional positions were often tortuous and sometimes extremely challenging; and they now do their research from bases in a variety of disciplines. In many cases early family influences were of major importance; for some contributors wars, social unrest, or social injustice was decisive; and in many cases an unexpected invitation to give a lecture or attend a conference, or accidental contact with a particular individual (a teacher, or perhaps a senior researcher) developed into an unexpected and major mentoring relationship that was crucial in their personal development. It is hoped that these personal stories will be of broad interest – and may even be a source of comfort or even of inspiration to younger colleagues starting their careers in the international educational research community.

Before introducing the authors more specifically, however, it is relevant to provide the reader with some background information about the *International Academy of Education* (IAE). It was established in 1986, as a result of the efforts of a small international group of researchers who happened in most cases to be personal friends: Torsten Husen, Gilbert de Landsheere, Benjamin Bloom, Neville Postlethwaite, Hellmut Becker, John Keeves, Herbert Walberg, among others. The official seat of the Academy is at the Royal Academy of Science, Literature and the Arts, in Brussels, Belgium, but its administrative centre has been with Dr. Barry Fraser at the Curtin University of Technology in Perth, Western Australia. The current president of the Academy is Dr. María de Ibarrola of Mexico, and the two immediate past-presidents are Drs. Monique Boekaerts (Belgium, The Netherlands) and Erik De Corte (Belgium).

The IAE is dedicated to strengthening the contributions of research to solving critical educational problems throughout the world, and providing better communication among policy-makers, researchers, and practitioners. This mission has led the Academy to undertake the editorship of journals, and the publication from time to time of book-length reports. In 2000 it launched – in a joint venture with the International Bureau of Education (IBE) in Geneva – the "Educational Practices

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Series". The 24 booklets that have appeared so far in the Series, are written (in English) by internationally well-known experts, and are disseminated by IBE in all its member countries. The pocket-format booklets each provide timely syntheses of research on educational practices that can improve student learning, and are designed for a broad international audience of educational professionals. The booklets can be freely reproduced (many have been copied tens of thousands of times), and some of them have been translated into as many as eight other languages (see http://www.ibe.unesco.org/en/services/online-materials/publicatioons/educational-practices). A parallel IAE "Educational Policy Series" was launched in 2005, published and disseminated by the International Institute for Educational Planning in Paris. To date thirteen booklets have appeared (see http://www.iiep.unesco.org/information-services/publications/education-policy-booklets.html.

Turning to the present volume, it is important to bear a number of things in mind: First, the authors were given quite a free hand – their backgrounds and career trajectories were so diverse that the editors did not regard it as appropriate (or even possible) to specify the kinds of issues that should be discussed – and so the authors were merely asked to reflect on the factors that had influenced their development as scholars and researchers in education. Furthermore, only five of the fourteen fellows who wrote autobiographies were native speakers of English, but all wrote clear prose that conveyed their individual "voices".

In alphabetical order, the authors are:

Lorin Anderson, University of South Carolina, USA; his expertise lies in the domains of educational measurement and research design.

Erik De Corte, University of Leuven, Belgium; his research is chiefly in mathematics learning and teaching, but he also has considerable experience in program development.

Andreas Demetriou, University of Cyprus, Cyprus; an educational psychologist whose work has focussed upon cognitive development, has also served as his country's Minister of Education and Culture.

Kadriye Ercikan, University of British Columbia, Canada; a Turkish Cypriot by birth, she has expertise in mathematical methods of analysis of research data.

Patrick Griffin, University of Melbourne, Australia; his expertise is in psychometrics and research design.

Eric Hanushek, Hoover Institution, Stanford University, California; his field is economics of education, and he has considerable experience in policy analysis.

María de Ibarrola, Center for Research and Advanced Studies, Mexico; she is a sociologist of education, whose main research interest is in the relation between education and work.

D. C. Phillips, Stanford University, California; an Australian by birth, he is a philosopher of education and of social science, with special interest in research methods.

Gavriel Salomon, University of Haifa, Israel; an educational psychologist, he has worked on technology and learning, and also researches issues related to peace education.

William Schubert, University of Illinois, Chicago; his main interest has been in curriculum history and theory.

Crain Soudien, University of Cape Town, South Africa; he is a sociologist by training, but has done work in the policy field, and for some years has been Associate Vice-Chancellor at his university.

Ulrich Teichler, University of Kassel, Germany; by training a sociologist, he is an expert in the field of higher education worldwide.

Servaas van der Berg, University of Stellenbosch, South Africa; he is an economist of education, and has had considerable policy experience.

Stella Vosniadou, University of Athens, Greece; an educational psychologist, she has special interest in theories of conceptual change.

Finally, the two editors of this volume wish to stress that the book is a product of a sub-committee of the IAE consisting of Lorin Anderson, María de Ibarrola, Denis Phillips, Gavriel Salomon, and Ulrich Teichler. This group initially came together to work on a different project; and the present work came about as a pleasant offshoot. Over the course of several years and at least half-a-dozen multi-day meetings – three in Mexico – we became more than colleagues; our bonding while working on the two projects was initiated and later facilitated by generous support and funding from the Programa de Apoyo al Desarrollo de la Educación Superior (PADES), Subsecretaría de Educación Superior, Secretaría de Educación Pública (Development Support Program of University Education (PADES) and the Undersecretary of Higher Education, Ministry of Education, Mexico).

LORIN W. ANDERSON

IT'S A BIT HARD TO BELIEVE: REFLECTIONS ON AN UNFORSEEN CAREER TRAJECTORY

THE EARLY YEARS

I was born in May, 1945, and spent my formative years in Keewatin, Minnesota, a small mining town located on the Mesabi Iron Range, about 100 miles south of the Canadian border. My father was a welder; his father and his father's father were blacksmiths. For as long as I can remember, my mother worked in a local grocery story as a cashier. For the first seven years of my life, I was an only child. Two days after my seventh birthday my brother, Jack, was born.

There was a single elementary school in our town that was located about three blocks from my house. When I was five years old, I attended half-day Kindergarten, morning session. There were 12 children in my class and about the same number in the afternoon session. There were two sections of first grade, each with about 12 children. There was only one section of second grade, so the class size doubled. When I entered second grade, I was allowed to walk to and from school on my own. After school I would walk to my maternal grandmother's house and wait until my mother came from work and walked me home. It was a short walk because there were only two houses separating my house from my grandmother's. As might be expected, then, my Czech grandmother (and Finnish step-grandfather) played a significant role in my upbringing.

I have fond memories of my elementary school years and can recall the name of every teacher, Kindergarten through sixth grade: Miss Rolle, Miss Carlson, Mrs. Golden, Miss Talus, Miss Mackenzie, Miss Herrella, and Miss Carlson (again). Reading came easy to me and I enjoyed writing. [In third grade Miss Talus encouraged my writing and I had several poems published in the elementary school version of the high school newspaper.] But I was especially good in arithmetic. Mrs. Golden was the first one to notice how quickly I caught on in arithmetic class and she gave me a workbook containing advanced problem sets that I could attempt to solve when I had completed my assigned work. Part of what I remember about elementary school is that each teacher had an interest – perhaps, a passion – that defined her classroom and her approach to teaching. Miss Rolle loved drama and we acted out everything we read. Miss Carlson loved art and we had an art exhibit open to the public at the end of each semester. Mrs. Golden lost her husband in World War II and their only son was studying for the priesthood. So themes of family, love, loss, and faith permeated what we read and discussed in class. Miss Talus loved writing, Miss Mackenzie loved

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literature, and Miss Herrella loved history. Their individual passions made learning interesting and as a group they offered a remarkably balanced curriculum.

When seventh grade rolled around I attended R. L. Downing High School, which was adjacent to the elementary school. There was an underground tunnel connecting the two schools so that students in both schools could share the library, swimming pool, gymnasium, and lunch room. It also made it easy to move from school to school when the temperature dropped to 20 or 30 degrees below zero Fahrenheit. The high school was divided into a south end (senior high, grades 10 – 12) and a north end (junior high, grades 7 – 9). For some reason, my junior high years are a blur. I have very few memories, good or bad. I do not remember the courses in which I was enrolled or the name of a single teacher. When I think of my high school years, on the other hand, the memories flood in. I remember that I had very good teachers. Because the mining companies paid a large proportion of the taxes that supported the schools, the salary schedules for teachers on "the Range" were higher than those for any other school district in the state, including Minneapolis-St Paul and the suburbs. Consequently, our little town was able to attract some of the best teachers the state's colleges and universities produced. I also remember that because of our small enrollment, approximately 70 students in grades 10 through 12, we were taught by the same teachers every year, with few exceptions. Miss Hecomovich taught history and geography, Mr. Heggie taught English, Mr. Herzog taught mathematics, and Mr. Mestnick taught science. In today's vernacular that practice would be called "looping." Finally, I remember that, again because of the small number of students, almost all students participated in some school-sponsored activity – athletics, band, choir, drama, and special-interest clubs. Many years later I learned that our school was an example of what Roger Barker and Paul Gump in their classic work, *Big School, Small School*, referred to as an "undermanned setting."

Contrary to the possible stereotype of mining communities, education was highly valued. There seemed to be two reasons for this. First, many of the fathers, including mine, had served in the military during World War II. Returning to the United States in their early to mid 20s, they were more interested in getting a job and starting a family than attending college. As might be expected, then, they wanted their children, particularly their sons, to have the college experience they missed. Second, it was clear to everyone that iron ore was a nonrenewable natural resource. From 1900 to 1970, about 60% of country's total iron ore output came from the Mesabi Iron Range. Iron ore production peaked during World War II, then gradually declined until the supply of high grade iron ore was essentially depleted by the time I graduated from high school in 1963. Working in the mines was no longer a viable career option for high school graduates.

COLLEGE EDUCATION

I cannot remember when I was NOT going to college. That is, attending (and graduating from!) college was not an option; it was a requirement. Whenever I came

home with a less-than-acceptable grade on my report card, one of my parents – typically my mother – would remind me quite emphatically that "You need good grades to get into college!" One of our neighbors, a self-proclaimed historian of the neighborhood, kept records of all of the children in the neighborhood who were his children's ages – that is, born between 1943 and 1952. When I visited him in the early 1990s, he proudly displayed a hand-drawn chart that summarized his "findings." There were a total of 24 names on the chart. Twenty had attended college and seventeen had earned at least a baccalaureate degree.

The traditional route to a college degree for graduates of R. L. Downing High was to attend Hibbing Junior College for two years while living at home, since the campus was only a 10-minute drive. You then completed your college education at either the University of Minnesota-Duluth or the "main U" (that is, the University of Minnesota, Minneapolis). This was the route that I was destined follow until I attended a winter conference of Presbyterian Youth on the campus of Macalester College in St. Paul, Minnesota during early January of my senior year in high school. At one of the early sessions, William Gramenz, the Dean of Admissions, spoke to the assembly, providing an overview of the college and inviting anyone who was interested in receiving more information to meet with him during lunch. I, along with two or three others, accepted his invitation. Each of us met with him for about ten minutes. He asked about the courses I was taking, where I ranked in the graduating class, and how well I had scored on the Scholastic Aptitude Tests. After hearing my answers, he asked whether I had applied for admission to the college. I told him I had not because my parents could not afford to send me to a private college. He told me that there was a new financial aid program for students from low income homes. He believed I would qualify, but that I would need to submit an application before he could be sure. I brought an application packet home, completed it, and sent it back to him. In late March, I received my acceptance letter and a financial aid package that covered tuition, room, board, and books. In early September, my parents drove me from "the Range" to "the Twin Cities" and a new chapter of my life began.

The transition from a rural high school to a private liberal arts college was not an easy one. Fortunately, I roomed with a guy whose father was a Presbyterian minister and whose sister had graduated from Macalester four years earlier. Whenever I felt confused or lost, Paul would help me regain my footing and direction. All Macalester students enrolled in four courses per semester, with a total of 32 courses required for graduation. Eight courses were needed for a major and four for a minor. All Macalester freshmen had to complete the following four courses each semester: one course in your intended major, one Western civilization course, one English (primarily writing course), and one foreign language course. Because I had done well in mathematics in high school and wanted to stay away from so-called "reading courses" (that is, courses that required a great deal of reading), I chose to major in mathematics and minor in education (so I could get a job after I graduated).

After a challenging freshman year, one riddled with numerous self-doubts, I settled into a routine. Over the next two years, my study habits improved as did

my grades. I found myself paying closer attention in class and "knowing" what to listen for. Any doubts that I would be able to "make it" vanished. As I was planning the course schedule for my senior year, I was approached by a friend, a psychology major, who told me that her advisor, Jack Rossman, had received a grant from the federal government to train about a dozen undergraduates in the philosophy, design, conduct, and interpretation of educational research. She knew that there were two or three openings in the year-long seminar and suggested that I meet with Dr. Rossman. I did so and the following fall semester I found myself knee deep in a field I did even know existed before I signed up for the course. Each member of the seminar was expected to design and conduct an original research study, write up the study and its results, and make an oral presentation at the end of the spring semester. Because my major was mathematics and because I was doing my student teaching at the time, I chose to investigate the relationship between attitude toward mathematics and mathematics achievement among high school sophomores. Although the study was modest (almost as modest as the correlation between attitude and achievement), its impact on me was profound. I found something exciting about research and the seeds of a budding educational researcher had been planted.

TEACHING, AND GRADUATE SCHOOL

In June, 1967, I received my B. A. in mathematics from Macalester, the first of my extended family to earn a college degree, and accepted a position as a mathematics teacher in a rural high school not far from Duluth, Minnesota, and about 75 miles from my hometown. During the summer following my first year of teaching, I began work on a Master's Degree in Educational Psychology at the University of Minnesota, Duluth, and completed the degree in three summers. During the second year of teaching at that rural high school, I accepted a position as a junior high mathematics teacher in a suburban school system south of St. Paul for the following year. Midway through my fourth year of teaching – my second year of teaching at the junior high school – I came to the realization that I really did not like teaching and I was not particularly good at it anyway. I was in a bit of a quandary so on a snowy December day I drove from Minneapolis to Duluth to seek advice from my Master's advisor, Moy F. Gum.

Being trained in counseling psychology, Moy listened patiently to my story, the bottom line of which was that I did not want to continue teaching, but I did not know what I wanted to do. Operating in the tradition of Carl Rogers, he would ask periodically, "And how does that make you feel?" At one point I remember replying, "Like I've wasted the last four years of my life." After about thirty minutes, he asked "What do you really enjoy doing? What are you passionate about?" In response I recounted my experience in the educational research seminar. After I finished, he said, "You know, I was a doctoral student of Benjamin Bloom at the University of Chicago. I just received a letter from Ben, a letter I assume he sent to all of his former doctoral students, asking if I could recommend someone who would enroll in the

doctoral program in Measurement, Evaluation, and Statistical Analysis (MESA) and serve as his graduate assistant. Would you be interested?" I think I simply nodded. I got up from my chair, thanked him for his time, and began to leave his office. "OK, then," he said. "I'll get in touch with Ben."

During the Christmas holidays, I talked with my wife and my parents about my state of mind. My mother thought I was insane to consider "leaving a good job." My father said that I should have "something in hand" before I give something up. My wife of four years, knowing how unhappy I had become, urged me to "do something" because I was not the easiest person with whom to live.

When the Christmas holidays ended, I was back teaching for my final semester. In late January, 1971, I was getting ready to leave for school when the telephone rang. It was just before 7 AM. I answered the phone and the voice on the other end said, "Hello. Is this Lorin Anderson?" "Yes," I said. "This is Benjamin Bloom. I'm calling to see whether you would be interested in a graduate assistantship here at the University of Chicago." "Yes, very much so," I muttered. "Good. I'll send you some material. You'll need to complete the application form and attend an orientation session in March. Can you do that?" "Yes, I can," I said, not knowing if I could or not. I attended the orientation session and shortly after that tendered my resignation as a junior high mathematics teacher. In August, 1971, I moved to Chicago and began my doctoral studies.

In retrospect I could not have arrived at the University of Chicago at a better time. Phil Jackson's *Life in Classrooms* and Bob Dreeben's *On What is Learned in Schools* had been published quite recently. Dan Lortie was working on *Schoolteacher*, Ben Wright was beginning his work on the Rasch model, and Ben Bloom was pulling together the research that provided the basis for *Human Characteristics and School Learning*. The stipend associated with my graduate assistantship permitted me to be a full-time student. As Bloom's assistant, I was assigned to a small office in Judd Hall. Having an office in the Department of Education allowed me to spend hours in informal conversations with Jackson, Dreeben, Jake Getzels, Herb Thelen, and, of course, Bloom himself.

My primarily responsibility as Bloom's graduate assistant was to locate research studies that were relevant to (and generally supportive of) his theory of school learning. Briefly, Bloom believed that variation in student achievement could be explained by three factors: cognitive entry behaviors, affective entry characteristics, and quality of instruction. I sought out correlational studies, experimental studies, and quasi-experimental studies that examined the relationship of these three factors, individually and collectively, with student achievement. Studies that incorporated all three factors were highly prized indeed. As might be expected, I spent countless hours in Regenstein Library. If I returned to his office "empty," he suggested that I needed to double my efforts since he was convinced that certain studies must exist. "Someone surely has studied that," he would say, and off I would go.

The summer before I began my studies at Chicago, Bloom had been involved in a week-long curriculum development seminar in Gränna, Sweden. The seminar was

attended by teams of six subject specialists from each of twenty-three countries. One outcome of the seminar was the establishment of Curriculum Research Centers in several of the participating countries. As a result of the seminar and also because of Ben's involvement in studies conducted under the auspices of the International Evaluation of Educational Achievement (IEA), one or more international scholars seemed to be visiting him all the time. Fortunately for me, Ben invited me to attend many of these informal meetings. As a result, I got to know Torsten Husen (Sweden), Arieh Lewy (Israel), Gilbert de Landsheere (Belgium), John Keeves (Australia), and Neville Postlethwaite (England, Germany). These meetings stimulated an interest in international and comparative education and allowed access to a vast network of international educators. For these contacts alone, I shall always be grateful to Ben.

It was under Ben's tutelage that I became aware of the writings of John (Jack) Carroll. I found his model of school learning to be a masterpiece. It was simple, elegant, and based, at least in part, on empirical evidence that he had gathered during studies of the predictive validity of a foreign language aptitude test that he had designed. When I met Jack for the first time at a conference on time and learning held at Northwestern University in 1981, I was awestruck and tongue-tied. Somehow I found my wits long enough to ask him if I could edit a book of his writings. He looked puzzled for a moment, but after I spent a half hour or more recounting everything I could remember about his work, he agreed. The book was published by Lawrence Erlbaum Associates in 1985. But, I'm getting ahead of myself!

MY LATER CAREER

With doctoral degree in hand, I accepted an appointment as an Assistant Professor at the University of South Carolina. I chose South Carolina over several other offers for two reasons. First, the faculty was just beginning to design graduate degree programs in educational research. I had always enjoyed building things and a new graduate degree program was no exception. Second, I was able to choose the courses that I wanted to teach, rather than be assigned courses to teach (as I would have at the other universities). In any case, in August, 1973, I moved to Columbia and began teaching my first university course that September.

In addition to planning and teaching my courses, I began to contemplate how best to negotiate the tenure and promotion system with its emphasis on research and scholarship. My doctoral thesis was entitled "Time and School Learning" and it was an empirical investigation of Bloom's belief in the modifiability of human characteristics within the context of the Carroll model of school learning. Specifically, I investigated the extent to which a week-long instructional program could *increase* the percent of instructional time that students spent engaged in learning thereby *decreasing* the total amount of time they would need to achieve some pre-set standard of mastery. Because the results were quite positive, I was reasonably certain that some publications could result from that study. In fact, over my career, five journal

articles, two book chapters, and two edited books were published, all derived from my doctoral research and additional data that I collected from studies on the topic that I had conducted during my first five years at the University.

During my time at Chicago, I communicated frequently with James Block, who was my predecessor as Bloom's graduate assistant. Jim had worked closely with Ben as Ben developed his ideas about mastery learning and Jim's doctoral thesis was a study of the impact of setting different mastery performance standards (e.g., 75%, 85%, 95%) on students' subsequent achievement and attitudes. Sometime in 1974, Jim invited me to co-author a relatively short monograph on mastery learning written for teachers and administrators. I gladly accepted and *Mastery Learning in Classroom Instruction* was published in 1975. Jim and I also collaborated on a book chapter which was published in 1976 in which we explored the psychological underpinnings of mastery learning. Publications based on my doctoral thesis coupled with the publishing opportunities offered by Jim Block facilitated my promotion to the rank of Associated Professor with tenure after my third year on the faculty.

I had been teaching a course in affective assessment (e.g., attitude scales, interest inventories, self-concept measures) for five or six five years when I became frustrated by the absence of a coherent treatment of the field. I contacted an editor from Allyn and Bacon whom I had met at several conferences and asked whether he would be interested in a book on affective assessment in education. He was open to the idea and I sent him a prospectus and a draft of the first chapter. Soon thereafter I received a contract and in 1981, *Assessing Affective Characteristics in the Schools*, was published. A second edition, co-authored by Sid Bourke of the University of Newcastle (Australia), was published by Lawrence Erlbaum Associations in 2000.

In April, 1980, while attending the Annual Meeting of the American Educational Research Association, I attended a breakfast hosted by the University of Chicago faculty. When I arrived, Dick Wolf of Teachers College, Columbia University, was already seated and invited me to sit with him. He introduced me to Doris Ryan of the Ontario Institute for the Study of Education. During breakfast Doris began to discuss the IEA Classroom Environment Study. She had been appointed as the International Research Coordinator and was greatly concerned about a rift among members of the planning committee in terms of whether the focus should be on teachers, students, or both. In addition, there was disagreement as to whether to observe and code specific behaviors (e.g., asking questions, providing feedback) or larger activity segments (e.g., discourse, seatwork). I briefly described some of my research, which she saw as a middle-of-the-road position, and she invited me to the next planning meeting. I attended that meeting and numerous other meetings in several countries over an eight-year period. Finally, nine years after my initial involvement, *The IEA Classroom Environment Study* was published.

In 1984, I received a telephone call from Brian Rowan, who at the time was at the Far West Laboratory for Educational Research and Development in San Francisco. Brian was working on a proposal to submit to the U. S. Department of Education for the purpose of conducting an evaluation of the federal education program referred to

as Title I or, at the time, Chapter I. Title I/Chapter I programs are intended to improve the quality of education for low-income students. The proposal called for the basic design to be replicated in six states, with each state having a state coordinator. He wondered if I would be interested in being the state coordinator for South Carolina. I expressed my interest and forwarded him a copy of a letter of support along with my CV. The study was funded and for the next year, I spent most of my non-teaching time working on the study. The final report was submitted to the federal government in 1986. Largely because of my research on Title I/Chapter I programs in South Carolina, I received a multi-year grant jointly funded by the South Carolina Department of Education and the Southeastern Regional Vision for Education (SERVE) consortium to conduct research on the state-funded compensatory and remedial programs. The results of this set of research studies were published in a series of journal articles and book chapters published from 1990 through 1994.

In December, 1988, I packed up my wife, Jo Anne, and our two sons, ages 9 and 11, and headed to Sydney, Australia, where I was to spend a semester in residence at the University of Sydney (or Sydney Uni, as they say "Down Under"). We traveled via Europe and stayed in a house outside of London for about two weeks, a house owned by Neville Postlethwaite. After stops in Paris and Bangkok, we arrived in Sydney in early January, 1989, and were met by our host, Michael (Mick) Dunkin. Although I had never met Mick, I had communicated with him on a regular basis for several years. I had read his book, *The Study of Teaching* from cover to cover and found it to be comprehensive, yet concise, largely because of its organizing framework. Mick was a gracious host, as was his wife, Iris. One day, not long after I had arrived, Mick showed me a letter he received from Torstein Husen and Neville Postlethwaite asking if he would serve as the section editor for the "Teaching and Teacher Education" entries in the second edition of the *International Encyclopedia of Education*. He had served as the editor of the "Teaching and Teacher Education" entries in the first edition of the *Encyclopedia*. As we talked he came to the realization that he really did not want to be involved in the second edition. He turned to me and asked if I would be interested in the job. I thought about it for a few days and told him that I would. He conveyed my interest and willingness to Neville Postlethwaite who sent me a formal letter of invitation, which I accepted.

In February, 1991, I attended a meeting attended by all section editors held in Malaga, Spain. It was an intensive three-day meeting, but with lots of time to hobnob with the other section editors. It was during this meeting that I renewed friendship with colleagues in the international community and made new ones. The tasks of developing an organizing framework for the "Teaching and Teacher Education" section, identifying appropriate entries within the framework, contacting writers for the entries, and reading, revising, and editing manuscripts were daunting. In May, 1994, slightly more than three years after the initial meeting, the *International Encyclopedia of Education, Second Edition* was published. By my count, the entries in my section totaled just over two million words. Following the publication of the *Encyclopedia*, each section editor was responsible for the publication of a "spin

off," stand-alone volume. The *International Encyclopedia of Teaching and Teacher Education, Second Edition* was published in January, 1996.

Somewhat ironically, January, 1996, was also the month in which I suffered my first heart attack. I had been awarded a sabbatical leave for the Spring semester, so following the angioplasty, I began to work on my sabbatical project. Despite having the cardiac procedure, I was a bit sluggish and was slow to accomplish much of anything. I had difficulty concentrating and lacked the stamina to work a full day. So, it should have come as no surprise, that in June, 1996, I had a second heart attack, one far more serious than the first. Apparently, the scar tissue from the angioplasty had closed one of the coronary arteries almost completely. This time three coronary artery bypass grafts (CABG, pronounced "cabbage" – medical humor) were required. During my 23 years at the University of South Carolina I had accumulated 180 days of sick leave. Consequently, I was on extended medical leave until June, 1997.

But enough of my health issues! To continue with the story, we have to go back in time to the Annual Meeting of the American Educational Research Association, which was held in Atlanta, Georgia, in April, 1993. Once again the setting was the breakfast hosted by the University of Chicago faculty. Shortly after I arrived I was approached by Ken Rehage, a professor at the University who also served as the Editor of the National Society for the Study of Education (NSSE) yearbooks. He told me that he was interested in producing a yearbook on Bloom's Taxonomy of Educational Objectives that would coincide with the 40th anniversary of its publication. He asked if I would be interested in editing a yearbook on the topic. I told him that I would be interested, but there was one problem. I had never read the book. "Surely you must have read it," Ken replied. "You're Ben's student!" I confessed that like many educators I could recite the six levels of the Taxonomy, but that is as far as my knowledge went. Interestingly, several years later Ben told me that the Taxonomy was "one of the most cited, least read books in American education." Ken insisted that I was the one for the job and that I should begin by reading the book. Before breakfast had ended, I had agreed to accept his invitation.

My first task, after reading the book, of course, was to find a co-editor. I asked Lauren Sosniak, also a student of Bloom, to serve in that capacity and, fortunately for me, she accepted. The next task was to establish an organizing framework. We decided to open with a chapter written by Bloom, follow that with excerpts from the original text (for those, like us, who hadn't read it), and end with a chapter written by David Krathwohl, one of the five contributing authors of the cognitive taxonomy and the senior author of the affective taxonomy. In between there would be three chapters examining the psychological basis for the Taxonomy, the philosophical assumptions made by the authors of the Taxonomy, and the empirical evidence supporting the hypothesized structure of the Taxonomy. Then, there would be five chapters discussing the impact of the Taxonomy on testing and evaluation, curriculum, teaching and teacher education, and international curriculum development and research. Once the framework had been determined, the third and

final task was to find people who would be willing to write the chapters. Ultimately, *Bloom's Taxonomy: A Forty-Year Retrospective* was published in 1994.

Because of my heart attacks, 1996 was pretty much a lost year. Early that year, I accepted a three-year appointment as the Chairman of the Editorial Board of the *International Journal of Educational Research.* In April I attended my first Editorial Board meeting at the Annual Meeting of the American Educational Research Association in New York City. Neville Postlethwaite, the previous Chairman, stayed on as a member of the Editorial Board. In Neville's status report he indicated that there was enough material for the current volume, but the Board had to start identifying themes and contributors for the next volume. I returned home and soon experienced my second heart attack. During my convalescence Neville served as "acting Chairman." I resumed the Chairmanship of the Editorial Board at the AERA meeting in April, 1997. I finished out my three-year term and accepted a second three-year term, which ended April, 2002. My role as Chairman of the Board of an international journal provided additional opportunities to work with educators throughout the world.

Sometime late in 1996, David Krathwohl telephoned me. He congratulated me on the quality of the 1994 NSSE Yearbook and then asked if I wanted to work with him on a revision of Bloom's Taxonomy. He had contacted the Education Editor at Longman, Virginia "Ginny" Blanford, and she was keen to support a revision. I told him of my health issues and said that I was interested but I would have to wait until I felt a bit stronger before I could get involved in the project. In the meantime, I suggested that he assemble a group of psychologists, curriculum specialists, teacher educators, and testing and evaluation experts that would be willing to work on a multi-year project. I gave him some suggestions and he set out to pull together a team. By early Spring I was feeling much better and I called Dave, informed him of my health status and suggested that he schedule an initial meeting of the team he had assembled. We met for the first time in March, 1997, and twice a year thereafter until the final draft of the book was completed in 2000. Between meetings, we each had our writing assignments. In 2001, *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy* was published.

Most of what I had published as an academic had had little impact on the educational world. As one of my colleagues replied when as a young faculty member I told her with pride that I had had an article published in the *Journal of Educational Psychology*, "That's where good research goes to die. It's a refereed journal, but no one reads it. They skim through the table of contents and pick out one or two articles that seem interesting to them or are relevant to their work." Therefore, I was quite surprised with the reception of what came to be known as the "revised Bloom's Taxonomy" or RBT. Suddenly, invitations to speak came via telephone, e-mail, and even text messages. I accepted some of the invitations and declined others. In 2004 I was asked by several curriculum consultants in the South Carolina Department of Education to conduct a year-long series of workshops for administrators and teachers as to how the RBT could be used in the revision of the state's academic standards.

In 2006 I began to work with the North Carolina Department of Public Instruction as a consultant to their Career Technology Education division to help them develop standards and assessments based on the RBT. My work with them ended in 2012. In 2009 I met with curriculum consultants on the academic side of the aisle in North Carolina to show them how to use the RBT to design what they termed "essential standards." We met in subject area groups every month for 18 months. I have given presentations about the RBT in Albania, Canada, Chile, Serbia, and South Africa.

I retired from the University of South Carolina in May, 2006, partly so I could take advantage of the increasing number of consulting and travel opportunities and partly because I had become tired of the academic life. The tremendous excitement I had experienced early in my career had simply vanished. With respect to my personal development, I had moved into Erik Erickson's generativity stage. Simply put, it was time to give back and my current work has enabled me to do just that.

What lessons can be taken from this tour through my personal history? What factors have contributed to whatever success I have experienced? I would suggest there are three. First, there were numerous what might be termed "chance occurrences." If I had not attended the Presbyterian Youth conference and met with William Gramenz, I would have never attended Macalester College. If I had not chatted with my college friend about my senior year class schedule, I never would have met Jack Rossman and been introduced to educational research. If I had not discussed my unhappiness with teaching with Moy Gum and if Moy had not been Ben Bloom's student, I would have never attended the University of Chicago. If I had not attended the University of Chicago breakfasts at AERA I never would have met Doris Ryan and become involved in the IEA Classroom Environment Study, nor would I have been approached by Ken Rehage and "encouraged" to edit the retrospective and prospective book on Bloom's Taxonomy. And, if the book had not been published and had I not invited Dave Krathwohl to contribute to it, I never would have worked on the revision of the Taxonomy.

Second, I took advantage of the many opportunities presented me. Sometimes I made my choice based on curiosity and/or interest (e.g., enrolling in the research seminar in college). At other times, my choice was made primarily as a result of a sense of duty (e.g., agreeing to edit the NSSE yearbook). "Chance occurrences" happen often and they happen to most people. The problem we face when confronted with these "chance occurrences" is to decide which opportunities to embrace and which to ignore. Choosing to embrace an opportunity typically means making a commitment to spend a great deal of time and expend a great effort. Most of the projects associated with the opportunities that I chose were multi-year projects, ranging from two or three years (e.g., the research on compensatory and remedial federal and state programs) to eight or nine years (e.g., the work on Bloom's taxonomy and my involvement with the IAE Classroom Environment Study).

Third, and related to the second, I worked hard and did my best. My father told me over and over again, "The world owes you nothing. You have to earn everything you

get." I do believe that effort IS more important that ability. I also believe that setting high standards for yourself keeps you striving and does not allow you to become self-satisfied and complacent. At the same time, however, working long and hard to achieve high standards is not without costs (e.g., one ex-wife, two heart attacks).

In his autobiography, *Chronicles: Volume I*, Bob Dylan (who grew up about seven miles from where I did) differentiates between *influences* and *enablers*. As a musician and composer, his influences included Woody Guthrie, Hank Williams, and Robert Johnson. His enablers, on the other hand, were lesser known people who opened doors for him or provided support and encouragement when he needed it most. I find this distinction particularly useful as I examine my life as a researcher. Ben Bloom was an influence, while Moy Gum was an enabler. We need both influences AND enablers if we are to achieve success in our chosen field (or the field we happen upon).

In closing, I think it is important to note that I consider myself an educational researcher first and foremost. Many, if not most of my colleagues, consider themselves to be experts in particular academic disciplines who happen to do research. Denis Phillips, for example, is a philosopher who happens to do research in education. Gavriel Salomon is a psychologist who happens to do research in education. Rick Hanushek is an economist who happens to do research in education. My doctoral degree, however, is in research methodology. Consequently, I have spent a great deal of my career attempting to improve the quality of educational research (Anderson & Burns, 1989) and trying to make sense of research in education (Anderson, 2004). When all is said and done, I believe that how you see yourself is at least as important as who you are (or perhaps more so).

FAVORITE WORKS

Books

Assessing affective characteristics in the schools (1981).
The IEA Classroom Environment Study (1989), with D. W. Ryan and B. J. Shapiro.
Research in classrooms: The study of teachers, teaching, and instruction (1989), with R. B. Burns.
A taxonomy of learning, teaching, and assessment: A revision of Bloom's taxonomy (2001), with D. R. Krathwohl and others.
Increasing teacher effectiveness, Second edition (2004).
Inquiry, data, and understanding: A search for meaning in educational research (2004).

Essays and Articles

An empirical investigation of individual differences in time to learn (1976).
The relationships among teaching methods, student characteristics, and student involvement in learning (1978).
Time and timing (1985).
Time and school learning: An historical perspective and a conceptual framework (1999).
Benjamin S. Bloom: His life, his work, and his legacy (2003).
The educator role of educational evaluators (2007).

REFERENCES

Anderson, L. W. (1973). *Time and school learning* (Unpublished PhD dissertation). University of Chicago, Chicago, IL.

Anderson, L. W. (1976). An empirical investigation of individual differences in time to learn. *Journal of Educational Psychology*, *68*, 226–233.

Anderson, L. W. (1981). *Assessing affective characteristics in the schools*. Boston, MA: Allyn and Bacon.

Anderson, L. W. (Ed.). (1984). *Time and school learning: Theory, research, and practice*. London, UK: Croom Helm.

Anderson, L. W. (Ed.). (1985). *Perspectives on school learning: Selected writings of John B. Carroll*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Anderson, L. W. (1985). Time and timing. In C. W. Fisher & D. C. Berliner (Eds.), *Perspectives on instructional time*. New York, NY: Longman.

Anderson, L. W. (Ed.). (1995). *The international encyclopedia of teaching and teacher education*. Oxford, England: Pergamon Press.

Anderson, L. W. (1999). Time and school learning: An historical perspective and a conceptual framework. In P. Gandara (Ed.), *The dimension of time and the challenge of school reform*. Albany, NY: SUNY Press.

Anderson, L. W. (2003). Benjamin S. Bloom: His life, his works, and his legacy. In B. J. Zimmerman & D. H. Schunk (Eds.), *Educational psychology: A century of contributions*. Mahway, NJ: Lawrence Erlbaum Associates.

Anderson, L. W. (2004). *Increasing teacher effectiveness* (2nd ed.). Paris: UNESCO International Institute for Educational Planning.

Anderson, L. W. (2004). *Inquiry, data, and understanding: A search for meaning in educational research.* London, UK: Taylor & Francis.

Anderson, L. W. (2007). The educator role of educational evaluators. *Studies in Educational Evaluation*, *33*, 5–14.

Anderson, L. W., & Bourke, S. N. (2000). *Assessing affective characteristics in the schools (2nd ed.)*. Mahway, NJ: Lawrence Erlbaum Associates.

Anderson, L. W., & Burns, R. B. (1989). *Research in classrooms: The study of teachers, teaching, and instruction*. Oxford, England: Pergamon Press.

Anderson, L. W., & Krathwohl, D. R. (Eds.). (2001). *A taxonomy of learning, teaching, and assessment: A revision of Bloom's taxonomy*. New York, NY: Longman.

Anderson, L. W., & Pellicer, L. O. (1994). Compensatory education in South Carolina. In H. Wong & M. C. Wang (Eds.), *Rethinking policy for at risk students*. Berkeley, CA: McCutchan.

Anderson, L. W., Ryan, D. W., & Shapiro, B. J. (1989). *The lEA Classroom Environment Study*. Oxford, England: Pergamon Press.

Anderson, L. W., & Scott, C. C. (1978). The relationships among teaching methods, student characteristics, and student involvement in learning. *Journal of Teacher Education*, *29*(3), 52–57.

Barker, R., & Gump, P. (1960). *Big school, small school*. Stanford, CA: Stanford University Press.

Block, J. H., & Anderson, L. W. (1975). *Mastery learning in classroom instruction*. New York, NY: Macmillan.

Bloom, B. S. (1976). *Human characteristics and school learning*. New York, NY: McGraw-Hill.

Carroll, J. B. (1963). A model of school learning. *Teachers College Record, 64*(8), 723–733.

Dreeben, R. (1968). *On what is learned in schools*. New York, NY: Addison-Wesley.

Dunkin, M. J., & Biddle, B. (1974). *The study of teaching*. New York, NY: Holt, Rinehart, and Winston.

Dylan, B. (2005). *Chronicles (Vol. 1).* New York, NY: Simon and Schuster.

Jackson, P. W. (1968). *Life in classrooms*. New York, NY: Holt, Rinehart, and Winston.

Lee, G., & Rowan, B. (Eds.). (1986). *The management and delivery of instructional services to Chapter 1 students: Case studies of twelve schools*. San Francisco, CA: Far West Laboratory for Educational Research and Development.

Lortie, D. (1975). *Schoolteacher: A sociological study*. Chicago, IL: University of Chicago Press.

ERIK DE CORTE

A GLOBALIZING, OPTIMISTIC-PESSIMISTIC EDUCATIONAL RESEARCHER

MY EARLY INTEREST IN EDUCATION

Born in June 1941, just about one year after the outbreak of World War II in Belgium, I grew up as an only child in a lower middle-class family. My parents, who were both born in the very early years of the 20th century, received little schooling. Compulsory education until the age of 14 years was introduced in Belgium only in 1914, just before the First World War started. However, the implementation was delayed by the war. After WWII when I was about 5 years old my parents started a small textile and lingerie shop. From May to September they extended their activity as market-vendors. When business slowed down my father worked in the building-industry.

However, although I was not raised in an "education family", my interest in education developed at an early age. Indeed, already in the primary school I told my parents that I wanted to become a primary school teacher. And I even started to practice – one of my favorite games was "playing school", and a younger friend from the neighborhood enjoyed being my docile pupil.

When I finished the 6th grade of primary school I was advised to skip the then still existing 7th grade, and started secondary school in the classical (Latin – Greek) track that lasted 6 years. However, I retained my plan to become a primary school teacher. Moreover, although I was quite good in Latin and Greek I lost the motivation for studying them. And thus against the advice of the psycho-medical-social center, I went to the teacher training college at the age of 15. My parents were quite pleased about it, because it was an entrée into a permanent and stable job in the civil service, very different from their rather uncertain livelihood. I finished my studies at the teacher training college as "primus inter pares" in June 1960, but instead of taking a teaching position (and to the disappointment of my mother) I expressed my desire to continue studying at the university. My father, although not well educated himself, supported my ambition, but he said: "If you fail at the end of the first year, it is over!" So I decided to take my chance.

FROM INTEREST IN STUDYING CHEMISTRY BACK TO EDUCATIONAL SCIENCES

At this stage in my academic studies my first choice was not to continue in pedagogy. During my teacher training years I had become very interested in chemistry. But

M. de Ibarrola & D. C. Phillips (Eds.), Leaders in Educational Research, 19–37.

in those days access to the study of chemistry at the university in Belgium was restricted to people who had successfully ended the classic track in secondary education. The psycho-medical-social center advised me to study engineering – for this would have been possible assuming that I successfully undertook a preparatory year focused on mathematics, but which, however, I did not care to do. Consequently I returned to my first favored domain, namely education – which at that time was the only directly accessible field at the university for graduates of a teacher training college.

I ended the four year training program in educational sciences at the University of Leuven in July 1964. The scope of the program was quite broad, involving for instance several courses in philosophy. But what I appreciated very much was the heavy emphasis on psychology, including developmental, differential, social, and educational psychology, but also psychological testing and the study of children with disorders. Another strength was the rather substantial introduction to research methodology and statistics. An important part of the training during the last two years was the preparation of a master's thesis; I carried out an empirical study about the attitudes toward school subjects of non-promoted and normally progressing secondary school boys. Students' attitude toward each school subject was conceived in terms of four dimensions: two subjective ones (interest and capacity) and two more objective ones (utilitarian and formative value). The 136 participating students expressed their attitudes on four corresponding rating scales. The ratings of 68 non-promoted and 68 normally progressing students were compared by means of analysis of variance, thereby allowing me to test several hypotheses. During my work on this study my interest in educational research crystallized. Rather unusual in those days for a master's thesis, the study resulted in my first two publications: a journal article in *Psychologica Belgica* in1964 and a small monograph with a summary in English in 1965.

With my degree of licentiate (today a Master's) in educational sciences I could again easily obtain a stable job teaching pedagogy and didactics in a teacher training college. But as at this time I had caught the "research virus", I chose to pursue the uncertain road of educational research. Already several months before the end of my studies the supervisor of my master's thesis, Prof. Swinnen, encouraged me to submit a grant proposal to the National Fund for Scientific Research (NFSR). After much hesitation I agreed to do so. The proposal was approved and on October 1, 1964, I became the second scholar in the field of education funded very moderately by the NFSR. A week before I had married Rita, so that two happy mile-stones in my life coincided.

BECOMING AN EDUCATIONAL RESEARCHER

The start of my career coincided with the founding of the Center for Psycho-Pedagogical and Didactic Research at the University of Leuven. The first project of the Center during the school year 1964–1965 focused on the evaluation of

mathematics education at the end of the primary school in the Province of Limburg. In collaboration with the team of superintendents of the Province, we (the supervisor of my master's thesis, a colleague and myself) developed an achievement test, which started from an inventory of the currently valid objectives of mathematics education that were held to be achievable by the average pupil (on the condition that they had received a good quality education). The test was administered to over nine thousand sixth graders from about five hundred schools. The project initiated a long period during which a similar test for mathematics but also for the mother tongue were constructed yearly, and administered at the end of the primary school to about forty thousand pupils of the Flemish Catholic schools.

Reflection and discussion about this project resulted in the development of a theoretical model for the evaluation of educational achievement. Two major issues that received considerable attention were: 1. The need to move away in educational evaluation from what Glaser (1963) has called norm-referenced tests toward criterion-referenced tests that use an educational criterion instead of a statistical norm for judging achievement; 2. The recognition of the importance of educational objectives as a basis for the construction of such tests, and therefore the need to develop a methodology for the determination and formulation of objectives. This latter theme became the central focus of my doctoral dissertation, namely a theoretical and empirical study of the determination, formulation, classification and evaluation of the cognitive objectives of mathematics education at the primary school. With respect to the determination of objectives, an empirical study was carried out whereby a list of objectives for primary math education was judged – by about 100 educational professionals (superintendents, teachers of teacher training colleges, headmasters and teachers of elementary schools) – in terms of three aspects: 1. the degree to which they are currently considered as established and valid objectives; 2. the degree of their educational desirability, in other words should one continue to pursue them; 3. their degree of attainability by average students assuming that high quality education is provided. With regard to classification, starting from a critical analysis of the well-known Bloom taxonomy of educational objectives, an alternative classification was developed based on Guilford's structure-of-intellect model. A recent description of this classification system and a comparison with a revised version of Bloom's taxonomy is available in Anderson & Krathwohl (2001. The defense of my dissertation took place in March 1970. My father, who was very proud, died suddenly two months later, so I was very pleased that he had at least lived to see my defense.

My work on educational objectives had an impact on primary education, especially through several practice-oriented publications (e.g. De Corte & Janssens, 1974; sixth edition 1983). Probably the involvement of a large group of the superintendents in the study was instrumental in this respect. Teachers were strongly urged to reflect on and to make explicit the objectives of their lessons, but many of my fellow-students from the teacher training college who had by then a number of years of experience as teachers, were not very pleased with my impact on their daily practice. Thus

I experienced here for the first time the well-known phenomenon of resistance to change.

Nevertheless, and no doubt due to my basic training as an elementary school teacher, the choices of my research topics have always been guided by two objectives: Contributing to the advancement of our scientific knowledge about the processes and outcomes of learning and teaching, and at the same time contributing to the research-based improvement of educational practices. The tension between both objectives has continuously been a challenge for me personally, but this tension also still exists in the field of educational psychology as a whole.

Based on my PhD work I obtained a four year grant from the NFSR starting in October 1970 as a "qualified researcher" (a "postdoc" in the current terminology). But in the early 1970s, important developments in the academic world in general, and in the training program in educational sciences in Leuven in particular – developments that were in part a result of the 1968 political protest movements – interfered with my research plans and activities. Due to the increasing democratization of higher education, the number of students substantially increased. Also the training program in educational sciences was extended and differentiated: in addition to regular school education, special education and adult education were introduced as fields of study. These developments, together with the fact that Professor D'Espallier, head of the educational section of the Faculty of Psychology and Educational Sciences, became seriously ill and died, resulted in my having to leave the position of NFSR qualified researcher, and instead I was nominated in 1971 as lecturer and in 1972 as associate professor charged with teaching tasks. This certainly slowed down my development as a researcher. Moreover, in the 1970s educational research in Belgium was not strong, so I had few interlocutors in my own country; therefore I followed more carefully the situation abroad, initially in The Netherlands and thereafter in the USA, two countries where educational research was much more highly developed.

A collaboration of my Leuven colleague Roland Vandenberghe and myself with three colleagues from the University of Groningen resulted in 1972 in a textbook for students in educational sciences, focused on teaching and learning, It was titled *Beknopte didaxologie,* and due to its success in the training of students in educational sciences, especially in The Netherlands, the book was twice thoroughly revised (1974 and 1981) and has also been translated into German and French.

During the early 1970s the Leuven team of researchers in education slowly increased. This created the opportunity to initiate and develop intensive exchanges about learning and teaching during several joint workshops with the important research group of Prof. Carl van Parreren of the University of Utrecht who introduced Vygotskian psychology in The Netherlands and Flanders. Through the contacts with the Utrecht group, Vygotskian ideas had an impact on our perspective on learning, especially by stressing the importance of learning as a vehicle for development and the importance for learning of cultural and social factors.

These contacts with The Netherlands in the first half of the 1970s resulted also in my nomination in 1975 as member of the Editorial Board of the major Dutch journal in educational sciences *Pedagogische Studiën*, and in 1979 I became the first Flemish Chair of the Board for a four year period. In the meantime in 1976 I was appointed professor of educational psychology at the Faculty of Psychology and Educational Sciences of the University of Leuven.

In the early 1970s I also started to make contact with American scholars, encouraged by the late Richard Snow of the School of Education at Stanford, who visited Leuven during his sabbatical year in 1972. These contacts resulted in my first study trip to the U.S.A. in the summer of 1975. I visited the Graduate School of Education, University of California at Los Angeles (Jim Popham and Merlin Wittrock), the School of Education of Stanford University (Elliot Eisner, Nate Gage, and Richard Snow), the Far West Laboratory for Educational Research and Development in San Francisco (Ned Flanders), the College of Education, University of Illinois at Urbana-Champaign (Dick Anderson and Barak Rosenshine), the Wisconsin Research and Development Center for Cognitive Learning, Madison (Herb Klausmeier), and the Educational Testing Service, Princeton (Sam Messick and Herman Witkin). The trip allowed me to discuss a large variety of issues with these important educational researchers – for instance, I talked about the role of educational objectives first at UCLA with Jim Popham (who in those days had a bumper sticker on his car saying "Stamp out non-behavioral objectives"), and two days later at Stanford with Elliot Eisner, one of the most prominent critics of the dominance of behavioral objectives (one of whose favorite sayings was "not everything that matters can be measured and not everything that is measured matters").

During the 1970s my research interest shifted from a focus on educational objectives to the analysis of the cognitive processes and structures underlying those objectives, and to the investigation of learning and teaching processes that are necessary to attain them; my focus continued to be on mathematics education. This research trajectory was certainly influenced by the contacts and discussions with academic colleagues and with educational practitioners over the years. But of special importance in this respect were two events. First of all in June 1977 I was privileged to attend the "NATO International Conference on Cognitive Psychology and Instruction," organized in Amsterdam with the aim of promoting exchange between cognitive psychologists and educational researchers on both sides of the Atlantic. Dick Snow introduced me to leading researchers, and thus I met for the first time Bob Glaser – who became my second American mentor. A conversation with Bob wherein I told him about the work in primary math education that I had started in Leuven with Lieven Verschaffel, led to the second important event – Bob invited me to visit the Learning Research and Development Center (LRDC) at the University of Pittsburgh. Thanks to a NATO grant I made a second study-tour to the U.S.A. in the spring of 1979, and had a very interesting and stimulating stay of several weeks at LRDC. Of special relevance were the meetings with Lauren

Resnick, Jim Greeno and their co-workers about research on mathematics education at the primary school. Their methodological approach and theoretical ideas have influenced our own work in Belgium on mathematical problem solving, such as the PhD work of Lieven Verschaffel on first-graders' representation and solution processes of simple addition and subtraction word problems. During this second study-tour I also had useful visits to the Department of Psychology of Carnegie-Mellon University at Pittsburgh (Bob Siegler and David Klahr); the Center for Human Information Processing, University of California at San Diego (Michael Cole), and again the School of Education at Stanford University (Dick Snow). At the end of this trip I attended for the first time the Annual Meeting of the American Educational Research Association in San Francisco; since then I attended all AERA conventions until 2012.

My research and teaching relating to learning and instruction was heavily influenced in the early 1970s by West-European (Selz, Kohnstamm, Van Parreren) and Russian (Vygotsky, Davydov, Gal'perin) educational psychologists. However, as a result of my contacts with leading American scholars, my theoretical framework was gradually influenced by other perspectives, especially the cognitive, information-processing approach, and later by socio-constructivism. But as stated by Verschaffel and Dochy (2006): "Rather than identifying himself with one single theoretical approach, Erik has always shown an openness to, and penchant for comparing and synthesizing different theoretical perspectives" (p. xiii).

FROM DESCRIPTIVE STUDIES TO INTERVENTION OR DESIGN RESEARCH

A mile-stone during my rather hectic but "golden" seventies was my appointment in 1976 as professor of educational psychology in the Faculty of Psychology and Educational Sciences of the University of Leuven in charge of introductory and advanced courses in educational psychology, and also a course in curriculum development. The progression of my research interests in the direction mentioned above led to the foundation in 1980 of the Center of Instructional Psychology; in 1990 the Center merged with the Center for Educational Technology (founded by Joost Lowyck) to become – until today – the Center for Instructional Psychology and Technology (CIP&T). A major overall aim of research in this Center has been to contribute to the development of theories of learning from instruction, and using this work as a basis for the design of powerful learning environments (with a special focus on mathematics education). Today the Center consists of an international group of more than 25 scholars.

The research in the 1980s – in collaboration with Lieven Verschaffel – focused initially on children's problem solving of elementary addition and subtraction word problems such as "Joe has 8 marbles; he has 5 more marbles than Tom; how many marbles does Tom have?" The main topics addressed in a series of studies were: the influence of the semantic structure of word problems on children's problem representation and performance; the systematic nature of their errors; the diversity

and inventiveness of their solution strategies; the effect on children's solutions of the sequence of presentation of the numbers in the problem text, i.e. whether the smaller or the larger number is given first; the influence of teaching variables based on an analysis of frequently used instructional programs in math teaching in grades 1 and 2 (for an overview see Verschaffel & De Corte, 1993). Around the mid-1980s we also studied the solution processes of upper primary school students on multiplication and division word problems. From a methodological point of view our research was guided by what I have called the broad-spectrum approach, i.e. the concurrent application of a variety of complementary data-gathering and data-analysis techniques in order to obtain a rich and reliable picture of the phenomena under investigation. More specifically, besides achievement tests we have used questionnaires, semi-structured individual interviews, and in some studies detailed quantitative analysis of children's eye movements while reading and solving word problems.

All these descriptive studies pointed to a number of important weaknesses of educational practices in math teaching in general and in instruction in problem solving in particular: Lack of attention for making an initial representation of a word problem; the focus on procedural rather than conceptual knowledge; the almost total lack of attention for the explication of solution strategies in the classroom, and related to this the absence of teaching heuristic strategies and metacognitive skills; and the lack of systematic attention to controlling the solution process and for reflection on it.

Considering my ambition to do research that can lead to the improvement of classroom practices, I thought at the end of the 1980s that it was appropriate to engage in intervention research. Based on our accumulated knowledge about children's solution processes, and also taking into account the advanced knowledge about learning, it seemed possible to design novel environments for learning and teaching that can overcome the weaknesses just mentioned, boost children's ability in solving mathematical word problems, and hopefully as well their problem solving skills in general. In a major "design experiment" carried out with the financial support of the Flemish Ministry of Education we developed a learning environment consisting of 20 lessons implemented over a four month period. The intervention was based on the following guidelines: 1. students were taught a five-stage self-regulation strategy for solving problems, and a set of eight heuristics; 2. a varied set of realistic, complex, and open problems was used: 3. a learning community was created through the application of interactive instructional techniques, in particular, small-group work and whole-class discussion; 4. an innovative classroom culture was created through establishing new norms about learning and teaching problem solving.

The results of the four participating experimental classes showed convincingly that the new learning environment, combining a set of carefully designed word problems with highly interactive teaching methods and the introduction of a new classroom culture, can significantly increase students' competency in solving

mathematical word problems, especially their self-regulated approach to problems (for an extensive summary of this and other design experiments see Verschaffel, Greer, & De Corte, 2000). And these results hold true not only for the high-ability but also for the low-ability students. Important to mention here is that our design experiments have had an impact on educational policy and practice. Indeed, in the new standards for mathematics education in the primary school that became operational in 1997 some attention is paid to self-regulation skills and heuristic strategies, but our work has especially influenced a new generation of textbooks for primary math education that were designed after the introduction of new standards. Our research (as well that of other scholars) shows that it is possible in the context of design experiments to successfully introduce novel research-based practices in classrooms. This good news is a reason for optimism, although it must be added that obtaining these results requires the intensive and sustained support of the participating teachers. This optimism, however, is negated somewhat by other research showing that introducing textbooks and materials based on ideas underlying innovative learning environments does not easily – and certainly does not automatically – result in high-fidelity and sustained broader implementation of such new approaches in classrooms. This became very obvious in a study wherein we investigated how our new approach to the teaching of problem solving was applied in classrooms that used a new textbook in which learning to solve problems is very explicitly based on our approach (Depaepe, De Corte, & Verschaffel, 2007).

While the focus in the research on children's math problem solving was for a long time upon cognitive processes and variables, an important development in the late 1990s was the growing attention to the impact of affective aspects, more specifically of beliefs and emotions, and to the influence of the culture of the mathematics classroom on children's problem solving (see for instance, De Corte, Op 't Eynde, Depaepe, & Verschaffel, 2010; De Corte, Depaepe, Op 't Eynde, & Verschaffel, 2011).

The study of primary school students' mathematical problem solving has constituted the mainstream of my research, but I have also been involved in projects addressing other aspects of math education as well as topics not related to mathematics (see also Verschaffel & Dochy, 2006). For instance, we developed a computer simulation as a tool for studying teachers' cognitive activities during error diagnosis in children's arithmetic procedures (De Corte, Verschaffel, & Schrooten, 1991). We also constructed the first assessment instrument for the large-scale evaluation of the new standards for mathematics education in Flemish primary schools (Janssen, De Corte, Verschaffel, Knoors, & Colémont, 2002). This study lies at the origin of what is now the Policy Research Center for Test Development and Assessment at the University of Leuven. Periodically, by order of the Flemish Ministry of Education, the Center organizes national (low-stake) assessments in different subject-matter domains to determine to what extent Flemish pupils reach final objectives or developmental aims at the end of particular educational levels.

Inspired by the interest in children's problem solving, a major project in the second half of the 1980s related to the cognitive effects of learning to program in Logo (De Corte, Verschaffel, & Schrooten, 1992). In two other projects we developed an instructional intervention based on the same basic ideas underlying the learning environment applied in the design experiment on mathematics problem solving described above. In one study we designed a learning environment for improving text comprehension strategies in upper primary school students (De Corte, Verschaffel, & Van de Ven, 2001). In another design experiment a learning environment was constructed and evaluated for improving self-regulated learning in first year university students of business economics (Masui & De Corte, 2005). Both investigations yielded positive results, and together with the intervention study on mathematics they led me to develop the CLIA-model (*C*ompetence, *L*earning, *I*ntervention, *A*ssessment) for designing learning environments that are powerful in eliciting (in students at all levels of education) learning processes that facilitate the acquisition of productive knowledge and competent learning, thinking and problem solving skills (De Corte, Verschaffel, & Masui, 2004). The three studies were instrumental in specifying the four interconnected components of the model:

- *C*ompetence: components of adaptive competence in a domain;
- *L*earning: characteristics of effective learning processes;
- *I*ntervention: principles and methods guiding the design of learning environments;
- *A*ssessment: forms of assessment for monitoring and improving learning and teaching.

The basic characteristics of the perspective on learning are: constructive, self-regulated, situated, and collaborative (CSSC learning) (De Corte, 2010).

MAINTAINING A BROADER PERSPECTIVE ON EDUCATIONAL RESEARCH

Notwithstanding the fact that my research has focused heavily on mathematics education, especially problem solving, I have always tried to keep a broader perspective on educational research in general and on instructional psychology in particular. It has been very helpful in this respect to be involved (as mentioned above) for eight years on the Editorial Board of the Dutch journal *Pedagogische Studiën,* and from 1987 to 2002 associate editor of the *International Journal of Educational Research.* I also acted as editor of the section "Instructional psychology" for the second edition of the *International encyclopedia of education* (Husén & Postlethwaite, 1994), and as co-editor (with the late Franz Weinert) of the *International encyclopedia of developmental and instructional psychology* (De Corte & Weinert, 1996). In addition I have been involved in a wide-range of publishing activities including editing books and special issues of journals (for a comprehensive overview see Verschaffel & Dochy, 2006). From 1987 till 1993 I was Director of the Leuven Language Institute which was also instrumental in keeping the broader perspective.

The wide appreciation for the research in educational psychology in general and in mathematics education in particular is illustrated by the invitations to contribute chapters to a number of international handbooks (De Corte, Greer, & Verschaffel, 1996; Verschaffel & De Corte, 1996; De Corte & Verschaffel, 2006; Verschaffel. Greer, & De Corte, 2007; De Corte, Mason, Depaepe, & Verschaffel, 2011).

Several awards have also been an expression of appreciation. In 1987 I obtained, with Lieven Verschaffel, the Research Award of the U.S.A. National Council of Teachers of Mathematics (NCTM) for an article on research of young children's math problem solving in NCTM's *Journal for Research in Mathematics Education*. At the 7th EARLI Conference held in Athens in 1997 I received, together with the late Dick Snow, the first EARLI "Award for Outstanding Contributions to the Science of Learning and Instruction". At the 25th International Congress of Applied Psychology in 2002 in Singapore I was recipient of the "Award for Outstanding Career Contribution to Educational Psychology" of the Division of Educational, Instructional, and School Psychology of the International Association of Applied Psychology. In the same vein I also mention my election in 2002 as a Foreign Member of the National Academy of Education of the U.S.A., my nomination in 2008 as Fellow of the American Educational Research Association, and in 2012 as Full member of the Russian Academy of Pedagogical and Social Sciences.

The "icing on the cake" was certainly the invitation to spend the academic year 2005–2006 as Fellow at the Center for Advanced Study in the Behavioral Sciences at Stanford, CA. (Sometime before I had already spent a very productive academic year 1998 – 1999 as visiting scholar at the School of Education of Stanford University.)

GLOBALIZING MY RESEARCH AND DEVELOPMENT ACTIVITIES

My interest in contributing to the improvement of educational practices has also stimulated me to initiate and participate in joint research and development projects with scholars in Latin America, Africa and Asia, and the designing of new training and degree programs; these activities were in many cases facilitated by the establishment of joint programs with my university in Leuven. I will mention only a few highlights.

Latin America

From 1986 until 1996 I coordinated a program for cooperation in educational sciences between the Catholic University of Uruguay in Montevideo and the University of Leuven. Besides establishing a Center for Science Education, a major outcome of the project was the launching and development of a Master's degree program in education.

From 1997–2004 I coordinated two consecutive projects at the Departemento de Didactica de la Matemática of the Facultad de Educación at the Pontificia

Universidad Católica de Chile in Santiago. Focus of the projects was innovation in mathematics education with an emphasis on problem solving. The results showed that the basic ideas of our approach to the teaching of mathematics were transferable to Chilean classrooms, however taking thereby into account the local social and cultural context.

The Flemish Interuniversity Council (VLIR) has a section for developmental cooperation that makes agreements with universities in developing countries focused on capacity building. Such an agreement for a five-year period with the Universidad Nacional Agraria La Molina (UNALM) in Lima, Peru started in 2010 under the overall title "Enhancing academic capacity for rural development". I am involved as team member in one of the eight projects that focuses on "Educational innovation in undergraduate and graduate programs with emphasis on the sustainable management of agro-ecosystems and rural development". The main objective of the project is the development of educational models in agrarian sciences to support the development of agrarian professionals linked to the reality of a highly diverse country.

In 2012 an agreement was signed between the Ecuadorian Ministerio de Educación, VVOB, and the Faculty of Psychology and Educational Sciences of the University of Leuven. The three partners agreed to cooperate in the establishment and development of the Universidad Nacional de Educación (UNAE), a new institution for higher education focused on training and professional development of teachers, school leaders and other professionals including researchers. I am involved in this challenging initiative, especially with respect to the initiation and elaboration of research activities in mathematics education, but also to support the development of the teacher training program.

Africa

The very beautiful but poorest continent on our globe that still is in need of massive help and support of the rich parts of the world is Africa. I have had the pleasure to be involved in projects briefly in North and Central Africa and quite extensively in South Africa.

In 1981 and 1983 I taught an introductory course in educational psychology at the Teacher Training College of the University Mohammed V in Rabat, Morocco, and in 1982 for educational professionals of the Ministry of Education in Bujumbura, Burundi. During missions in Zaïre (our former colony, nowadays Congo) I worked with the teaching staff of the Faculty of Medicine of the University of Kinshasa (1984), and a selected group of the staff of the University of Lubumbashi (1985) in educational psychology.

Starting in 1979 I visited beautiful South Africa many times, the first occasion being at the invitation of the Faculty of Education of the Rand Afrikaans University (now the University of Johannesburg); and in 1981 I spent several weeks as guest professor at the Faculty of Education of the University of Pretoria. However, soon

after that, as a measure against the apartheid system, professors of the University of Leuven were forbidden to travel to South Africa. But when, in 1988, I received an invitation from the University of Bloemfontein, I was granted an exception by our Rector – the reason being that the program of my one-month visit consisted of giving lectures and seminars for black teachers, school leaders and superintendents in Cape Town, Port Elizabeth, King Williams's Town, Umtata, Durban and Bloemfontein. In the post-apartheid era I have again been involved in a number of interesting activities facilitated by the then priority status of South Africa in the policy for developmental cooperation of the Government of Flanders. From 1997 until 2003 I coordinated seven consecutive research and development projects funded by the Flemish Ministry of Education, initially in collaboration with the University of the Free State in Bloemfontein, but afterwards also involving the Universities of Pretoria and Stellenbosch. These projects related to different aspects of educational innovation (curriculum materials, assessment instruments, teacher training, school leadership) in the new South Africa.

In 2003 the Flemish Interuniversity Council (VLIR) made an agreement with the University of the West Cape (UWC) for a five-year cooperation program involving seven projects in different disciplines under the overall title "Dynamics of building a better society". The Dean of the Faculty of Education of UWC asked me to act as Flemish team-leader for the project "Addressing the direct and indirect impact of HIV/AIDS on pre- and school-going children in South Africa". A group of over 20 masters, PhD, and post-doc students participated in the program, developing their capacity as first-rate researchers as they addressed various topics in four areas: defining educationally justifiable objectives related to the HIV epidemic; identifying learning content and appropriate educational practices; developing learning environments, and designing evaluation practices.

For my intensive involvements in educational research and development in South Africa I have been awarded two doctorates *honoris causa*: in 2000 at the Rand Afrikaans University in Johannesburg, and in 2003 at the University of the Free State in Bloemfontein.

Thailand

For a long time the Catholic Assumption University in Bangkok, Thailand was not allowed to organize a doctoral program in education, a right reserved for public education institutions. In early 1994 the visionary Rector of the university came to Leuven with an original proposal for a joint venture to set up a doctoral program in Bangkok. An underlying idea was that he wanted that some people of the staff of his university would get a PhD in educational sciences. He gave us the freedom to put together a program based on our PhD standards. He also guaranteed that he would cover all the costs. At that time I was just about to start my term as Chair of the Department of Educational Sciences (1994–1998), and I was assigned the task of putting together a program. I defined the entrance requirements and designed a

program of ten courses that the students had to take; in parallel with this coursework the students could prepare a proposal for a PhD that had to meet the regular criteria of the University of Leuven. The program started at the end of 1994 and ran until early 2002. Two consecutive groups of about 20 students took the courses, most of them successfully. But in the end only three students obtained the PhD degree from Leuven; most of them had underestimated the required effort and time investment. However, our efforts were not totally in vain – we heard afterwards that several more students succeeded in getting a PhD at other universities in the U.S.A. or in another Asian country.

INVOLVEMENT IN ORGANIZATION AND MANAGEMENT OF EDUCATIONAL RESEARCH AND DEVELOPMENT

EARLI: the European Association for Research on Learning and Instruction

At the "NATO International Conference on Cognitive Psychology and Instruction" in 1977 the majority of the presenters were North Americans who knew each other quite well, whereas many European participants met each other for the first time. This was typical for the situation in those days, mainly due to language and cultural barriers. When I started in the late seventies to attend the AERA meetings and to visit American research centers like LRDC, I regularly met European colleagues whom I had never encountered in the "old world". There was thus an obvious need for a European forum for researchers in learning and instruction, and the plan slowly matured to create such a meeting space. In this respect I was strongly stimulated and supported by the late Dick Snow. In the early 1980s he stayed for a two year period as liaison scientist at the London Branch of the US Office of Naval Research. Exploring European research in the broad field of psychology, especially instructional and differential psychology, he travelled throughout the continent and identified in different countries senior as well as promising junior scholars doing interesting research on learning, development and instruction, but who had not many contacts with their colleagues in other parts of Europe. In December 1983 Snow and I decided to organize a conference as a lever for launching a European forum for exchange and discussion of research ideas, methodologies and results relating to learning and instruction.

Working on our plan we discovered a related initiative of two Dutch colleagues, Hans Lodewijks and Robert-Jan Simons, namely to start a European journal in educational research. We joined our efforts in the spring of 1984 and decided as a first step to have a conference and to establish an organization; the plan for launching a journal was postponed. This resulted in the organization of the first EARLI conference in Leuven, Belgium in June 1985, with financial support mainly from SVO (the Dutch Foundation for Educational Research) and the London Branch of the US Office of Naval Research. During the preparation of the conference we were pleased with the many positive, even enthusiastic reactions. The first conference brought together 135 scholars from 11 European countries. They were joined by

five distinguished American researchers: Bill McKeachie, Bob Glaser, Lauren Resnick, the then President of AERA Dave Berliner, and of course Dick Snow. The conference ended up with the foundation session of the European Association for Research on Learning and Instruction. Over the years EARLI has constantly grown; it now has about 2000 members from all over the world, and the biennial conference is generally perceived as the most important meeting of educational researchers in Europe.

I was EARLI President from 1985 till 1989, and very quickly the idea to launch an EARLI journal was raised in the Executive Committee. Negotiations in 1986 at AERA in San Francisco with Pergamon Press and the editors of the *International Journal of Educational Research* led to an agreement that each volume of *IJER* would contain two thematic issues devoted to research on learning and instruction under the editorial control of EARLI. In that perspective I was nominated as one of the editors of *IJER*. In 1989 the constructive cooperation with Pergamon Press gained a new impetus. It was decided to start a real EARLI flagship journal *Learning and Instruction*, replacing EARLI's yearly contribution to *IJER*. My term as EARLI President ended then, and at the request of the Executive Committee I agreed to act as the first editor of the journal, with Lieven Verschaffel as editorial assistant. The first volume of *L&I* appeared in 1991. Thanks to the hard work of the successive editors after me since 1993 – Roger Säljö, Neil Mercer, Wolfgang Schnotz, Anastasia Efklides, and Lucia Mason – the journal's scientific reputation, reflected in the increasing impact factor, has continuously grown over the past two decades, and it is now recognized world-wide as one of the top-journals in the field of educational psychology.

I have also been active in educational psychology at the global level. In 1994 I was elected for a four-year term as President of the Division of Educational, Instructional, and School Psychology of the International Association of Applied Psychology. My main responsibility was organizing the program of the Division at the 24th International Congress of Applied Psychology (San Francisco, CA, August 1998).

IAE: the International Academy of Education

I was surprised when Torsten Husén, one of the major European educational researchers in the second part of the 20th century, asked in 1996 for my CV. Soon thereafter it became clear why: in 1997 I was nominated as Fellow of the International Academy of Education. Another surprise followed quickly at the General Assembly meeting of the IAE in Paris in June 1998. Torsten and Neville Postlethwaite asked me to become President of IAE. It was after quite a bit of hesitation but also pride that I accepted to succeed Torsten. After a first four-year term I was asked to continue and stayed on till 2008.

The IAE is dedicated to strengthening the contributions of research to solving critical educational problems throughout the world, and providing better

communication among policy-makers, researchers, and practitioners. This mission converged well with my interest in reducing the gap between research and educational practices. In that perspective Herbert Walberg and I, supported by the Board of Directors of the IAE, launched in 2000, in a joint venture with the International Bureau of Education (IBE) in Geneva, the Academy's Educational Practices Series. The 24 booklets that appeared so far in the Series, written by internationally well-known experts and published in English, are disseminated by IBE in all its member countries. The pocket format booklets provide for a broad audience of educational professionals timely synthesis of research on educational practices, that generally improve student learning and are of wide international importance. The booklets can be freely reproduced and some of them have been translated in eight other languages. Together with Neville Postlethwaite a parallel IAE Educational Policy Series was launched in 2005, published and disseminated by the International Institute for Educational Planning in Paris. In this series 13 booklets have so far been published.

AE: Academia Europaea

I'm not sure about it, but it is very probable that Torsten Husén was also the key person behind my election to the Academia Europaea in 1996. Since the late 1990s I have been involved in the organization of AE conferences on higher education topics, for instance as chair of the program committee of a conference on "Excellence in higher education" held in Stockholm in 2002 (see De Corte, 2003). In 2005 I was invited to become member of the HERCULES (**H**igher **E**ducation, **R**esearch and **Cul**ture in **E**uropean **S**ociety) expert group of the AE. In 2010 I was unanimously elected by the group as chair for a three year period; in June 2013 this has been extended till 2016. Besides being an advisory body to the Council of the AE on issues that are relevant to research and policy in European institutions of higher education and learning, a major task of the HERCULES group consists precisely in the organization of conferences on problems and issues in European higher education. In May 2013 a conference took place in Stockholm on the topical issue "Bibliometrics: Use and abuse in the review of research performance". Another meeting was held in November 2013 in Rome on "Migration and mobility in science: Impacts on cultures and the profession in institutions of higher education in Europe".

Participation in Review and Evaluation Committees in Higher Education

Since 1994 I have been invited to participate as chair or member in 10 committees and panels for the evaluation of research or training in educational sciences and teacher training in different European countries: Estonia, Finland, France, Germany, and The Netherlands. In the latter country I chaired in 2000 the Review Committee

for Research in Pedagogical Sciences and Education, covering 35 research programs in seven universities, and in 2005 the Review Committee of the Training Programs in Pedagogical Sciences in six universities.

Although there is no doubt that such quality assessment exercises are valuable, one has nevertheless to critically reconsider and evaluate them from time to time. This was the topic of another conference of the HERCULES group of the Academia Europaea that I co-organized (Cavalli, 2007). For instance, in The Netherlands there has been over the years a shift from a strong orientation toward quality improvement in the direction of a heavy focus on accreditation; this encountered resistance from part of the academic staff. It seems to me that striving for improvement should indeed remain an important objective of quality assessment.

FINAL COMMENT

I am optimistic that educational research has the potential to contribute to the improvement of the quality of education, but I am doubtful – and thus rather pessimistic – that we will succeed on the short term in the sustainable, large-scale implementation of research-based new approaches to classroom learning and teaching.

Also taking into account my background and roots, I am quite satisfied and proud of my modest contribution to educational research and development. However, this has only been possible thanks to the support and assistance of many people. My parents created the environment and conditions that allowed me to study at the university. Of the many others, I need to mention two persons who have substantially contributed to my career. It has been a great pleasure to collaborate over about 30 years productively with my younger colleague Lieven Verschaffel, an always loyal, very dynamic and highly creative scholar. And my wife Rita has not only provided me the time and space to be a researcher, but she also has encouraged and supported me throughout my career.

FAVORITE WORKS

Books

Beknopte didaxologie (Foundations of teaching).(1974); German and Fernch translations 1975, 1979. Co-authored with Geerligs, Lagerweij, Peters and Vandenberghe

Learning and instruction. European research in an international context. (1987). Co-editor with Lodewijks, Parmentier, and Span.

Groeien in onderwijzen. Handleiding voor leerkrachten basisonderwijs. Deel 1 en Deel 2. (Growing in teaching. Manual for primary school teachers. Part 1 and 2). (1988/1990). Co-authored with Vandenberghe et al.

International encyclopedia of developmental and instructional psychology. (1996). Co-editor with Weinert.

Making sense of word problems. (2000). Co-aunthor with Verschaffel and Greer.

Excellence in higher education. (2003).

Book Chapters

Mathematics teaching and learning. (1996) With Greer and Verschaffel.
Historical developments in the understanding of learning. (2010).
The reflexive relation between students' mathematics-related beliefs and the mathematics classroom culture. (2010). With Op't Eynde, Depaepe, and Verschaffel.
Self-regulation of mathematical knowledge and skills. (2011). With Mason, Depaepe and Verschaffel.

Articles

The effect of semantic structure on first graders' strategies for solving addition and subtraction word problems. (1987). With Verschaffel.
The influence of rewording verbal problems on children's problem representations and solutions. (1985). With De Win and Vertschaffel.
Influence of the semantic structure of word problems on second graders' eye movements. (1990). With Pauwels and Verschaffel.
Learning to solve mathematical application problems: A design experiment with fifth graders.(1999). With Bogaerts, Lasure, Ratinckx, and Van Vaerenbergh.
The CLIA-model: A framework for designing powerful learning environments for thinking and problem solving. (2004) With Masui and Verschaffel.
Epistemic dimensions of students' mathematics-related belief systems. (2006). With Op't Eynde and Verschaffel.
Teachers' metacognitive and heuristic approaches to word problem solving: Analysis and impact on students' beliefs and performance. (2010). With Depaepe and Verschaffel.

REFERENCES

Anderson, L. W., & Krathwohl, D. R. (Eds.). (2001). *A taxonomy for learning, teaching, and assessing. A revision of Bloom's taxonomy of educational objectives.* New York, NY: Addison Wesley Longman.

Cavalli, A. (Ed.). (2007). *Quality assessment in higher education in Europe.* London, UK: Portland Press.

De Corte, E. (Ed.). (2003). *Excellence in higher education.* (Wenner-Gren International Series, Vol. 82). London, UK: Portland Press.

De Corte, E. (2010). Historical developments in the understanding of learning. In H. Dumont, D. Istance, & F. Benavides (Eds.), *The nature of learning. Using research to inspire practice* (pp. 35–67). Paris: OECD Publishing.

De Corte, E., Depaepe, F., Op 't Eynde, P., & Verschaffel, L. (2011). Students' self-regulation of emotions in mathematics: An analysis of meta-emotional knowledge and skills. *ZDM—The International Journal on Mathematics Education, 43,* 483–495.

De Corte, E., Geerligs, C. T., Lagerweij, N. A. J., Peters, J. J., & Vandenberghe, R. (1974). *Beknopte didaxologie (Foundations of teaching)*. Groningen: Tjeenk Willink. German and French translations 1975, 1979.

De Corte, E., Greer, B., & Verschaffel, L. (1996). Mathematics teaching and learning. In D. C. Berliner & R. Calfee (Eds.), *The handbook of educational psychology* (pp. 491–549). New York, NY: Macmillan.

De Corte, E., & Janssens, A. (1974). *Praktische leidraad voor het formuleren van leerdoelen. (Practical guide for the formulation of learning objectives.)* Leuven: J.B. Wolters.

De Corte, E., Lodewijks, H. G. L. C., Parmentier, R., & Span, P. (Eds.). (1987). *Learning and instruction. European research in an international context* (Vol. 1). Leuven/Oxford: Leuven University Press/ Pergamon Press

De Corte, E., Mason, L., Depaepe, F., & Verschaffel, L. (2011). Self-regulation of mathematical knowledge and skills. In B. J. Zimmerman & D. H. Schunk (Eds.), *Handbook of self-regulation of learning and performance* (pp. 155–172). New York, NY: Routledge.

De Corte, E., Op ‘t Eynde, P., Depaepe, F., & Verschaffel, L. (2010). The reflexive relation between students’ mathematics-related beliefs and the mathematics classroom culture. In L. D. Bendixen & F. C. Feucht (Eds.), *Personal epistemology in the classroom: Theory, research, and implications for practice* (pp. 292–327). Cambridge, UK: Cambridge University Press.

De Corte, E., & Vandenberghe, R. (1988/1990). *Groeien in onderwijzen. Handleiding voor leerkrachten basisonderwijs*. *Deel 1 en Deel 2. (Growing in teaching. Manual for primary school teachers. Part 1 and 2)*. Leuven: Wolters.

De Corte, E., & Verschaffel, L. (1987). The effect of semantic structure on first graders’ strategies for solving addition and subtraction word problems. *Journal for Research in Mathematics Education, 18,* 363–381.

De Corte, E., & Verschaffel, L. (2006). Mathematical thinking and learning. In K. A. Renninger, I. E. Sigel (Series Eds), W. Damon, R. M. Lerner (Eds-in-Chief.), *Handbook of child psychology. Volume 4: Child psychology and practice* (6th ed., Vol. 4, pp. 103–152). Hoboken, NJ: John Wiley & Sons.

De Corte, E., Verschaffel, L., & De Win, L. (1985). The influence of rewording verbal problems on children’s problem representations and solutions. *Journal of Educational Psychology*, *77*, 460–470.

De Corte, E., Verschaffel, L., & Masui, C. (2004). The CLIA-model: A framework for designing powerful learning environments for thinking and problem solving. *European Journal of Psychology of Education, 19,* 365–384.

De Corte, E., Verschaffel, L., & Pauwels, A. (1990). Influence of the semantic structure of word problems on second graders’ eye movements. *Journal of Educational Psychology, 82,* 359–365.

De Corte, E., Verschaffel, L., & Schrooten, H. (1991). Computer simulation as a tool in studying teacher’s cognitive activities during error diagnosis in arithmetic. In P. Goodyear (Ed.), *Teaching knowledge and intelligent tutoring* (pp. 367–378). Norwood, NJ: Ablex.

De Corte, E., Verschaffel, L., & Schrooten, H. (1992). Cognitive effects of learning to program in Logo: A oneyear study with sixth graders. In E. De Corte, M. Linn, H. Mandl, & L. Verschaffel (Eds.), Computerbased learning environments and problem solving (NATO/ASI Series F: Computer and Systems Sciences, Vol. 84, pp. 207–228). Berlin: Springer Verlag.

De Corte, E., Verschaffel, L., & Van de Ven, A. (2001). Improving text comprehension strategies in upper primary school children: A design experiment. *British Journal of Educational Psychology, 71,* 531–559.

De Corte, E., & Weinert, F. E. (Eds.). (1996). *International encyclopedia of developmental and instructional psychology*. Oxford, UK: Elsevier Science.

Depaepe, F., De Corte, E., & Verschaffel, L. (2007). Unravelling the culture of the mathematics classroom: A videobased study in sixth grade. *International Journal of Educational Research, 46,* 266–279.

Depaepe, F., De Corte, E., & Verschaffel, L. (2010). Teachers’ metacognitive and heuristic approaches to word problem solving: Analysis and impact on students’ beliefs and performance. *ZDM—The International Journal on Mathematics Education, 42,* 205–218.

Glaser, R. (1963). Instructional technology and the measurement of learning outcomes: Some questions. *American Psychologist, 18,* 519–521.

Husén, T., & Postlethwaite, T. N. (Eds.). (1994). *International encyclopedia of education. (2nd ed)*. Oxford, UK: Pergamon Press.

Janssen, R., De Corte, E., Verschaffel, L., Knoors, E., & Colémont, A. (2002). National assessment of new standards for mathematics elementary education in Flanders. *Educational Research and Evaluation, 8,* 197–225.

Masui, C., & De Corte, E. (2005). Learning to reflect and to attribute constructively as basic components of self-regulated learning. *British Journal of Educational Psychology, 75,* 351–372.

Op ‘t Eynde, P., De Corte, E., & Verschaffel, L. (2006). Epistemic dimensions of students’ mathematics-related belief systems. *International Journal of Educational Research, 45,* 57–70.

Verschaffel, L., & De Corte, E. (1993). A decade of research on word-problem solving in Leuven: Theoretical, methodological and practical outcomes. *Educational Psychology Review*, *5*, 239–256.

Verschaffel, L., & De Corte, E. (1996). Number and arithmetic. In A. Bishop, K. Clements, C. Keitel, J. Kilpatrick, & C. Laborde (Eds.), *International handbook of mathematics education* (Part 1, pp. 99–137). Dordrecht: The Netherlands: Kluwer Academic Publishers.

Verschaffel, L., De Corte, E., Lasure, S., Van Vaerenbergh, G., Bogaerts, H., & Ratinckx, E. (1999). Learning to solve mathematical application problems: A design experiment with fifth graders. *Mathematical Thinking and Learning, 1,* 195–229.

Verschaffel, L., & Dochy, F. (2006). Prof. dr. dr.h.c. Erik De Corte: A biographical sketch. In L. Verschaffel, F. Dochy, M. Boekaerts, & S. Vosniadou (Eds.), *Instructional psychology: Past, present, and future trends. Sixteen essays in honour of Erik De Corte* (pp. x–xix). Oxford: Elsevier.

Verschaffel, L., Greer, B., & De Corte, E. (2000). *Making sense of word problems*. Lisse, The Netherlands: Swets & Zeitlinger.

Verschaffel, L., Greer, B., & De Corte, E. (2007). Whole number concepts and operations. In F. K. Lester (Ed.), *Second handbook of research on mathematics teaching and learning* (pp. 557–628). Charlotte, NC: Information Age Publishing.

ANDREAS DEMETRIOU

GROWING A THEORY OF THE DEVELOPING MIND – IN AND AROUND THE IVORY TOWER

When I was invited to write this autobiographical note I wondered who on earth might be interested to read it? Who might my audience be? Shall I myself read somebody else's autobiographical note? So far I myself had read only two autobiographies, those of Freud and Darwin, and the biographies of a few people such as Piaget and Einstein. Naturally, my work cannot possibly be compared with the work of these giants of intellect. In the end, I decided to accept the invitation in order to reflect on my own life and choose among my reflections those which might be of relatively broad interest. Prominent among those are the following:

1. As a developmental scientist, I would like to be useful to life-span developmental scientists who have an interest in how a professional career is chosen, how it interacts with important life events and cycles, and how it provides meaning to life at different life-phases.
2. Students and future researchers in psychology and education who are interested in pursuing a research career in these fields and would like to see why it might be worthwhile to do so.
3. Researchers of science who study the birth and development of scientific ideas.
4. Fellow academics and researchers, especially younger ones, who at the peak of their research career are tempted, or are invited, to serve in demanding administrative positions in academia, such as the office of university Rector, or in politics, such as the office of a government Minister.

THE FORMATIVE YEARS: FROM BRITISH CURFEW TO ARISTOTLE UNIVERSITY

I grew up in Cyprus, in a small village, Strongylos, in the Messaoria plains. There were about 300 Greeks and as many Turks, separated in two neighborhoods divided by a street running through the whole village. In a sense, this was a relic of the Ottoman presence in Cyprus. I was a child in the 50s when Cyprus was still a British colony, and an adolescent in the 60s, just after Cyprus gained its independence. Literally speaking, my memories of childhood contain nothing academic. However I remember that there was no electricity, no running water, no phones, and of course no television. But there was everything else: The immense power of history, past and recent. The community involved "us" and "them". Bonds between "us" were close, almost a 300-member family. The "others" were a different world, close in space but

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very remote in our minds. This was the school of human evolution teaching us that the world is segregated by language, religion, culture, and history.

Memories of this world are embroidered on a background of Mediterranean fields, green in the winter but decorated with all sorts of flower colors – brown and yellow in the summer. The horizon at the far north was interrupted by Pentadaktylos, our mountain, that made us as children wonder what was behind it, if anything; at the near east it was interrupted by a hill, full of wonders in our eyes. This hill was the wonderland of our explorations. We used to go there to explore unknown caves, see uncharted land, come close to the boundaries of the prohibited land (a nearby town inhabited by Turkish Cypriots), and even excavate archeological treasures.

Like most other families in the community, we made our living from agriculture. We were relatively comfortable but not affluent. Making a living from agriculture at those times required hard work by all members of the family, from a very early age. This engrafted on us a sense of responsibility and obligation for the family and the community, together with the motivation to escape to a better world. Education was the road to this world. Thus, there was hunger for education both in the community and the family. In the family, my mother was pushing for persistence, success, and distinction ("There is no '*I can't*; only *I don't want*" was her motto!) and my father was pushing for pride. And growing up with two younger brothers, Demetris and Aristotelis, gave me a kick start later in setting-up a research group, where competition and protected cooperation are recipes for success.

Every child went to the primary school in the village. Reflecting back, we received a good education by the standards of the time. Explicitly and implicitly, our education opened our minds to the whole world. Columbus, Captain Cook, and Jules Verne were there to take us to strange worlds, past or future, far beyond the Messaoria horizons. The Incas, the Maoris, and the world on the moon pulled our boundaries much beyond the horizon ending at the Pentadaktylos mountains. But it was restrictive too, because these times were turbulent for Cyprus. It was the period of the liberation uprising against the British colonial rule (1955–1959), and the inter-communal conflict with the Turks of Cyprus. The school systematically transfused into us the sense of belonging to the Greek nation and transformed the historical boundaries between Greeks and Turks into mental boundaries. It was very successful education in both respects! The boundaries grew hard and created a no man's land!

In August 1960 everything changed. Cyprus became an independent country. There was optimism for the years to come, fast development in every aspect of life, and a sense of obligation in every one to get involved in building a new country. The fruits planted in the years before were ripe to be harvested: Go to high school and then to the University to become a scientist. I passed the entrance exams, both written and oral (which were close to an inquisition), and I was accepted at the Pancyprian School. This school is the oldest Greek school in the modern world (it was established in 1812, before the Greek war of independence). At the time it was very selective, very prestigious, and oriented to education in the sense of the German *Bildung*. My parents selected this school for me due its standing and prospects. The

school was indeed good – it was tough and strict, and taught us that there is no limit to learning but that this can only achieved from non-stop hard work. However, the theory that learning at school must always be pleasant was not around at the time!

In Piagetian terms, I must have entered formal operations quite early. I was reflective, questioning, argumentative, and very much interested in politics from the very beginning of secondary school. I reflected on the society and the country; and I leaned to the left, assuming that socialism can help to make a better, freer and fairer world. This might have been a reaction against the nationalistic and religious messages imposed on us by both the school and the society at large. I remember pondering the existence of God, developing the logical arguments for and against. I do not ponder the question as such anymore, but I am still doing research on children's conception of Gods and the interaction of religious thought with intellectual development and life choices.

Some experiences in this phase contributed crucially to orientations I adopted and which I still follow. For good or bad, I took part in an experiment on mathematics teaching which included supposedly strong first-graders. The experiment was based on the assumption that learning mathematics must start from set theory. It was the time when the Piagetian theory was very popular among educators as a frame for learning mathematics. Piaget's claim that logical and mathematical thought is grounded in the logic of classes and relations was interpreted at that time to imply that learning mathematics should take place best via set theory. Actually it might be so, if there is a complete model specifying how this approach relates to other aspects of mathematics and how it would systematically develop in time. This model never came into being. Thus, as it is quite common in education, the experiment was abandoned after two or three years, probably because decision-makers thought that we did not learn the proper mathematics. Thus, they got us back into the classrooms where the classical stuff was taught. It was shocking. It was all new to me and very often I felt that I couldn't catch up. I lagged behind and the effect radiated to the sciences, for which a good knowledge of mathematics was needed. As a result, I turned away from the natural sciences as an option for university studies.

My socio-political interests and versatility with language compensated for my difficulties in the sciences. Due to a model teacher of the time, Theodoros Stylianou, I developed interests in sociology and psychology which went far beyond the school curriculum. I read a lot about Mahatma Gandhi and his ideas and activities. His ideas still remain with me. I also came across Freud and read his *Introduction to psychoanalysis*. I was excited. I studied this book (which I treasured) thoroughly, and feel that my understanding of psychoanalysis still draws upon that reading. In any case, I decided that I would study sociology or psychology.

Throughout the school years I was avidly reading literature – all sorts but especially Greek novels. Kazantzakis (the author of *Zorba the Greek*) was my preferred author due both to his world-view and his special way of using modern Greek. For some time I even thought of becoming a novelist. I wrote poems and novels and this resulted into my first publication when I was 16 (Demetriou, 1971). This was a

novel titled *Struggle*, dealing with father-son and Greek-Turkish relationships, and it was embedded in the agricultural activities of the village. The novel was awarded the "best novel" prize of the school in the year 1969 and the activity as a whole was awarded the "Greek letters" prize.

That was it: I made my mind up that I would follow university studies in social sciences, and I chose to study at the Aristotle University of Thessaloniki because it offered the programs that I wanted. Another reason was the fact that Thessaloniki, the second largest city in Greece and the capital of Nothern Greece, at the time was the best university town in Greece.

STUDYING AT THE ARISTOTLE UNIVERSITY: FROM FREUD TO PIAGET

After about one year of national military service, I started my studies in the School of Philosophy of the Aristotle University in the fall of 1970. There were several options, and I chose the program in Psychology and Education. Looking back, the program was good, in the spirit of the German *Bildung*. We acquired a good background in classical studies and philosophy, and also a sound background in psychology and education. The representation of schools of thought also was good. Depending upon the professor, the theory-based Continental school of thought and the empiricist Anglo-Saxon traditions were well represented. The psychology component robustly represented the cognitive revolution of the 60s, the rise of Piaget and Vygotsky at that time, and the Chomskyan revolution in linguistics. The clinical training was fair and eclectic, and represented psychodynamic theory well, but with a leaning to behavior modification. During my studies I was attracted to clinical psychology and even decided to specialize in it. In fact, as a student, I participated in the clinical activities of the Department, practicing behavior modification under the supervision of Mika Fatouros. Mika was an excellent clinician and a political activist, something which was very attractive to students in those uneasy years.

BECOMING AN ACADEMIC

In the summer of 1974 there was a coup d' etat in Cyprus against the President, which was organized by the Greek military Junta that had been ruling Greece since 1967. The coup was followed by the Turkish invasion in Cyprus and the occupation of about one third of the land, including my village. At that time I was in Cyprus for the summer vacation. I was called up into the army, and released in September, when I returned to Thessaloniki in order to take my final exams. The prospects looked grave. I graduated in March 1975 with a good degree, but returning to Cyprus was futile and, of course, the means for graduate study were not available because of the war. Unfortunate as they were, these coincidences opened my way to academia and the research that I am still doing: Professor Lambros Houssiadas, my professor and mentor, and the "pater familias" of modern psychology in Greece, offered me the post of research assistant in the Department, and I proudly accepted the offer.

At about the same time I married Litsa Tsakalea, who was also a student at the University, after a typical student affair. We are still growing older together; in Doppler's terms, the color of the flames shifts with time to suit the new challenges of life. Litsa was ideal for creating the stability and home atmosphere that was necessary for the long course in science that I was just starting. These events permanently marked my life.

Soon after I took up my position at the University in the fall of 1975, Professor Houssiadas asked me to teach Piaget to undergraduate students. I was thrilled by Piaget. I was fascinated by the complexity of his thought and felt that reading him was a mind-stretcher. Piaget's genetic epistemology, integrating psychology, biology, philosophy, logic, and education, was cognitive science long before the term was coined in the 60s. I still consider two of his books, *Biology and knowledge* (Piaget, 1971) and the *Growth of logical thought: From childhood to adolescence* (Inhelder & Piaget, 1958) to be among the best books of psychology I ever read. Since that was what I was looking for, I decided to do my doctoral dissertation on Piagetian theory. At the same time, I was still involved in clinical activities.

In view of the above, when I spent a year in Australia at the University of New South Wales (supported by a scholarship of the Australian Government) I followed both lines. I tested children in primary schools for my doctoral experiments and, at the same time, I attended the Master's program in behavior modification and some heavy courses in statistics and cognitive psychology. The year in Australia was seminal because it helped me to put my work in the perspective of cognitive science and to write technical English. Dr. John Taplin, my supervisor then, was very helpful in both of these tasks.

In the years following my visit to Australia I was fully occupied with my doctoral experiments. I submitted my thesis in 1982 and settled in cognitive and developmental psychology at the Aristotle University for the next 14 years. I practically abandoned my involvement with clinical psychology but always remained clinically sensitive in dealing with evidence in research or about individuals.

THEORY BUILDING AND EMPIRICAL RESEARCH

Piaget was a great man. Freud legitimized the unconscious and the forces of nature in us, but Piaget legitimized childhood, showing that children are not little adults – they live in a different world. But his theory was plagued by many weaknesses. This is actually the cost that most foundational theories have: They secure a glorious place in the history of a discipline, but at the same time, they are plagued by weaknesses. Their descriptive constructs are too general to accommodate the delicate complexities of the phenomena they are concerned with (the human mind here) and their explanatory constructs are too global to accommodate the variety of causal relations in these phenomena (learning and development here). I soon set myself the major task to develop a theory that would preserve the strengths and remove the weakness of Piaget's theory. This theory, so far, has evolved in three phases:

The Piagetian (1977–1987), the neo-Piagetian (1987–1996), and the universal phase (1996-present). I will outline them below.

The Piagetian phase: From Structures d'Ensemble to Specialized Structural Systems

In the late 70s, when I started my research, Piaget's theory was still the dominant model of cognitive development. By that time, many of the problems of this theory were obvious to cognitive developmental researchers: Research showed that the Piagetian structures of the whole do not account for the organization of cognitive processes. Moreover, equilibration was too general a mechanism to explicate why and how development occurs. At the beginning, I focused on the problem of structure. With many colleagues, (Anastasia Efklides in particular) I tested people with Piagetian-like tasks addressed to concrete or formal operations and used psychometric methods to analyze their organization. The Piagetian structures did not emerge (Demetriou & Efklides, 1985; Shayer, Demetriou & Prevez, 1988). However, specialized domains (such as quantitative, causal, and spatial thought) emerged as very powerful organizational factors of development and performance. These were called Specialized Structural Systems (SSS). Thus, in this first phase I formulated a theory of cognitive domains that was well-tuned with psychometric theories of intelligence and the core processes movement of the time (Demetriou & Efklides, 1981; Shayer et al., 1988). During this period I visited Geneva many times – I wanted to see Piaget and his colleagues and talk with them about their (and my own) research. I saw Piaget for a very short time and still treasure the memory of his imposing presence. I met with many of his close colleagues, such as Barbel Inhelder, Hermina Sinclair, Magali Bovet, Pierre Dasen, and Willem Doise, and spent time searching in Piaget's archives. I even gave a talk about my research to their seminar. It was my firm impression that they were too loyal to the theory and not really interested in grasping the implications of research on Piagetian theory that was going on outside Geneva. They were already a school of thought coming from another time, and such schools of thought do not adjust but in the fullness of time they just come to a closure.

My two sons, Pantelis and Demetris, were born during this phase. Watching them developing was instructive. Piaget was right *in the phenomena he discovered*; everything came on time – object constancy, intuitive thought, the conservations, the suppositional stance of the adolescent. Being a cognitive developmentalist is good for empowering the mind of your children and giving them a drive for freedom. I hope that now (that are both in their 30s) they can themselves judge and that they agree.

The neo-Piagetian phase: From SSS to Mental Processing

The next phase was very productive. This reflected, to a large extent, the dynamics of the country and the Aristotle University at that time. Everything was vibrant

and explosive. The country was striving to meet the European challenge, and the University was expanding in many ways. For the first time, research money was available. We started a new graduate program in cognitive and developmental psychology, and thus my research was infused with the vigor of new graduate students who came to study with me. Maria Platsidou, Smaragda Kazi, Nicos Makris, Eleftheria Gonida, George Spanoudis, James Adecoya from Nigeria and Xiang Shang Kui from China, and many others were involved in our research which focused on the question of transition. Following the trends of the time, we studied how various aspects of information processing, such as speed of processing, control and inhibition, and working memory, relate to transitions across developmental levels of thought.

The so called neo-Piagetian researchers, especially Juan Pascual-Leone and Robbie Case, were very influential at that time, both stressing the role of working memory in cognitive development. We showed that other factors, such as speed and control of processing, are equally, if not more, important for cognitive development. Moreover, we specified how the SSS are related to these dimensions of mental processing. It was deeply gratifying when this work made it to the *Monographs of the Society for Research in Child Development* (Demetriou et al., 1993, 2002). Expanding on the previous phase, we detailed development within the various domains, such as quantitative and causal thought, and tried to specify how they relate to the general processes represented by speed and working memory (see Demetriou et al., 2010, for references and elaboration). On another track, with a logician friend, Philip Kargopoulos, we tried to develop the logical substantiation for the psychological differentiation between SSS (Kargopoulos & Demetriou, 1998). This line of research needs to be developed. We also showed that SSS are accurately reflected in subjective aspects of mental processing. This suggested that self-awareness of cognitive processes is important for cognitive organization and change (Demetriou & Efklides, 1989), lending an experiential dimension to mental functioning. However, it is only just recently that I have realized how cognizance drives cognitive transitions. An experiment to highlight this force of change has just finished and has been written up (Spanoudis, Demetriou, Giorgalla, & Zenonos, submitted). The experiment makes it is clear that the grasp of awareness in each phase is a major force of transition to the next phase.

There was strong interest in our work during this phase. People wanted to visit us in Thessaloniki and I was also invited to visit and talk at many renowned universities all over the world (Stanford, Yale, and Harvard, and most of the prestigious European Universities, such as Amsterdam, Complutence, Edinburgh, Leiden, Leuven, Neimengen, Munich, Gottingen, Würzburg and others). Admittedly, wandering around some of the world´s top universities creates a sense of fulfillment; after all, the road from colonial Cyrpus and the Messaoria plains of the 50s was a very long one. But, as put by Homer at the very beginning of his Odyssey, the big gain of travelling is learning about the minds of other people. IN the course of my travels I met all of the neo-Piagetians theorists: Robbie Case, Kurt Fischer,

Graeme Halford, and Juan Pascual-Leone, and some other important researchers of cognitive development, such as Robert Siegler and Robert Sternberg. I was even active in promoting the neo-Piagetian movement, organizing symposia with all of these scholars at important conferences. Some of this work appeared in two edited volumes (Demetriou, 1987; Demetriou et al., 1992). My relation with these people grew into friendship, which was rather close with some of them (Robbie Case and Juan Pascual-Leone in particular).

Robbie's early and unexpected death at 56 was a great loss for the field. He was a deep thinker who still had much to offer. In fact, our two theories might have developed very differently if he were still alive. We started working together to integrate the two theories. One study was accepted for publication a few weeks before he passed away, so that he never saw it in print (Case et al., 2001). I am honored that I am still cooperating with Juan Pascual-leone. He was the founder of the neo-Piagetian movement and, in recognition of his important contribution to developmental psychology, the University of Cyprus bestowed upon him an honorary doctorate. Thus, we are academically bonded in the history of the field. Discussing with Juan about theory building is always a mind enriching experience.

Jan-Eric Gustafsson of the University of Gothenburg, Sweden, and Michael Shayer of Kings College, London, are two important methodological influences coming from this period. Jan-Eric introduced me to the intricacies and the technicalities of structural equation modeling, which became one of my main methodological tools in the service of the development of the theory. Michael taught me his method of discrimination level analysis and we did important work together (Shayer et al., 1988). This method allows the systematic study of developmental structure of performance on large numbers of tasks. These two methods served as the instruments that allowed me to play the music that would get Jensen and Piaget to tango, so to speak: i.e., to work for the integration of the differential and the developmental theory of intelligence into a comprehensive theory. With Michael we are still closely working together (Demetriou et al., 2013).

The Universal Phase: Mind the Mind

By the mid-90s a comprehensive theory was already in place. The architecture of the mind, the development of the various processes, and their relations, were at the core of the theory. The relations between these processes and self and personality were at the periphery. In a sense, my initial interest in clinical and psychodynamic theory was gradually coming back. The main postulates are as follows:

1. The mind involves both general and specialized processes. Namely, (i) representational capacity (how much information we can represent and process at a given moment), (ii) abstraction and inference (integrative processes identifying and relating information and meaning), (iii) domain-specific processes (recording and processing of specific types of information and relations, such as verbal, spatial,

quantitative), and (iv) cognizance (awareness, control, and metarepresentation of mental processes) (Demetriou et al., 2011). Cognizance interacts with personality, channeling individuals to formulate strategies for information seeking and handling that are in general accordance with their intellectual profile (Demetriou & Kazi, 2001; Demetriou et al., 2003)

2. All of these processes are always present in mental functioning but their relations change with learning and development. Development occurs in four cycles: (i) Episodic representations from birth to 2 years, based on observational and action episodes. (ii) Global representational from 2 to 6 years; these are the mental analogues of observational and action episodes. (iii) Generic concepts from 7 to 11 years; these are encodings of the relations between representations. (iv) Finally, principles from 12 to 16 years; these are rules defining acceptable relations between concepts and the logical processes governing their relations. Production of new representations dominates at the beginning of each period; later representations are aligned and inter-related, preparing transition to the next period.
3. Thus, with development, students can deal with increasingly more representations. They become increasingly adept in using inference to connect representations and evaluate conclusions. Also, they invent new representations to stand for the relations between representations (e.g., a class name such as "mammal" standing for very different animals) and they can flexibly alternate between them according to current needs. As a result the concepts or problems that children can master develop dramatically (Demetriou et al, 2010). Development transforms the worldview prevailing at successive phases of life. Interestingly, the two main markers of the efficiency of mental processing, speed and working memory, are differentially related to the cycles of thought development. Speed marks transitions across cycles and working memory marks development within cycles (Demetriou et al., 2013).
4. Intellectual development may come from genetically driven changes in the brain or it may be a reaction to experience, including learning at school. Thus, progression within the cycles above or across them may vary extensively across concepts within individuals or across individuals for a given concept. Variation depends on experience and learning that may differ for different concepts or individuals (Demetriou et al., 2002). In any case, there is a personal and subjective side to intellectual development. This is reflected in the grasp of insight about the nature of representations dominating in each cycle and the mental processes underlying their alignment. Cycle after cycle, the awareness about the new cycle-specific representations is minimal at the beginning and it builds up as the relations between them are worked out. By the end of the cycle, awareness becomes explicit and it is part of the generation of the mental units opening the new cycle. Interestingly, in experiments addressed to learning how to reason, individual differences in working memory are a strong predictor of who is going to acquire awareness about reasoning processes and use them properly.

Thus, in a sense, working memory is the window to cognizance that is needed to master new logical principles. However, in experiments addressed to learning new skills or concepts in a domain, such as mathematics, individual differences in reasoning and prior knowledge were the best predictors of individual differences in learning. Thus, the effects of mental efficiency markers on domain-specific learning are mediated by inferential processes (Demetriou & Kazi, 2001, 2006; Demetriou, Spanoudis, & Shayer, in press).

SERVING THE COMMUNITY

In terms of the Big Five Factors of personality, I enjoy being with, and working with, people (high extroversion), thrive in change (high openness to experience), can stand pressure (low in neuroticism), I play with rather than abide by the rules (average in conscientiousness), and care for others but don't mind if am not always pleasant (average in agreeableness). I discovered early on that this profile is conducive to social and political activities. Others accept you, seek your company, and vote for you in elections – most of the time. These inclinations, together with my political interests, led me into active involvement both in the wider academic life of the University and the scientific community at large.

At the Aristotle University, I was instrumental in achieving the separation of the section of psychology from the Department of Psychology and Education and in the creation of an autonomous Department of Psychology. I served as the first chairman of this Department in the early 90s. At the same time, I was very active, with several colleagues from all over Greece (notably Professors John Paraskevopoulos and Jim Georgas of the University of Athens), in the creation (in 1989) of the Greek Psychological Society and the launching of *Psychology: The Journal of the Greek Psychological Society*. I was the first secretary general of the Society and the founding Editor of the journal. At the same time, I was actively involved in the development of the European Association for Research on Learning and Instruction (EARLI) which started in 1985. I served as a member of its governing board for two terms, under the presidency of Erik De Corte. I was also an associate editor of its journal, *Learning and Instruction* and the Editor of the *Advances in Learning in Instruction*, the EARLI book series. These experiences were extremely enriching for a young lecturer. I became acquainted with the European academic world and acquired self-evaluation standards that were very useful for the further development of my research.

There was no University in Cyprus until the 80s. The reason was political. The local establishment was concerned that a University in Cyprus might weaken the bonds of the island with Greece. Eventually, the presidential elections of 1988 brought in power the first left-leaning government in Cyprus under a forward looking President, George Vassiliou. Over the next few years, Vassiliou and his government succeeded in creating the first university of the island, the University of Cyprus, which was established in 1991 and accepted its first students in the fall of 1992.

The university was conceived as a research-oriented institution and many Cypriot academics, who were working at universities and research centers all over the world, took up the challenge and returned home in order to help with its development. So, there I was: After 26 years, in 1996, I moved from my alma mater, the Aristotle University, to the University of Cyprus. I started as a Professor of Psychology at the Department of Education, as there was no Department of Psychology at the time.

At the beginning, there were very few experienced full Professors at the University of Cyprus. As a result, my involvement in university administration was unavoidable. I was soon elected chairman of the Department of Education and two years later vice-rector of the University. The experience was great. The place was vibrant and enthusiastic in all respects: The large majority of academics and administrators were very young (in their 30s or 40s) and all wanted to create a world-class university. The general ambience was also very good. The people of the island as well as the state were very supportive, both because the university gave the opportunity for higher studies at home, but also because new and different voices, importing new ideas from abroad, were heard for the first time on the island. Also, because Cyprus then was doing well economically, the University developed fast and became a respectable member of the European and international academic scene. We created new Schools and Departments, new services and institutions, and established a community of scholars. I shall mention only one of these creations in which I played a central role: A new autonomous Department of Psychology, the second I had helped establish in my career.

However, not everything was easy. The conservative forces which objected to the creation of the University were very resistant, and often attacked us on the silly ground that we endangered the "Greekness" and the traditions of the place. Also, the various political parties, each for a different reason, were very uneasy with the University, because they saw it as a new center of power and influence which was out of their control. They systematically tried to control it by various means, including changing the regulations that governed the participation of students in the elections for the administrative officers of the University (rector, vice-rector, dean, etc.).They increased student participation, because they knew that they could influence them directly through their party-associated youth organizations. This caused a clash of the University with the state and led to the resignation of the then Rector, Professor Nicolas Papamichael. I succeeded him, as acting Rector, for several months and then, at the next elections, I ran for the post of Rector. However, as I now know, it is not wise to run for office in a system that is going through a period of crisis, unless you are with the opposition. Thus, I lost this election.

Losing the election was frustrating, because I had served the University for six consecutive years – successfully I believe. But it was also a good lesson, because I learned that organizations do not return favors on the basis of a mutuality principle. They expect you to always work for their own benefit, but they are not prepared to forgive mistakes, real or imaginary. Moreover, in systems still on their way to maturity, populism prevails! However, societies balance their give-and-take with

individuals, if the balance of one's actions is positive. Thus, losing the election opened new challenges: The state decided to start a second university in Cyprus and I was invited to become its founding president. I wavered because the demands of the job were huge in every way: academic, administrative, and political. Moreover, I was concerned that this might halt my research. Eventually I accepted, because the opportunity to create a University is very rare in the life of a professor. After all, theories are destined to vanish sooner or later but institutions may be eternal. I chaired the Interim Governing Board consisting of 11 professors, Greek or Greek-Cypriot, representing all fields of learning, coming from four different countries (Cyprus, Greece, UK, and the USA). The meetings of the Board were immensely rewarding. We gathered usually once a month and convened for a couple of days, non-stop. It was highly stimulating to coordinate people coming from different university traditions, disciplines, and countries. But it was also impressive to see how strong a shared universal academic tradition is. This facilitated understanding and constructive decision making and led to the birth of the Cyprus University of Technology in 2004. On a less serious note, the Governing Board meetings also led to the creation of the so-called "rector's sandwich". This was the name given by a local restaurateur to the sandwich that I usually ordered at our lunch breaks. I understand that now the same restaurateur also offers the "lecturer's sandwich" which, of course, is much less substantial than the rector's sandwich!

The Cyprus University of Technology is located in Limassol, the second largest city and the main sea-port in Cyprus. We designed the University to expand the possibilities for studies and research offered by the University of Cyprus. This new university is oriented toward applied research, and it offers studies in most fields of applied science (social and natural), and the arts. We opted for a city university. We planted it in the historical center of the city, which was deserted at the time. In this way we completely transformed the city. In a lucky combination with many other social and economic changes, we transformed Limassol into a very nice Mediterranean university town.

My service to the community co-evolved with my research. In fact, the years from 1996 to 2008 were very productive in terms of research and publications. New research programs started on the relations between information processing and logical development (Demetriou et al, 2008), thought and personality development (Demetriou et al., 2003), thought and emotional intelligence (Demetriou, 2006). New doctoral students came to work with me: Maria Andreou, Terpsa Constantinidou, Antigoni Mouyi, Rita Panaoura, and Panayiotis Stavrinidis and others completed their dissertations during this period. I appreciate their contribution to the sustainability of the research program of a very busy Rector.

STEPPING OUT OF THE IVORY TOWER

High level academic administration is political, especially in countries with unsettled national and political disputes. A Rector is visible and interacts with politicians.

Thus, the road to politics is often short. This was true in my case. A left-center coalition won the 2008 presidential elections and the new President of Cyprus, Demetris Christofias, invited me to participate in his government as the Minister of Education and Culture. I accepted. I thought that I might contribute to bringing down the mental boundaries that divide the country and which I had experienced from the years of my primary education. And I felt that I could infuse something of the mentality of the cognitive developmental researcher and academic into a system dominated by local mentality for a long time.

This was the first time that I had stepped out of the ivory tower of the University. The experience had both a positive and an unpleasant side. The positive side first: It is a privilege to serve in one´s own country's government. On the human side, it offers honors that would please every mortal. On the political side, no one can really understand how a state operates, unless s/he sits around the cabinet's conference table and participates in the decision-making that rules a country. Moreover, it is very educational to learn the game of negotiating and balancing between all stakeholders and institutions: political parties, unions, the church and the media, are all part of the daily game. To implement actions and decisions the minister needs to juggle many balls. Also, this role opens possibilities for doing things that no other post would allow. During my term we reformed the curriculum of every school subject, from preschool education to high school, and we changed many structures in the Ministry. Happily, the new curricula are still in place and developing, despite the fact that two new ministers have taken office since I left.

On the negative side, the road from decision to implementation is very long. At any moment, even with the best of intentions on the part of a government, decisions about education are disputed and challenged by other stakeholders, agents, or institutions in society. In a sense, political conflict about educational policies originates from a fear – on the part of forces opposing the government – that education is used as a disguise for the long-term settlement of current political issues in the interests of the political party in power. Introducing new curricula may be a *casus belli* for many. History or language wars are common in countries where national or international disputes still linger. There have been countries, such as Greece, where new curricula in these sensitive subjects were scrapped. I had my own history war and survived, but not unscathed. Mental boundaries are very difficult to bring down, especially when defended by brain-washed missionaries led by populist politicians!

Apart from politics, there is the fact that bureaucracy may be a hindrance. Modern systems of education are vast systems of bureaucracy that are governed by laws and regulations covering everything. Laws exist at multiple layers, frequently clashing with each other, because they may have been legislated at different times by governments with different orientations and priorities. Also, education is served by a very complex administrative structure, involving multiple layers and departments. Administrative bureaucracies are constrained by their habitual ways of dealing with problems. When the pace of change is faster than what they can absorb, they will try to halt the change. Hidden agendas are frequently present. These come either

from within the administration itself, when a proposed change endangers the power balance within the system, or from connections between administration and agents in the society which oppose the government. Implementation of policies is often derailed skillfully and imperceptibly, so that no one really knows why things remain stagnant.

Academics may not realize that, no matter however demanding the world of academia is, it is a world of saints compared to the wild world of politics. In academia we care for the truth – at least most of the time, especially if it is not concerned with internal academic politics! In politics the truth does not normally count for much. In academia we praise the accomplished. We promote and give awards and medals, we bestow honorary degrees, etc. In politics you are always considered wrong by the opposition. Also, in politics no one really acknowledges the success of someone else, because that might minimize the chances of his/hers own success. In academia we understand that recognition may come after decades of work on a problem, if not posthumously. In politics they want things done now, if not yesterday. Despite its shortcomings, evaluation in academia is systematic and generally fair. By contrast, in politics, it is based on popularity, as controlled by the media, and frequently on underground inter-dependencies of various sorts of interests. People in politics, in the economy, and the media strive for power, profit, and popularity. Their inter-dependencies are variable and often underground. As a result, the violations of "principles" and morality are common and even the violation of the law is not uncommon. Staying untouched takes guts and alertness. Surviving is a feat. Succeeding is a miracle.

The international aspect of a Minister's job is definitely among its assets. For a European Union country the experience is very instructive. Participating in the Council of Ministers of Education, Culture, and Sports was a powerful educational experience at many levels. Most important among these were: (a) getting to know how other countries address and solve their problems, and (b) participating in the historical process of European integration. For obvious reasons, education and culture fall under the subsidiarity principle, that is, decisions are advisory for the various countries, rather than mandatory.

This process is at its early beginnings, and it is guided by goals (both explicit and implicit) that may be in conflict with national priorities. For example, the goal for the creation of a "European citizen" is often received with caution and mistrust by people and organizations in many European countries. There is, as yet, no commonly acceptable answer as to how (or by how much) a European identity should be integrated with a national or a local identity. How many different layers in a European identity are acceptable and how are they going to be prioritized and interconnected? Can we really combine the ideal for informed, critical, reflexive, flexible, self-determinable, and self-realizable citizens with the ideals for stability, continuation, and tradition? As might be expected, answers to these questions vary depending upon the history, the culture, the local conditions, and the size of each member state. Taking positions on these issues is not an easy matter for European Union Ministers.

Bilateral ministerial exchanges between countries are also very rewarding. Visits in different countries help a minister understand how similar the problems for sustaining quality education for all are worldwide. Even in very different countries, such as the European countries on the one hand and the Muslim countries or China (which is a world in its own) on the other, leaders strive to raise thoughtful and knowledgeable citizens for a better world. And definitely this is what children themselves want: I saw it in the eyes of all the children in every classroom I visited, from Stockholm to Teheran, Kuala Lumbur and Beijing. Succeeding is a different matter. It is my firm impression that politicians all over the world are falling short of the demands of our meta-modern era, where everything is changing fast, the borders of the space-time have fallen, images from every corner of the world can come into every home at the blink of an eye, and where everyone can generate or transmit information at any time. Educational researchers and theorists need first to understand the implications of these changes and then help the leadership understand, cope, and prepare the world for them.

Last but not least. I was privileged to visit CERN and go down into the tunnel to see the Large Hadron Collider just before it was finally closed for the experiments to start. It is already well known that these experiments established the existence of the Higgs particle, which Peter Higgs predicted some 50 years earlier. This prediction, which lends completeness to the so called standard model of physics, earned him the 2013 Nobel Prize. I was also honored to participate in the 2010 Nobel Prize Award ceremony, because Christoforos Pissaridis, one of the laureates in economics of that year, comes from Cyprus. I was also touched to pay homage to Freud, by visiting his house in Vienna. The Austrian colleague, being aware of my background, was kind enough to arrange this visit for me when I visited Austria.

These encounters give depth to one's understanding of science, and bring a degree of self-awareness about one's own limits! Being in the LHC tunnel helps place psychology in the perspective of mega-science and its exactness in crashing and modeling the nano-components of matter. (I am sure Democritus would have been ecstatic if his soul could have slipped into the collider to see what the atoms that he imagined about 2500 years ago really are like.) Being at a Nobel Prize ceremony helps place our science in the perspective of modern global science: However important psychology is for people's life, it is a poor and distant relative in the distribution of public recognition and awards – yet Economics is neither more exact nor more helpful for people than psychology (the recycling economic crisis is an unpleasant attestation of this). Finally, by just being in Freud's house helps a psychologist place his theory in the perspective of probably the most influential theory ever created in the social sciences.

DRAWING THE EDUCATIONAL IMPLICATIONS OF THE THEORY

Trying to do scientific work while a Rector is difficult but not impossible. Trying to do the same while a Minister is next to impossible. However, the development

of the theory was my life's organizer. So, I did not abandon it during these years. Obviously, it was impossible to start and to run new experiments. However, I continued to work conceptually on the theory, mainly very early in the mornings, from 6 to 7.30 am, or during the weekends. Given the demanding duties of the Minister of Education, I pondered extensively about the educational implications of the theory. This culminated in a monograph-length essay published in the Educational Psychology Review (Demetriou et al., 2011) with very constructive commentaries by some distinguished colleagues (Lorin Anderson, Earl Hunt, and David Olson). In a nutshell, these are the educational postulates of the theory:

1. The worldview associated with each major educational layer (preschool, primary, and secondary) must be consolidated at the beginning of the layer and then used to prepare the transition to the next worldview: Preschoolers must acquire awareness of age-specific representations and build links between them. For example, look at a set of objects, name them, choose representations appropriate for each, and make a story for them, arranging the objects so that they match the story. Primary school children must acquire an insight into the mental processes underlying links. For example, explicate the object-word-image connections, conceive of alternative connections, and specify their similarities and differences. Adolescents must grasp the formal principles constraining these processes. For instance, explicate how the sequences of one such story necessarily follow from one another.
2. Education needs programs addressed to each of the four types of processes involved.
3. The complexity of concepts taught at successive school grades must be tuned to the representational possibilities typically associated with each grade.
4. The pacing of teaching of any concept must be tuned to the typical representational and processing rate of the grade concerned. Anyone may operate lower than his or her optimum level when first facing a new task. Thus, teaching must always start with examples demanding less than the students' optimum capacity.

To be able to implement these processes efficiently, education must cater for the following:

1. Develop and use diagnostic tools able to specify the discordance between understanding capabilities, developmental tempo of students, and teaching demands and pace.
2. Develop flexible curricula in the various school subjects that would allow individualization of teaching rate according to the possibilities of individual students.
3. Develop special remediation programs to enable students who are left behind to catch up and progress apace with their classmates.
4. Follow students at risk at major developmental/educational turning points to ensure that new teaching demands proceed apace with developmental transitions.

So, this is my revenge on the Piaget of the 60s, whose crude ideas about learning mathematics spoiled my possible choice of a care5r in the natural sciences. I hope that we now are in a better position to use cognitive developmental theory to guide education.

CONCLUSION: BACK TO THE IVORY TOWER

The history of Cyprus is still ongoing, and it gets explosive every so often, changing the course of individual lives. It may not be a coincidence that in the summer of 2011 we managed to produce the largest explosion of conventional military explosives that has ever occurred. (The explosion caused many deaths, the destruction of a major power plan, and initiated a major political crisis.) People gathered around the presidential palace and demanded that the president resign. He refused, and rightly so. But he reshuffled his government in order to maneuver his way out of the crisis. And so I was out of government and back in academia. Notably, the 74 war had channeled me into academia and a war-like incident in 2011 pulled me back to it.

For the first time in my life I work at a private university, the University of Nicosia, as the president of the University´s Research Foundation. This implies that most of my time is dedicated to research, in one way or another. After a long time, I am free of the administrative duties that burdened my life for the last 15 years. This is a happy development. I now have the time to concentrate on the theory and weave its final version into a magnum opus to come soon. The four-year break in the Ministry was helpful in confronting old questions and concepts through a fresh eye and new methods of analysis. The discovery of the developmental cycles mentioned above, whose beginning is indexed by speed and deployment by working memory (Demetriou et al., 2013), was the result of this fresh approach. At present, we run analyses, on the data of many independent studies conducted by many esteemed researchers all over the world, in order to validate the pattern. Happily, we did validate it (Demetriou, Spanoudis, Shayer, van der Ven, Brydges, Kroesbergen, Podjarny, & Swanson, H. L. (in press)). This pattern has many implications for individual intellectual diagnoses and the planning of learning activities. Also, we started a new series of experiments to specify the role of insight into mental processes in the transition across major developmental cycles (Spanoudis et al., submitted).

A reader might ask here: Where do ideas come from in the process of developing a theory? How is the science establishment involved in this development? The contribution of others differs according to the phase of the work. At the beginning it is substantial. In my first phase of work, the combination of Piaget's conception of structure combined with psychometric methods of analyzing performance led to the discovery of SSS. We looked for Piaget's structures, we did not find them, and instead proposed structures emerging from the data. Later, the dialogue with others' ideas is more balanced. Searching for the central functions of mental processing, such as speed and working memory, was a combination of an understanding of what was missing from the theory with a search for good candidates. Later, ideas strive to

bond with each other. Thus, they spring out of massaging old ideas all the time, day or night, awake or asleep. Experiment and modeling at this advanced phase are just traffic signs to prevent derailing.

Other people may give good hints but they do not generate ideas in you. This is the case with the reviewing business in science. I have read hundreds of reviews of papers I submitted – most of them good, some of them nasty! Have they affected my ideas? Not really. Many of them were very useful in improving and refining a paper but they are not really part of the fabric of ideas. And something that I just realized: In my whole academic life I was very successful in getting empirical papers accepted in good journals. This, however, has not been the case with my theoretical papers, which were negatively received most of the time and some of them never made it to print. However, the ideas tested in the empirical papers came from these never-published papers. This tells something about the epistemological stance that is dominant in psychology: It is a blatant positivism that despises theory-making. Most probably, Piaget or Freud would have much of their work rejected if submitted through the standard review process of today

Educating new researchers is as important as doing science. Making them epistemologically aware and sensitive is, in my view, more important than imparting knowledge or research skills as such. Knowledge and research skills may enable a young researcher to carry out good research, but the enlightenment that results in, and that is built into, theory comes from understanding what science is, your own and your discipline's place in it, and your obligations to it!

As Daniel Kahneman, a cognitive psychologist who won the Nobel Prize in economics said at one his talks, if you live long enough you may experience the unexpected. Becoming a fellow of the International Academy of Education and Academia Europea, Honorary Doctor of Middlesex University and Honorary Professor of Durham University, UK, and the Changchun Normal University, China, are strong calls to stay on course. It is a great pleasure that the company at this part of the course is very gratifying. It is a very rewarding running new research projects with some of my academic children, already established academics themselves, such as George Spanoudis (University of Cyprus), Smaragda Kazi (Panteion University of Social Sciences, Greece), and Nikos Makris (Democritus University of Thrace, Greece) and my academic grandchildren, their doctoral students. And it is an immense pleasure evaluating and enriching the theory through my interactions with Pantelis' son, my grandson, Andreas Demetriou, jr. He is 5 years old, and enjoys immensely my stories of my village childhood life (of half a century back), and insists that I must keep telling these stories to every-one. I promised him that I will do so!

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FAVORITE WORKS

The neo-Piagetian theories of cognitive development: Toward an integration. (187) and (1988).

The development of mental processing: Efficiency, working memory, and thinking. (2002). With Christou, Platsidou, and Spanoudis.

The architecture and dynamics of developing mind: Experiential structuralism as a frame for unifying cognitive developmental theories. (1993). With Efklides and Platsidou.

Unity and modularity in the mind and the self: Studies on the relationships between self-awareness, personality, and intellectual development from childhood to adolescence. (2001). With Kazi.

Educating the developing mind: Towards an overarching paradigm. (2011). With Mouyi and Spanoudis.

Cycles in speed-working memory-G relations: Towards a developmental-differential theory of the mind. (2013). With Kazi, Mouyi, Platsidou, Shayer, and Spanpoudis.

REFERENCES

Case, R., Demetriou, A., Platsidou, M., & Kazi, S. (2001). Integrating concepts and tests of intelligence from the differential and developmental traditions. *Intelligence, 29,* 307–336.

Demetriou, A. (1971). Agonas (Struggle). In C. I. Koliou & C. Vassiliou (Eds.), *Twenty short novels*. Nicosia: Pancyprian Gymnasium Press

Demetriou, A. (Ed.). (1987). The neo-Piagetian theories of cognitive development: Toward an integration. Special double issue of the *International Journal of Psychology, 22*(5,6). Reprinted as a book by North-Holland, 1988.

Demetriou, A., Christou, C., Spanoudis, G., & Platsidou, M. (2002). The development of mental processing: Efficiency, working memory, and thinking. *Monographs of the Society of Research in Child Development, 67* (Serial No. 268).

Demetriou, A., & Efklides, A. (1981). The structure of formal operations: The ideal of the whole and the reality of the parts. In A Meacham & N. R. Santilli (Eds.), *Social development in youth: Structure and content* (pp. 20–46). (Contributions to Human Development, Vol. 5). Basel: Karger.

Demetriou, A., & Efklides, A. (1985). Structure and sequence of formal and postformal thought: General patterns and individual differences. *Child Development, 56,* 1062–1091.

Demetriou A, & Efklides, A. (1989). The person's conception of the structures of developing intellect: Early adolescence to middle age. *Genetic, Social, and General Psychology Monographs, 115,* 371–423.

Demetriou, A., Efklides, A., & Platsidou, M. (1993). The architecture and dynamics of developing mind: Experiential structuralism as a frame for unifying cognitive developmental theories. *Monographs of the Society for Research in Child Development, 58* (Serial No. 234).

Demetriou, A., & Kazi, S. (2001). *Unity and modularity in the mind and the self: Studies on the relationships between self-awareness, personality, and intellectual development from childhood to adolescence*. London: Routledge.

Demetriou, A., & Kazi, S. (2006). Self-awareness in g (with processing efficiency and reasoning). *Intelligence, 34*, 297–317.

Demetriou, A., Kyriakides, L., & Avraamidou, C. (2003). The missing link in the relations between intelligence and personality. *Journal of Research in Personality, 37,* 547–581.

Demetriou, A., Mouyi, A., & Spanoudis, G. (2010). The development of mental processing. In W. F. Overton (Ed.), *Biology, cognition and methods across the life-span. Vol. 1: Handbook of life-span development* (pp. 306–343), Editor-in-chief: R. M. Lerner. Hoboken, NJ: Wiley.

Demetriou, A., Spanoudis, G., Shayer, M., van der Ven, S., Brydges, C., Kroesbergen, E., … Swanson, H. L. (2014). Relations between speed, working memory, and intelligence from preschool to adulthood: Structural equation modeling of 14 studies. *Intelligence*, *46*, 107–121.

Demetriou A., Shayer, M., & Efklides, A. (Eds.). (1992). *Neo-Piagetian theories of cognitive development: Implications and applications for education*. London: Routledge.

Demetriou, A., Spanoudis, G., & Mouyi, A. (2011). Educating the developing mind: Towards an overarching paradigm. *Educational Psychology Review*. doi:10.1007/s10648-011-9178-3

Demetriou, A., Spanoudis, G., Shayer, M., Mouyi, A., Kazi, S., & Platsidou, M. (2013). Cycles in speed-working memory-G relations: Towards a developmental-differential theory of the mind. *Intelligence*, *41*, 43–50.

Inhelder, G., & Piaget, J. (1958). *The growth of logical thinking from childhood to adolescence*. New York, NY: Basic.

Kargopoulos, P., & Demetriou, A. (1998). Logical and psychological partitioning of mind: Depicting the same picture? *New Ideas in Psychology, 16,* 61–88.

Piaget, J. (1974). *Biology and knowledge*. Chicago, IL: University of Chicago Press.

Shayer, M., Demetriou, A., & Pervez, M. (1988). The structure and scaling of concrete operational thought: Three studies in four countries. *Genetic, Social, and General Psychology Monographs, 114,* 307–376.

Spanoudis, G., Demetriou, A., Giorgala, K., & Zenonos, V. (submitted). Embedding cognizance in intellectual development.

KADRIYE ERCIKAN

BECOMING A RESEARCH METHODOLOGIST AND PSYCHOMETRICIAN: CHANCES, OPPORTUNITIES, AND INFLUENCES

Mathematics, modeling, measurement and generalization: my academic life has circled around these topics since my earliest post-secondary years. At first glance, they appear to be highly abstract and theoretical – operating on a plane far removed from the tugs and conflicts of human emotion, day-to-day experience, life struggle and social negotiation. If so, then my career might be viewed as a multi-decade attempt to make the former applicable to the latter: to harness the tools of research and abstraction to the service of human welfare and community improvement. The impulse to follow this path can be traced to my experiences growing up on the divided, conflicted island of Cyprus, in the eastern Mediterranean Sea.

CHILDHOOD INFLUENCES

I was born in Nicosia, Cyprus in 1961. Cyprus is a small island in the Eastern Mediterranean, populated by two main ethnic groups: Turkish and Greek Cypriots. My birth coincides with the end of a period in Cyprus as a British Colony in 1960 and the establishment of the Republic of Cyprus. Both the past as a British Colony, as well as the turbulent, strife-ridden years post-independence had a fundamental influence on my life and career. Being from a Turkish Cypriot, non-practicing Muslim family, I lived in a small, all Turkish Cypriot town called Lefke in the western part of the island for the first six years of my life. Early memories of my childhood include being stopped at checkpoints whenever we went to visit places outside of Lefke, and of being searched and questioned in a language I did not understand (Greek). Therefore, we rarely left Lefke. I vaguely remember trying to think, around the age of five, of a world that went beyond the boundaries of Lefke and Cyprus, and finding it difficult.

Television became a household item in the 1960s. There was only one channel and it broadcasted in Greek and showed some programs in English, another language I did not understand. Once a month on a Tuesday, late at night, a Turkish movie was on the program. Since very few people had television sets, Turkish Cypriot families would gather until late at night in houses of friends who had televisions to watch it. As a child, I never questioned why there were no other Turkish programs from the official television station of the Republic of Cyprus, which was also supposed to represent the Turkish fifth of the total population.

M. de Ibarrola & D. C. Phillips (Eds.), Leaders in Educational Research, 59–73.

My father was a high school math teacher and my mother took care of the family. As a teacher, my father believed that Kindergarten was not good for the development of children (I am not sure what kind of educational philosophy this was based on), so neither my sister nor brother, nor I, went to Kindergarten. In fact, my father believed that children should start learning when they start school so that they would not be bored at school. He instructed my mother not to teach me how to read. I vividly remember asking my mother sounds of letters and number symbols as she did the laundry (Turkish reading/writing is phonetic in that a single letter represents a sound in the language: once one learns the sounds of the letters, one starts reading even if it only means decoding). On the first day of first grade, we were given our textbooks. The mathematics book was full of exercises. On the first night of school, I had finished all of them. Perhaps this is exactly what my father wanted to avoid. Given the diversity in large classrooms of 40 plus students in Cyprus, students who learn the basics before starting school can indeed soon start to feel bored. This was not, however, the case for me. Perhaps one reason was because I went to five different schools in six years of elementary education!

Shortly after the beginning of the first grade, we moved to Nicosia, the capital city where my father was transferred. Moving schools is certainly exciting but also challenging. There was always a first day when I went into the playground and did not know anyone. I can think of two ways this has affected me. It taught me not only how to adjust to new environments but also, to keep my focus on academics, both of which came handy in escaping Cyprus and exploring different places around the world. In the first grade, my introduction to reading books changed my life. We were encouraged to read books at home everyday and share the stories we read with the class the next day, mini book group discussions of a sort. Reading books at home became a daily, shared activity with my mom. She read the book to me first and then I read it to her. We finished a book a day that year.

Small accomplishments in the early years of my education reinforced enjoyment in learning and connecting with others – family, friends and teachers – through my learning. Moments of engagement with my parents around learning and exploration became great sources of fun for me. Later on as an adult in California, I took part in a visualization exercise about ideal childhood and ideal parents. My visualization manifested itself as working on puzzles and explorations with my parents. These all formed foundations of a career focused on learning and problem solving.

The remnants of Cyprus' British history were evident when I was growing up there, and still continue to be there. At the end of elementary school, my education could take either of two possible paths, one in a Turkish high school, or another one in the English College based on the British system. My father taught at the English College, which also had the reputation of being the best high school on the Turkish side of the island, since it selected students on an entrance examination. The English College provided secondary education primarily in English and prepared students for GCE (General Certificate Examination) O (Ordinary) and A (Advanced) Levels for higher education in the UK. I started my secondary education in English

at this school after a very basic introduction to English in elementary school. The teachers were mostly Turkish and the classes were taught in a mixture of English and Turkish. Subjects like mathematics were easy due to less of a language burden on the learners. Social studies, history, geography, and to some extent science were another matter. Understanding the textbooks, which were all in English, was difficult. Every sentence had several words I did not understand and required using the dictionary. The textbook pages were full of handwritten Turkish explanations of dozens of words, instead of highlights of key concepts to focus on in my learning. Learning in subjects that involved lots of language required a lot of memorization. Very simple concepts like "what is the function of roots of a tree?" became a difficult memorization activity, particularly when it came to answering such questions on a test. These experiences provided rich insights for me in understanding the challenges in learning and getting tested in a second language. It also provided first-hand experience, which I would later articulate, of threats to the validity of inferences from assessments for students in a second language.

In the summer of 1974, a year after I started high school, the civil war in Cyprus broke out when my family and I were vacationing in my maternal grandmother's Turkish Cypriot village, Gaziveren. On the first day of the war, the village fell to Greek Cypriots after a brief resistance, and the women and children were put in the village school while the men, including my father and uncles, were taken away as prisoners of war. My mom was wounded when a group of Greek Cypriot soldiers opened fire and threw hand grenades into the school. Like many other Cypriot families, my family lived through the trauma of the war for several months and faced great losses. For our family, this meant not knowing what had happened to my mother, who was taken by Greek Cypriot soldiers from one hospital to another for over four months, and not knowing what happened to my father who was taken as a prisoner of war for exactly 100 days. During this period of time, we stayed with my maternal grandparents.

During the war, the non-practicing Muslim community in our village became more religious to get through the difficult times under Greek Cypriot occupation, and went to the Mosque for prayers and support. A religious leader in the village who provided support to my grandparents, particularly my blind grandfather, suggested that since both my parents were away, I should quit school and take care of my brother and sister, who were both elementary school age. Fortunately, my grandmother who was not sent to school by her parents stood up for us and did not allow this to happen. She moved to Nicosia with us where we could all go back to our schools. Our parents ingrained the importance of education in us but the possibility of dropping out of high school in their absence during the war in Cyprus was a potential path for me.

In an exchange of prisoners of war between the two ethnic communities, my father was released and my mother came back home from the hospital, after nine months of treatments and physical therapy, paralyzed and bound to a wheel chair at the age of thirty-two.

I continued my education in the midst of challenges at home and finished English College in 1979. At that time in Cyprus there were no universities or any other higher education institutions. Young people from the Turkish side either went to university in Turkey because of the language and ethnic and cultural connections, or to the UK because of the legacy of the British education system on the island. Because the high school I attended prepared me for both possibilities, I could go to either. Turkey was in the midst of its own political turmoil between the right and the left and the religious groups. Boycotts and closure of universities for long periods of time were routine and university-student arrests and killings were daily events. Higher education in the UK was extremely expensive for Turkish Cypriots with middle class income, particularly after the war. Close to the end of my last year in high school, one Commonwealth scholarship in mathematics was announced. This was an opportunity to avoid the turmoil in Turkey, not saddle my parents with any financial burden, and gain independence.

FORMAL EDUCATION SHAPING MY CAREER

Going to Essex University on the Commonwealth scholarship presented me with tremendous opportunities to develop as a person and as an independent thinker. From a tiny island in the Mediterranean, I found myself in the middle of one of the most politically active student groups in the UK, and possibly in the Western world at that time. There were regular sit-ins protesting many university decisions, hunger strikes in solidarity with freedom fighters in El Salvador or Palestine, and a large international student body. These exposed me to many ideas, philosophies, lifestyles and choices – and gave room for me to explore possibilities and choices for myself. First, I came to the realization that I wanted to continue learning in graduate studies, and not remain a mathematics teacher as I had committed to becoming as part of receiving the Commonwealth scholarship. After graduation, I went back to Cyprus for two years to teach mathematics in the high school I graduated from, but after the two years I applied for another scholarship, a Fulbright/Cyprus America Scholarship, for graduate studies in the United States. By the time the scholarship decision was finalized, I fell in love with a fellow-teacher and long-time friend Naim Alper. I was determined to continue with graduate education. We decided to get married a month before I left for graduate school in the US.

During my undergraduate studies in mathematics in the UK, I had realized that I enjoyed applied mathematics and the application of mathematics for solving real world problems more than abstract mathematics. In the US, I therefore started an MS program in Operations Research (OR) at Stanford University on a two-year scholarship. Since my initial plan was to return to Cyprus as quickly as I could to reunite with my husband, I completed the MS in one year. But before the end of the MS, Naim had joined me and I was in no hurry to return to Cyprus. I used the second year of my scholarship to obtain another degree, an Engineers degree – a graduate degree intermediate in rank between MS and a PhD – in OR. This

second year gave me opportunities to take many courses outside of OR that included statistics, computer science, industrial engineering and business. It also gave me an opportunity to work closely on a research project with one of the most well-known people in OR, Frederick Hillier. Fred was the co-author (with Gerald Lieberman) of the key textbook on OR that was used worldwide. I worked on a thesis on integer programming. This was my first true research project that stretched my programming skills to develop and test heuristic procedures for finding solutions for integer programming problems (Ercikan & Hillier, 1987).

OR is mathematical modeling of complex systems. It includes game theory, linear programming, integer programming, and queuing theory, among many other mathematical modeling approaches. It attracted graduate students from telecommunication companies, manufacturing, engineering, the military and many other fields that involved complex mathematical modeling. My two years in the OR department gave me opportunities to engage in discussions with students and faculty from a variety of disciplines. The mathematical models in OR taught me analytical skills for modeling and solving complex real life problems that cut across many areas of life from industry, communications, transportation, psychology and education. My interest in math, which had developed partly because I shied away from other subjects due to the English language burden in my secondary education, was diverted to applying my analytical skills to understanding the world and solving problems.

My interest in dealing with real world issues and problems pushed me in the direction of applications of OR instead of a doctorate in OR. During my studies in OR, I met some graduate students from the School of Education who were taking the same courses as I was. Through them, I discovered that there was a program called Mathematical Methods in Education (MME) in the School of Education at Stanford. At the end of my Engineers degree in OR, I applied for the doctoral program in MME. I was welcomed by the MME faculty and the School of Education and was given a four year fellowship. Key faculty members affiliated with the program were Lee Cronbach, Ed Haertel, Ingram Olkin and David Rogosa. MME was very flexible in its course requirements and, in fact, I was encouraged to take any courses that appealed to me, particularly because I already had two degrees in OR. This flexibility opened doors to many areas and provided opportunities to engage with faculty who were involved in exciting new research areas. I took courses with Elliot Eisner who was immersed in educational connoisseurship at that time; Denis Phillips on philosophy, science and social inquiry and evaluation; Nel Noddings on feminism, and several measurement courses from Ed Haertel, among others.

I arrived at Stanford at the age of twenty-three and was there until the end of 1991, a total of eight years. These were the most formative years of my life. During this time, I was introduced to a new culture, one that felt liberating in many ways. I found California culturally very accepting and Stanford academically open and flexible. Besides these benefits, I was excited and invigorated by being where things seemed to be happening. In engineering, computer and mathematical sciences, there were

many examples of how developments in academia impacted the great strides taken in Silicon Valley in the 1980s. In Education, discussions were always connected to the most critical issues in education at that time. Denis Phillips described the role of political context in educational evaluation and discussed implications for the evaluation of Sesame Street and Title I programs targeted for addressing inequity and social change. Elliott Eisner shared his experiences of influencing the pendulum in the direction of qualitative research. Dick Snow engaged students in a doctoral seminar on reviews and discussions of the most recent research on adaptation of instruction and assessment for individuals and aptitude-treatment interaction. There were discussions of qualitative versus quantitative research methodology and debates between Eisner and Phillips. Mike Smith was the Dean and there were debates about a national test in the US. These experiences reinforced the belief in me that it was indeed possible that my work could have an impact on real life problems.

During my grad studies at the School of Education, I worked as a teaching assistant for Ingram Olkin, Helena Kraemer and Jeremy Finn. I learned a great deal about teaching from each one of them. Ingram was great at communicating complex statistical notions to mostly non-mathematical School of Education students in a conceptual way. I was responsible for preparing examples of data analysis for statistical methods he was teaching. I now teach graduate students in a Faculty of Education with similar mathematical backgrounds and I utilize the two strategies I learned from Ingram in my teaching: a focus on conceptual elaborations and demonstrations through data analysis. Helena Kraemer was a very thorough, methodical teacher. She was also a biostatistician and worked in a medical school. Therefore, she communicated statistical problems by drawing analogies between statistical inference and inference in other contexts such as in law. For example, she created analogies between statistical significance and making conclusions beyond a reasonable doubt. Drawing analogies between statistical inference and inferences in other fields is not an easy task. I often use the same analogies I learned from Helena. More recently, Bob Mislevy has opened my eyes to inference in different fields and I resort to those examples as well. Jeremy Finn was also a very organized teacher. He was the first Professor I encountered who used previously prepared slides in all of his teachings. The slides could be distributed to students ahead of time so that they could concentrate on engaging in discussions rather than taking notes. This is another teaching strategy I used as soon as I started teaching, which was not common at UBC when I first started to teach there in 1998.

In my first year in the doctoral program, I enjoyed taking many courses and did not worry about finding a research topic. My first advisor in the school of education at Stanford was Ingram Olkin. At the end of the first year in Education, he stopped me one day and asked if I would like to spend the summer somewhere else. He told me about an internship at the Educational Testing Service (ETS). I did not know any researchers at ETS, but I filled out an application anyway. I was awarded an internship with Rebecca Zwick that summer. Rebecca was an excellent mentor; she was very organized, gave me lots of responsibilities and balanced challenge and

guidance. By the end of the summer, we completed a research study that resulted in a jointly authored, highly cited *Journal of Educational Measurement* article (Zwick & Ercikan, 1989). Our research introduced me to differential item functioning (DIF), which was a new topic then. In fact, the first article on the Mantel-Haenzsel DIF method was by an ETS colleague Paul Holland, published in 1986, two years prior to my internship at ETS. Since DIF is used to investigate potential bias in tests, it matched well with my interests to connect my academic engagements with real life issues and in particular with equity issues. DIF, item bias and fairness have been the focus of the majority of my research publications. Rebecca and I have stayed in touch and she continues to be a mentor, friend and supporter.

Having built a foundation in complex mathematical modeling, I entered the School of Education with the intention of developing a research career applying my OR knowledge to educational problems. However, there were very few applications of OR to education, limited to basic applied problems like school program scheduling. Furthermore, none of the faculty members at the School of Education were doing research on applications of OR. I searched for opportunities to work with researchers outside of the School to develop knowledge and experience in research on applications of OR. During my internship at ETS, I discovered Wim vander Linden at the University of Twente, in the Netherlands, who was applying OR models to psychometrics. I wrote to Wim and indicated my interest in working with him. Wim was very supportive and invited me to come to Twente. I spent the summer of 1989 there, where I was exposed to a different model of graduate education and academic environment. Twente had a research intensive environment where graduate students were paid to conduct their own research, and faculty had relatively low teaching loads. After the summer at Twente, I went back to Stanford and got ready for my comprehensive exams. I focused on a review and application of integer programming to test construction. After the comprehensive exam, my work in applications of OR stopped. I realized that I needed the support of a faculty member at Stanford to supervise my dissertation whose expertise matched the research focus, and there wasn't one in education at that time.

My introduction to educational measurement during my internship at ETS and my collaboration, combined with the presence of Ed Haertel (a measurement researcher) as a faculty member in the School of Education, led me in the direction of educational measurement for a dissertation research topic. While I was attempting to refine my ideas, I met with Ed every week and left the meetings with enthusiasm and excitement to learn about a new research area. I spent about six months doing this and gained knowledge about a variety of topics, but as weeks and months went by I started realizing that it was time to focus. As a strategy to hone in on a single topic, I started meeting with different faculty members in the School of Education and explored different research ideas. One key scholar with whom I had taken classes was Richard Snow. I had enjoyed courses with Dick on assessment of human abilities and assessment of cognitive and conative constructs. He pointed me to an article he had just read which was about a new direction in measurement modeling

in the *Journal of Educational Measurement* on computerized adaptive testing and testlets (set of test questions related to each other in some way) by Howard Wainer and Gerard Kiely (1987). I brought this topic up as a possible direction with Ed. Jointly, we explored different ways testlet modeling methodology might be used in measurement. Ed was familiar with a project in political science and thought it would be worth exploring the connection between testlet methodology and a project Paul Sniderman was doing in political science. Paul had developed a measure of political persuasibility using a survey that provided challenges to respondents based on their initial responses. Using a telephone survey, respondents were presented with challenges to their positions regarding race and racism. The degree to which the respondents changed their political positions was identified as an indicator of their persuasibility with regards to racism. I met with Paul to obtain more information about his measure. The adapting/branching nature of his measure, in fact, presented an example of testlets. Such branching measures presented challenges in how the responses could be used for measuring persuasibility. So my dissertation focused on modeling responses from branching tests. As an education graduate student, my challenge was to apply the same branching survey approach to an educational issue.

Throughout my time at Stanford, my interest in connecting my learning with real life issues, especially those in international and social justice, converged in this effort to identify a research topic. At Stanford I met numerous international graduate students. Through them I got introduced to the Institute for International Studies (ISS) at Stanford and started working there as a research assistant. At IIS, I was involved in the evaluation of California International Studies Project (CISP). One of the topics of focus in CISP was immigration and students from immigrant backgrounds. I developed measures of students' knowledge, opinions and persuasibility about immigration and immigrants in California. My research assistantship in this project provided the contact with schools for data collection for me. This was in the 1980s and the beginning of personal computers. Personal computers provided a great platform for administering a branching measure of persuability. Naim, who was doing a computer science graduate degree by then, did the programming with HyperCard for Macintosh computers. The schools did not have computers. So I called the Apple Computer company, using a number I obtained from IIS, and told them that I needed 20 Macintosh computers to administer the measures I developed at schools. Apple told me to pick up the computers when I needed them. I did not have a credit card and they did not ask for any kind of deposit. I was delighted and grateful.

My focus on educational measurement in my dissertation was influenced by my experience as an intern at ETS, Wim van der Linden's mentorship and Ed Haertel's guidance and the courses I had taken with him. The courses, such as the one that focused on item response theory (IRT), included the most current research and applications of research to educational measurement. IRT was perhaps the biggest change in large-scale assessment in education in the 1980s and 1990s. Frederick Lord's book was published in 1980 (Lord, 1980), and the Educational Testing Service and a few other testing companies started implementing IRT in testing programs in

the mid to late 1980s. I used IRT models in my dissertation research in the late 80s when it was scarcely used in real testing settings. The software Multilog (Thissen, 1991) was in the Beta phase and was sent to Ed by David Thissen, the developer of the program, to try it out. I compared several psychometric models for modeling responses from branching testlets using Multilog. More broadly the dissertation research examined the relationship between knowledge, opinions and persuasibility with regards to immigration and immigrants in California (Ercikan, 1992). Unlike the great proportion of academics who focus their careers on their dissertation topics, I used my dissertation research as a foundational learning experience and moved on to apply this knowledge to large-scale educational assessments where my first job after graduation from Stanford took me.

One research area that started in my graduate school days and continues to dominate my research agenda is international assessments of education achievement. I came across this topic completely by chance. At my first attendance at the annual meeting of the American Educational Research Association (AERA) in 1988, in addition to Division D (research methodology and measurement) and the National Council of Measurement in Education (NCME) conference sessions, a few sessions by the International Studies Special Interest Group drew my attention. I attended one session on international assessments in 1988. Neville Postlethwaite was giving a talk on methodological challenges in international assessments. In particular, I was interested in test adaptation issues. Later on Neville sent me the data for the Canadian assessment, with English and French administrations. Canada provided an interesting comparability issue, with relatively smaller cultural differences between the Francophones and Anglophones within Canada, compared to language differences compounded with much larger cultural differences that would be expected between countries. This introduction led to my first, first-authored journal article (Ercikan, 1998a), and first edited journal special issue on methodological challenges in international assessments (Ercikan, 1998b). My research on this topic has expanded to include broader validity issues in interpreting international assessment results (Ercikan, Roth & Asil, in press), gender differences in mathematics and science achievement and participation (Ercikan, McCreith & Lapointe, 2005a, 2005b), and measurement comparability (Ercikan & Koh, 2005).

MENTORS AND CATALYSTS

Among many who helped my career along the way, Rebecca Zwick and Ed Haertel were the two key mentors who shaped my academic path starting from my graduate school days. Another profound influence has been Wendy Yen. Wendy was the principal research scientist at CTB/McGraw-Hill, a testing company (the largest one for K-12 testing in the 1980s and part of 90s) where I started working immediately after I completed my doctoral studies and she was a prominent psychometrician (an NCME president in 1994–1995). Her thoroughness, clear thinking, sense of fairness and trust in me helped me take leaps in the early part of my career. I arrived at CTB soon

after the company was awarded the contract for the largest performance assessment in the country: Maryland School Performance Assessment Program (MSPAP), in 1991. MSPAP not only included hands-on performance assessment tasks, but also integration across curricular areas – mathematics with science, and language arts with social studies. It also aimed to assess complex thinking in these areas. At that time there were no books or articles one could open up to find guidance about how to score, scale and equate such assessments. There were no guidelines about how to use such assessments for high stakes accountability purposes. I became a part of a team under Wendy's leadership which investigated these issues, developed psychometric models and software for scaling, equating, and differential item functioning analyses (Candell & Ercikan, 1994; Ercikan, 2002; Fitzpatrick, Ercikan & Yen, 1998; Yen, 1993; Yen & Ferrara, 1997). MSPAP was the most successful and comprehensive performance assessment in the 90s. With the introduction of No Child Left Behind, the state of Maryland moved on to multiple-choice tests that would allow the state to test every student much more cheaply than a performance assessment allowed.

Under Wendy's guidance, a few years later I became the lead researcher for MSPAP assessments as well as other statewide assessments that followed it, and CTB's newest assessment systems: Terranova. Many of our experiences with MSPAP helped inform an assessment that was targeted to break ground in inclusion of performance assessment along with multiple choice questions and assessment of complex thinking (Ercikan et al., 1998). Terranova was highly praised and was awarded the best product recognition by the McGraw-Hill companies in 1996.

In 1998, Wendy recommended me to be on the National Academy of Education's committee on Foundations of Educational Assessment. My three-year membership on this committee served as postdoctoral training. At times it felt like a second doctorate on educational assessment and it had a very important impact on my research career. The committee included thirteen distinguished researchers, including learning specialists in mathematics, science and reading, cognitive and developmental psychologists, a neuropsychologist, policy experts and three psychometricians, including me. I was the most junior person. The committee was co-chaired by the late Bob Glaser and Jim Pellegrino. Its charge was to rethink the foundations of educational measurement, given the developments in our understandings of how people learn. The committee's work resulted in a widely influential book, *Knowing What Students Know*, edited by Pellegrino, Chudowsky and Glaser (2001). Meeting with this committee four times a year for three years was stimulating, challenging and, most of all, a great learning experience. It took the committee a full year to develop a common language to engage in productive discussions. My introduction to evidence-based assessment design, cognitively-based assessments, and assessment for learning were all through this committee. These topics have dominated my research on assessment design, validity and accountability (Ercikan, 2006; Ercikan & McKeown, 2007; Ercikan & Seixas, 2011; Ercikan et al., 2012; Seixas, et al, 2012).

I had many more colleagues and mentors who were influential in shaping my career. I will mention two with whom I continue to work and who continue to influence my thinking. Peter Seixas, a history educator, started the Center for the Study of Historical Consciousness at the University of British Columbia (UBC) in 2000, two years after I started a tenure-track position there. I knew nothing about historical consciousness but the topic triggered an interest because of the strong presence of the past in my consciousness, choices and decisions in my life. My experience of the war in Cyprus in 1974 and my mother's permanent loss of mobility due to her injury in the war have been constant reminders of the past and of Cyprus. Once I was granted tenure at UBC in 2003, I started exploring how I could shift my research to include Cyprus and conflicts in Cyprus. I approached Peter to find out more about what he did and what historical consciousness meant. He was enthusiastic to tell me about his and others' research on the topic. He invited me to join a group of distinguished historians to work on a national survey of Canadians' engagement with the past. After a few grant applications, the project was funded in 2006 and continued until 2011, with a book, *Canadians and Their Pasts*, published in December 2013 (Conrad, et al., 2013). My introduction to Peter's work and a five year collaboration on the national survey project led to several connected projects (Ercikan & Seixas, 2011; Ercikan et al., 2012; Seixas, et al., 2012) and gave me a deeper understanding of the development of historical thinking among students, Peter's primary research focus. Inspired by my involvement in the Canadians and Their Pasts project, I conducted a survey of Turkish and Greek Cypriots' thinking about their past and its relationship to present day political issues and choices (Ercikan, 2006), during my first sabbatical in 2004–2005 academic year at the Eastern Mediterranean University in Cyprus. In 2011, I invited Peter to collaborate with me on a project on assessment of historical thinking. This project has been a significant portion of my research activities during the last three years and our collaboration is continuing with a jointly edited book on assessment of historical thinking (Ercikan & Seixas, in preparation).

My collaborations with Wolff-Michael Roth have been other catalysts in my academic activities. In 2004, I was invited to contribute a chapter for a research methods book edited book by Clif Conrad and Ron Serlin (Conrad & Serlin, 2006; 2011) and was invited to collaborate with Michael, a cognitive scientist who primarily uses qualitative research approaches. We were matched because of our complementary research methodology expertise. Our collaborations included constructing data for research (Ercikan & Roth, 2006), comparing and contrasting qualitative and quantitative research (Ercikan & Roth, 2006), and examining research generalization claims in different research paradigms (Ercikan & Roth, 2009; Ercikan & Roth, in press a, b; Ercikan, Roth, & Asil, in press). Our co-edited book *Generalizing from Educational Research: Beyond Qualitative and Quantitative Generalization*, was awarded the Significant Contribution to Measurement and Research Methodology by AERA Division D and is one of the highlights of our collaboration. Research generalization as a topic is now a major aspect of my research agenda and is infused

in all of my other research. Michael and I continue to collaborate and often start a new collaboration before an ongoing one is over.

A CAREER OF CHANCE, OPPORTUNITIES AND INFLUENCES

My becoming an academic was due to chance events and opportunities. If I had not received the Commonwealth scholarship for undergraduate studies in the UK, I would probably have ended up at a Turkish university in medicine or architecture (both were on my list of areas in my university entrance applications). And if I had not been awarded the Fulbright/Cyprus America Scholarship, I would probably have stayed in my teaching job in Cyprus. Beyond these key opportunities in my education, the opening of a position in measurement, evaluation, research methodology (MERM) at UBC, the year I moved to Canada, was the most significant opportunity in my academic career. Such positions are rare, as most MERM programs are very small, and in a faculty or school of education they come about only when someone retires, perhaps once a decade. I was very fortunate to have been in Vancouver at that time and available to take on this position.

What I focus on academically is certainly influenced by my experiences as an individual rather than by chance events. My current research includes methodological issues in international assessments, effects of language and test adaptation on comparability of test results, validity of inferences from assessments of linguistic minorities in different countries, effects of population heterogeneity and diversity on research generalizations, the role of socio-economic factors as predictors of educational outcomes, and assessment of historical thinking. My international experiences and background has certainly been an important factor in my pursuit of research on international assessments for over two decades. My experiences as a learner in a second language in the English College as well as in the UK as an undergraduate student and at Stanford as a graduate student have informed and inspired my research on language issues in assessments. My continued interest in how students think about the past is motivated by my experiences as a child in a war-torn country. A theme that cuts across all of these research areas is a concern for inappropriate interpretation of educational assessment and research that may disadvantage already disadvantaged individuals.

One of the biggest sources of stimulation and satisfaction in my career has been using my academic training, research and professional experiences to influence research and measurement in practice in Canada, the US and internationally. In Canada and the US, I have served on advisory boards and panels for many large-scale assessments. These include the National Assessment of Educational Progress, Educational Testing Service, and the American Institute for Certified Public Accountants. Internationally, I have had the fortune of doing this as an evaluator of UNESCO's international assessments in three continents, as an international advisory board member for the South Africa Education Quality Improvement Initiative, as an advisor for research on classroom assessment in Singapore, as a

Chair/member of the technical advisory panel for Puerto Rico assessments, among others. A special development in these international involvements is my nomination by David Berliner and induction to the International Academy of Education as a fellow in 2013. This fellowship is not only a great honor for me but reinforces where I would like to put my energies in the next phase of my career: making an impact in international contexts in particular addressing inequity around the world.

FAVORITE WORKS

Books

Assessing Historical Thinking. (In press). With Seixas.
Canadians and Their Pasts. (2013). With Conrad, Friesen, Letourneau, Muise, and Seixas.
Improving Large Scale Assessment in Education: Theory, Issues, and Practice. (2013). With Rousseau and Simon.
Generalizing from Educational Research: Beyond Qualitative and Quantitative Polarization. (2009). With Roth.

Articles

Cautions about uses of international assessments. (In press). With Asil and Roth.
Limits of generalizing in education research: Why Criteria for Research Generalization should include population heterogeneity and users of knowledge claims. (In press). With Roth.
Is Fairness Research Doing Justice? A Modest Proposal for an Alternative Validation Approach in Differential Item Functioning (DIF) Investigations. (2013). With Oliveri.
Adapting Tests for Use in Other Languages and Cultures. (2013). With Lyons-Thomas.
Assessment of Higher Order Thinking: the Case of Historical Thinking. (2011). With Seixas.
Constructing data. (2011). With Roth.
Application of think-aloud protocols in examining sources of differential item functioning. (2010). With Arim, Domene, Gognon, Lacroix, and Law.
What good is polarizing research into qualitative and quantitative? (2006). With Roth.
Developments in assessment of student learning and achievement. (2006).
Factors associated with mathematics achievement and participation in advanced mathematics courses: An examination of gender differences from an international perspective. (2005). With Lapointe and McCreith.
Disentangling sources of differential item functioning in multi-language assessments. (2002).
Translation effects in international assessments. (1998).
Calibration and scoring of tests with multiple-choice and constructed-response item types. (1998). With Burket, Julian, Link, Schwarz, and Weber.
Linking statewide tests to the National Assessment of Educational Progress: Accuracy of combining tests results across states. (1997).
Differential item functioning in NAEP. (1989). With Zwick.

REFERENCES

Candell, G. L., & Ercikan, K. (1994). On the generalizability of school-level performance assessment scores. *International Journal of Educational Research*, *21*(3), 267–278.
Conrad, M., Ercikan, K., Friesen, G., Letourneau, J., Muise, D., & Seixas, P. (2013). Canadians and their pasts. Toronto: Toronto University Press.

Ercikan, K. (1991). *Item response theory models for knowledge, opinion and persuasibility measurement* (Doctoral dissertation). Stanford University, California, CA.

Ercikan, K. (1997). Linking statewide tests to the national assessment of educational progress: Accuracy of combining test results across states. *Applied Measurement in Education*, *10*(2), 145–159.

Ercikan, K. (1998a). Translation effects in international assessments. *International Journal of Educational Research*, *29*, 543–553.

Ercikan, K. (1998b). Special issue, methodological issues in international assessments. *International Journal of Educational Research, 29*(6), 569–577.

Ercikan, K. (2002). Disentangling sources of differential item functioning in multi-language assessments. *International Journal of Testing*, *2*, 199–215.

Ercikan, K. (2006). Developments in assessment of student learning and achievement. In P. A. Alexander & P. H. Winne (Eds.), *American Psychological Association, Division 15, Handbook of educational psychology*, (2nd ed., pp. 929–953). Mahwah, NJ: Lawrence Erlbaum Associates.

Ercikan, K. (2006, April). *Historical consciousness of ethnic groups in conflict: Turkish and Greek cypriot case*. Paper presented at the Annual Meeting of the American Educational Research, San Francisco Association, San Francisco, CA.

Ercikan, K., Arim, R. G., Law, D. M., Lacroix, S., Gagnon, F., & Domene, J. F. (2010). Application of think-aloud protocols in examining sources of differential item functioning. *Educational Measurement: Issues and Practice*, *29*, 24–35.

Ercikan, K., & Barclay-McKeown, S. (2007). Design and development issues in large-scale assessments: Designing assessments to provide useful information to guide policy and practice. *Canadian Journal of Program Evaluation*, *22*, 53–71.

Ercikan, K., & Hillier, F. S. (1986). *Heuristic procedures for 0-1 integer programming* (Engineers Thesis). Stanford University, California, CA.

Ercikan, K., & Koh, K. (2005). Construct comparability of the English and French versions of TIMSS. *International Journal of Testing*, *5*, 23–35.

Ercikan, K., & Lyons-Thomas, J. (2013). Adapting tests for use in other languages and cultures. In K. Geisinger (Ed.), *APA Handbook of Testing and Assessment in Psychology* (Vol. 3, pp. 545–569). Washington, DC: American Psychological Association.

Ercikan, K. & Oliveri, M. E. (2013). Is fairness research doing justice? A modest proposal for an alternative validation approach in differential item functioning (DIF) investigations. In M. Chatterji (Ed.), *Validity, fairness and testing of individuals in high stakes decision-making context* (pp. 69–86). Bingley, UK: Emerald Publishing.

Ercikan, K., McCreith, T., & Lapointe, V. (2005a). Factors associated with mathematics achievement and participation in advanced mathematics courses: An examination of gender differences from an international perspective. *School Science and Mathematics Journal*, *105*, 11–18.

Ercikan, K., McCreith, T., & Lapointe, T. (2005b). How are non-school related factors associated with participation and achievement in science? An examination of gender differences in Canada, the USA and Norway. In S. J. Howie & T. Plomp (Eds.), *Contexts of learning mathematics and science: Lessons learned from TIMSS* (pp. 211–225). The Netherlands: Swets & Zeitlinger International Publishers.

Ercikan, K., & Roth, W. M. (2006). What good is polarizing research into qualitative and quantitative? *Educational Researcher*, *35*, 14–23.

Ercikan, K., & Roth, W. M. (Eds.). (2009). *Generalizing from educational research: Beyond qualitative and quantitative polarization.* New York, NY: Routledge.

Ercikan, K., & Roth, W. M. (2006). Constructing data. In C. Conrad & R. Serlin (Eds.), *Handbook for research in education: Engaging ideas and enriching inquiry* (pp. 451–477). Thousand Oaks, CA: Sage Publications. (Also 2nd Edition, 2011).

Ercikan, K., Roth, W. M., & Asil, M. (In press). Cautions about uses of international assessments. *Teachers College Record*.

Ercikan, K., Roth, M., Simon, M., Lyons-Thomas, J., & Sandilands, D. (In press). Assessment of linguistic minority students. *Applied Measurement in Education*.

Ercikan, K., & Roth, W. M. (In press). Limits of generalizing in education research: Why criteria for research generalization should include population heterogeneity and users of knowledge claims. *Teachers College Record*, *116*(6).

Ercikan, K., & Seixas, P. (2011). Assessment of higher order thinking: The case of historical thinking. In G. Scraw & D. H. Robinson (Eds.), *Assessment of higher order thinking skills* (pp. 245–261). Charlotte, NC: Information Age Publishing.

Ercikan, K., Seixas, P., Lyons-Thomas, J., & Gibson, L. (2012, April). *An evidence centered assessment design for historical thinking*. Paper presentation in the Assessment of Complex Thinking in Mathematics, Reading, Science and History symposium at the annual meeting of the American Educational Research Association, Vancouver, Canada.

Ercikan, K., & Seixas, P. (Eds.). (In press). *Assessing historical thinking*. New York, NY: Routledge.

Ercikan, K., Schwarz, R. D., Julian, M. W., Burket, G. R., Weber, M. M., & Link, V. (1998). Calibration and scoring of tests with multiple-choice and constructed-response item types. *Journal of Educational Measurement*, *35*(2), 137–154.

Fitzpatrick, A. R., Ercikan, K., Yen, W. M., & Ferrara, S. (1998). The consistency between raters scoring in different test years. *Applied Measurement in Education*, *11*(2), 195–208

Pellegrino, J. W., Chudowsky, N., & Glaser, R. (Eds.). (2001). *Knowing what students know: The science and design of educational assessment*. Washington, DC: National Academies Press.

Seixas, P., Ercikan, K., Gibson, L., & Lyons-Thomas, J. (2012, April). *Assessing historical thinking: Challenges and possibilities*. Paper presentation in the Assessment of Educational Accountability in History and Science: Beyond Recall symposium at the annual meeting of the American Educational Research Association, Vancouver, Canada.

Simon, M., Ercikan, K., & Rousseau, M. (Eds.). (2013). *Improving large scale assessment in education: Theory, issues, and practice.* New York, NY: Routledge.

Thissen, D. (1991). *MULTILOG user's guide: Multiple, categorical item analysis and test scoring using item response theory*. Lincolnwood, IL: Scientific Software International.

Wainer, H., & Kiely, G. L. (1987). Item clusters and computerized adaptive testing: A case for testlets. *Journal of Educational measurement*, *24*(3), 185–201.

Yen, W. M. (1993). Scaling performance assessments: Strategies for managing local item dependence. *Journal of Educational Measurement*, *30*(3), 187–213.

Yen, W. M., & Ferrara, S. (1997). The Maryland school performance assessment program: Performance assessment with psychometric quality suitable for high stakes usage. *Educational and Psychological Measurement*, *57*(1), 60–84.

Zwick, R., & Ercikan, K. (1989). Differential item functioning in NAEP. *Journal of Educational Measurement*, *26*, 55–66.

PATRICK GRIFFIN

SERENDIPITY AND AN ACCIDENTAL PSYCHOMETRICIAN

THE ACCIDENTAL START

How did I become an education researcher? Why did I settle on psychometrics as a career? How did that decision lead me to the kinds of research projects I've been working on for more than 40 years? Before I was asked if I would write this story, I had never considered these questions. In fact I became a psychometrician quite by accident. I was teaching in a country school in Victoria, Australia, and trying to increase my qualifications. I'd enrolled at the University of Melbourne in a Bachelor of Education program to supplement my teaching qualifications. I had what was called a Trained Secondary Teachers Certificate (TSTC), but most of my colleagues had a Diploma of Education and this was considered to be superior to a certificate. So I set out to acquire a Bachelor of Education to put my self-esteem at ease.

In order to study for this degree I had to drive 300 km from the country school to the University once a week to attend classes. This was in the early 1970s, and roads and cars being what they were the trip took more than 4 hours. The school principal agreed I could have all of my "spare" classes on one afternoon and that could be on the day where classes were held at the University. I could use that afternoon to drive to the lectures. There was no distance education; there was no online delivery; there was no other option than to attend – and the University had mandatory attendance requirements of 80%. So at midday I would set out to drive the 300 km to attend a two-hour lecture that started at 5 p.m. At the end of the lecture I would drive the 300 km back to the country town and get home about midnight. So the next morning after my trip to the university was not the most productive time in my teaching career. Everyone including my colleagues and my students were surprised by, but supportive of, my endeavors.

My students were tolerant and understood what I was trying to do. Unconsciously I was modelling for them the value of education in a community where most of the students lived on farms or in small towns and had little or no prospect of employment other than to go back on the farm or to work in some labor-intensive job in the local town. Many of them had never considered travelling to university. So I was demonstrating my commitment to the importance of education at the same time I was managing to teach them mathematics, chemistry and science in the junior high school years.

M. de Ibarrola & D. C. Phillips (Eds.), Leaders in Educational Research, 75–91.

When I finished the degree I was offered a place in the Master's degree program at the University. I desperately wanted to do that but I'm not sure why. It meant I had to transfer to Melbourne along with my wife, Lynn, and three young children if I wanted to enroll in the higher degree. I was completely ignorant of what constituted a Masters degree but it seemed like a good idea at the time. The move to Melbourne was necessary because it was not possible to study for a Masters degree in the same way as the bachelor of education. So I began applying for teaching positions in schools in Melbourne. I applied to a Jewish school, several Catholic schools and to the state Department of Education (my employer at that time) for a transfer. My preference was to transfer rather than to resign from the State Education Department – for some reason I was reluctant to resign and start again in a private school. But I could not get a transfer. I protested and took the argument to my local Member of Parliament and wrote a letter of protest to the Director-General of Education. At the end of 1972 I was in Melbourne at an examination center where I was sitting an exam in the last subject of my bachelor's degree. When the exam was over my school principal told me that I had an appointment the following morning with the Deputy Director-General of Education (DDG) in the State system.

MELBOURNE, MUSEUM, AND MASTER'S

The DDG had little tolerance for teachers who wanted to improve their qualifications. He said to me "You have a basic qualification and this is all you need to be a teacher in our schools. Why do you need to be more qualified than is necessary?" Without thinking, without even pausing, without taking time to think about what I was about to say I said "Because I want to make a difference!" The DDG was clearly taken aback at such an arrogant and perhaps delusionary response. So he asked me to come back the next day. When I arrived at his office the following morning I was met by his secretary who ushered me into a side room where I met the director of the Science Museum and a teacher who had been on secondment to the Museum to take charge of excursions for elementary school students. The DDG said a similar position had been established at the Museum for a teacher to establish a program for high school students and I could transfer to the museum if I was able to establish a program of activities for high schools. I thought I was well qualified to do this. As I had no other options, and no other offers on the table for teaching positions in Melbourne, I accepted the position.

It was a great thing to do. I learned about all kinds of scientific marvels. I had the opportunity to build holograms, to work in a planetarium, to teach classes of students with museum exhibits as teaching aids. I was able to transmit TV signals on a laser beam, create multi-colored shadows, use modern and antique teaching aids and teach science in a classroom (gallery) specially designed and built for me and my program. While I was there I decided that I would use the setting to write my masters research thesis on how students use a museum as a learning environment. I didn't set out to use ethnographic methods but this became a serious attempt an

ethnographic study as a participant observer watching students visiting the museum and getting excited about science.

Towards the end of my first year in the Museum the State government decided that teachers colleges in Victoria would no longer be a part of the Department of Education. They were to become independent and autonomous educational institutions similar to community colleges in the United States. Many of the teaching staff had worked in teachers colleges for decades. The government decision meant they had to make decisions about their own future. If they stayed in the teachers college they would have to resign from the state education department. So many decided to return to schools and become classroom teachers rather than teacher educators in order to retain their employment benefits. This meant that there were a number of positions available and advertised in the daily press. I noted these but quite frankly I didn't understand what some of them involved. It was also true that I was a high school teacher and the teachers college focused on the preparation of elementary school teachers. So I wasn't sure that I could contribute to a teacher's college program that prepared elementary school teachers. So I wrote a letter to the principal of the College asking for information about a subset of the advertised positions.

Within a week I received a letter from the principal thanking me for my application and promising I would hear from her in due course. This alarmed me. I had not applied – I had merely asked for information. So I collected together a rudimentary curriculum vitae (which I had never before prepared) and materials that I had been writing and publishing both as a teacher and as member of the Science Museum Education Service. I sent the whole bundle to the Teachers College principal together with a letter indicating that I wished to be considered for one of the positions but I did not designate which position that would be.

To my surprise I was invited to attend for an interview. I can even remember how I was dressed that day – in my burgundy flared trousers, heeled boots, white safari jacket, and with my collar length hair and 1970s moustache. I was introduced to a panel of four people – the current Head of Department, the designated new Head of Department, the College accountant and the College principal. The College principal, Ms Lowndes, opened the discussion by welcoming me to the interview and pointing out that the panel was not sure which position I had applied for although my application was very thorough, and comprehensive. I had to confess that I too did not know which position I had applied for and I relayed the story to the panel about how I had asked for information and had been treated as though it was an application. So I said to the panel "Why don't you tell me about the positions that were advertised and I'll tell you which one or ones I'm interested in". At this point the new head of Department interjected saying that he noticed that I was a mathematics teacher and that my undergraduate degree had both majors in mathematics and chemistry. He (John Izard) thought that I would fit well into a subject that he taught. He was a psychometrician and taught an introductory course on classical test design and evaluation. I knew little or nothing about this field but I thought I would be

comfortable teaching something that had a mathematical basis. I certainly had not studied any of the subjects in this field during my undergraduate studies because they were not offered on the evenings that I could drive from the country to Melbourne to attend classes. Nevertheless I was relaxed about the fact that I might be able to teach test theory. During the interview we discussed various theories of education and different eminent educators. We spent time talking about my early experience in teaching where I had developed strategies for differentiated and targeted instruction in mathematics education for junior high school students.

These things together with my background in mathematics gave them enough confidence at the end of the interview to say to me "Mr Griffin, in a week's time we will be advertising positions at the lecturer level. You have applied for a position at the tutor level. We are of the opinion that you would be wise to resubmit your application next week for one of the lecturer positions." I went home and my wife asked me if I thought I would be offered the job. I was able to say "No I don't think so, but I think I was promoted."

BECOMING A PSYCHOMETRICIAN

So that was how I entered the field of psychometrics. My mentor for the next five years was John Izard. He'd written a small instructional book on classical test design and development and I was to work my way through that, and practice the skills and the theories and the mathematics that were embedded in it. At first I acted as a tutor – John would give the lectures and I would lead classes reinforcing the subject matter of the lecture. After about a year of this I began giving lectures myself, and developed my own material to introduce the students to test development and the use of assessment data. The course was extremely unpopular. Teachers, and elementary school teachers in particular, did not prepare multiple-choice tests and they certainly did not undertake classical item analysis calculations, compute discrimination indices, means and standard deviations, standard errors, measurement errors or use many of the algorithms John and I were teaching. I was convinced there had to be a different way to prepare teachers to use assessment data. It is this conviction that has driven the work I have been doing for the last 35 to 40 years.

The college was also keen to improve the staff qualifications profile. By 1976 I had finished my Masters degree and I attended a lecture at the University of Melbourne given by the famous psychometrician George Rasch. I also had the opportunity to attend lectures and seminars offered by a learning theorist, Robert Gagne'. I was impressed by these two theorists. I wondered about the possibility of combining the psychometric models of George Rasch with the learning hierarchies and conditions of learning that Gagne' was developing. Another person I met about this time was a young man called Neville Postlethwaite as he was working for the IEA and travelling to various countries giving a seminar series on international studies of student achievement. Later we were to become close friends but he did not ever recall meeting me in the earlier years.

The college had a very generous professional development program whereby staff were offered time away in order to study if they could be accepted into a university overseas. I had watched many of my colleagues who had been at the college for several years travel and attend courses in the UK, Canada, United States or elsewhere in Australia. So I decided that I would also apply for extended leave to study towards a doctorate. Because I had a very young family I felt there were limited choices largely dependent on our financial situation. The cost of studying at the University of Chicago where Bruce Chopin and Ben Wright had taken the ideas of Rasch and developed a program of objective measurement was beyond my finances. So I turned my attention to the work of Robert Gange' in Tallahassee, Florida. I subsequently put in my application to join the program at Florida State University.

My intention was to study with Bob Gagne'. However in the period between my application being accepted and my arrival in Tallahassee at the end of 1977, the FSU Graduate School of Education had undergone a restructure and I was enrolled in a different department to the one where Gagne' was placed. I enrolled in the measurement and statistics program and also became one of Bob Gagne's research assistants. This was important because of the rule that university employees were eligible for "out of state fee waivers". It was of considerable financial benefit, but also gave me a chance to work with the great learning theorist while studying measurement and statistics. I decided that I would take as many courses as possible. Most of them were in measurement, statistics, research methods and an external program in vocational education, which was related to studies I was conducting before I went to Florida. I applied to take a course overload in every quarter and instead of taking the requisite 12 quarter hours of courses I regularly enrolled in between 15 and 18 hours each term. Because I was successful and managed to finish the course work within the first year of the program with a perfect GPA of 4.0 and then set about writing my dissertation, I completed the whole degree in well under two years.

At the end of the doctoral program I was awarded a postdoctoral fellowship with the Psychological Corporation of New York. There I worked on the measurement aspects of many of the tests of the corporation, and Rasch scaled some of them. About that time one of the professors at FSU had recommended me for a position at the University of Hong Kong. Of course I had to return to Melbourne, and it would take another 6 to 8 months before I was able to take up the position at the University of Hong Kong. Interestingly I applied for the position in Hong Kong because a professor at Tallahassee had recommended me to his friend in Hong Kong, and out of curiosity Lynn and I agreed that it would be interesting to at least be interviewed and have to travel to Hong Kong – a place where we had never been. But I wasn't interviewed. I was offered the position on the recommendation of my professor in Tallahassee. So then we had the adventure of selling the house in Melbourne, packing up everything we owned, and heading off into the unknown Orient to this mysterious place called Hong Kong.

THE HONG KONG YEARS

The first few months in Hong Kong were almost traumatic. Although we had lived for a short time in New York in a high-rise apartment nothing could have prepared us for the kind of high-density, high-rise living in Hong Kong. It was also true that the crowds and the weather were quite alien to us. So I started looking for ways to leave Hong Kong. I applied for and was called for an interview at the National Centre for Vocational Education research in Adelaide. This was largely because I had spent some time before leaving for America studying apprenticeship training Australia. I went to Adelaide for an interview and discovered that every staff member was on secondment from some other institution except the director and the assistant director – the position for which I had applied. Moreover the whole organization was in rented premises. It seemed to me to be a fairly risky proposition. So I declined the invitation to join the National Centre for Vocational Education Research as its deputy director. History shows this was not a wise choice. In the ensuing years the organization has gone from strength to strength to become a major national research unit.

But in time my family began to enjoy life and the Chinese community in Hong Kong. We were happy to stay. It gave me my first opportunity to supervise doctoral candidates and my recent experience as a student being supervised helped me in this. I also started writing articles and conducting small-scale research. A wonderful opportunity was given to me when the Dean of the School of Education nominated me as the National Research Coordinator for the Second International Mathematics Study (SIMS). This was the best postdoctoral education I could ever experience. I travelled to various countries to attend coordinator meetings where I met experts in every form of research methodology. Lee Burstein introduced me to multilevel modelling. Skip Keifer led the attitude scale development. Ken Ross and Malcolm Rosier led the sampling aspects of the study. Neville Postlethwaite, whom I had met several years previously in Melbourne, was a leading figure in the questionnaire development. I learned a lot about survey methods, data analysis and scale development. I became one of the specialists within the International Education Association on Rasch modelling and item response theory. I conducted several psychometric studies for that organization. As a national research coordinator I also learned about data management, data cleaning and formatting. I was lucky to have two brilliant research assistants during this period. Both have now become full professors and I continue to work with them on a regular basis.

THE MELBOURNE AND GOVERNMENT YEARS

After almost four years in Hong Kong, my children were growing up and my eldest daughter had reached middle high school. In those days it was not possible for expatriate children attending international schools to gain entry into a university in Hong Kong. As a family we discussed the idea that we would move to a country where the children could complete their high school education and proceed on

to university. Coincidently at this time I was approached by the Victorian State Department of Education through the director of the curriculum and research unit. He asked if I would return to Melbourne and lead the research and measurement unit of the state education department. This seemed to be such a good opportunity, given the emerging urgency of education shifts for the children. So we returned to Australia and I took up a position in a large state Department as head of research and measurement.

Immediately on setting up in Melbourne, two opportunities became available to conduct meaningful research. While in Hong Kong I had watched interviews take place in the British Council where students were interviewed and assessed and placed into classes according to their English proficiency and the kinds of language training they would need. The process involved an oral interview and an estimate, made by the interview panel, of English proficiency. It was mind-numbingly boring and extremely loose, and lacking in any measurement qualities. I had proposed as part of a conference paper, subsequently published in proceedings, a way to identify key markers of language development and to apply item response modelling in order to determine a hierarchy of skills in language. I proposed the idea that the hierarchy could be used to identify where, on the development continuum, the interviewee could be placed and this could become a criterion for placing students in relevant classes. Unfortunately I had to leave Hong Kong before this research project could be realized, but on returning to Australia the Adult Migrant Education Program (AMEP) approached me to develop a test that would enable exactly the same thing to be done. I formed a team in 1984, consisted of a young man called Ray Adams, a French teacher and an English language teacher from the AMEP. Ray Adams went on to complete his doctorate in the mid-1980s and ultimately became international coordinator and technical director of the TIMSS program and then of the PISA project. He also became the author and designer of a major software package of Rasch model analysis (Quest and then Conquest).

This team developed the interview test of English language (ITEL). Publication of the test soon attracted criticisms because the test was based on the use of grammatical structures in order to discriminate between people at different levels of language proficiency. It was argued that this would influence language courses to emphasize structures rather than functions. What it did for me was lift me to an international level of recognition in language testing. To our knowledge this was the first time that item response modelling had been applied to language testing. It broke new ground in language testing and its interpretation and application. It led to several documents and several articles which themselves attracted criticism but sparked a debate about the use of item response modelling language testing. It is now a routine activity. Much of the credit for the application of item response modelling to language testing has to be given to Ray Adams and his background knowledge of measurement and psychometrics. He was also responsible for increasing my knowledge of both the mathematics and the logic of Rasch model analysis.

TURNING 40

They say that life presents us with lots of challenges. I'd been working in educational measurement and research for quite some years by the time I had reached the position of head of research and measurement in the State Education Department of Victoria. I arrived back in Melbourne in early 1984. Over the next two years the team developed the ITEL and began work on the ideas behind formative assessment of literacy and numeracy in the classroom. At about this time Ken Ross and Neville Postlethwaite approached me to see if I was willing to take on the role of coordinator of the International Literacy Study. It would mean transferring to the United States. My family was quite excited and we all took the actions that we might need for further education, work and so on. However, this was an era when the American government had decided that since they were hosting the study, the coordinator would have to be an American. I didn't return to America to live. This was fortunate for a number of reasons. The first was to do with my health. The second reason was to do with the kind of trajectory my life would take in Australia and elsewhere.

A few days before I turned 40 years of age I had a heart attack on the way home from work. I didn't lose consciousness but sat down on the side of the road as I was heading to the train station. The pain subsided and I decided to go home anyway. The homeward crowd took little notice of a suited man sitting on the edge of the road. I went to the local doctor's practice but it was shut. So I went home. I didn't tell anybody what happened. I explained to Lynn that I was going to work at home the following day, but instead I presented myself as an outpatient at the local hospital. Tests were conducted and I was immediately transferred to the Melbourne public hospital cardiac unit. After a few days of more testing I was sent home to take it easy. I was certainly no longer allowed to go to work and instead spent the time trying desperately to deny what happened to me. After all I was too young for this to have happened! I tried to avoid going into hospital – I had heard that it was possible to beat this kind of thing with diet and exercise. I tried to phone the hospital and withdraw from the appointment with the surgeon. But the phone would not connect. Despite all my protests I was admitted to hospital on my 40th birthday for bypass surgery. People who have experienced this form of surgery will know it is a major traumatic event in one's life. So I was admitted and had the surgery on what turned out to be a notable day in Melbourne – it was the day that the criminal underworld decided to plant a bomb outside the main police station in Melbourne. A young policewoman died as a result of the explosion. It touched us in a disturbing way because while my wife was waiting for me to come out of the operating theatre the bomb victim was admitted to hospital and was taken right past my wife as she waited outside the surgery .

As with most heart patients I was in an intensive care unit for some days. On the morning after the surgery representatives of the surgery team came to ask me questions about what I remembered while under the anaesthetic. Apparently I had woken up in the middle of open heart surgery! Some of my better friends have indicated that I would normally do this in order to give advice. Such is their form of

humor. I had indeed woken up in the surgery and there were consequences for me. In order to administer more of the anaesthetic the surgery team had to turn off the heart-lung machine. When they turned off the heart-lung machine the blood clotted and numerous small blood clots bombarded my brain. It was the equivalent of suffering several simultaneous strokes. I lost the use of my right arm, my left leg, my speech was incoherent and I had trouble focusing on any particular issue. I had almost no hand eye coordination. I also had a tendency to have epileptic fits and for this I was treated with the drug Dilantin.

Obviously my family was very concerned. My younger brother came to see me and together we agreed that twelve months hence we would run in the Melbourne half marathon fun run. This meant that I had to learn to walk, talk, think and then learn to run. I soon found myself in the invidious position of sitting in a neuropsychologist's office putting square pegs in round holes – literally. I feared that I had suffered permanent brain damage and that my research career had come to an end. I gradually improved and, with the help of family and colleagues at work, I developed a sense of humor about the whole matter. I returned to work but could not concentrate for long periods of time. My colleagues and friends at work enjoyed some of the more pitiful behaviors that I had developed. It was all in good fun and they helped me to recover, and they certainly never ever let me feel sorry for myself. I continued to have trouble with noise and stimulation and could not cope with two or more people talking to me. One day I ran out of Dilantin and took a day or so to get around to renewing the prescription. I noticed that the intolerance of talk and crowds disappeared and I decided not to take it again; my concentration came back and my abilities to deal with people and ideas refreshed. I felt that I had been able to return to work, and I resolved never to waste a day again.

BACK TO WORK

Emotionally it was quite a shock. I realized that I had not been making good use of my life up to this point, and since that time I have been constantly reminding myself that every day is a bonus. It's now 28 years since that surgery and I would hate to think that I wasted even one single day of those 28 years. I had a second life and I intended to make the best of every day. Some people would say that now I work too hard and have become too busy for my own good. But we never know how long we have, and if we believe in what we do, the effort and the busyness and the hard work are the reward in themselves.

I also started to exercise on a daily basis and became very careful about my diet. My brother did not run in the mini marathon, but I did – and just 12 months after the surgery. It wasn't fast but that was a goal I set and it demonstrated how "bloody-minded" and determined I could be. With diet and exercise I've probably added many years of opportunity to have an impact; to help others and to make sure that I make a contribution. I was reminded of what I had said to the deputy director-general of education: "I still want to make a difference".

Not long after the first papers were published on the ITEL I was asked to travel to London to represent Australia as part of the international consortium that was developing a new version of the International English Language Testing System (IELTS). I became a psychometrician on that program and began to work with language testing and language proficiency specialists.

During this period I had also been given a project in the Department of Education to monitor children's literacy and numeracy. The order for this project came directly from the Minister for Education. The Ministry at the time had a pattern of strong opposition to testing, and the instruction given to the team was to develop a method of monitoring student literacy and numeracy without the use of tests. So we visited schools, sat in classrooms and observed what teachers were doing. At the end of each lesson we asked the teachers how they decided whether a student could read or could do the mathematics they were teaching. We were asking them to describe the evidence of development of literacy and numeracy. We looked at their teaching strategy and reviewed with them what they saw as a milestone on the student's pathway towards becoming literate and numerate. We set about combining lots of different evidence. But we were unsure about how to treat the data. The team met every morning for about an hour to discuss observations from the classrooms of the previous day and we began to define the process of assessment.

We noted that successful teachers always asked questions of students; that they use the student's answers to formulate either instruction or further questions, and generally gave feedback to the students. Over many weeks of observations we began to formulate a description of what was happening in the classroom. The teachers had a very purposeful process of observing, recording and interpreting the evidence they accumulated regarding a student's learning development. They used this evidence to communicate with the students about their learning and progress. From this we were able to coin a definition of assessment: "Assessment and reporting is a purposeful process of observing, recording and interpreting observations about learning and communicating decisions and interpretations to stakeholders". In 1990 I published a book with Harcourt Brace Jovanovich about the process of assessment and reporting. It was my first research book. By then Ray Adams had gone to Chicago and had completed his doctorate and become famous in his work.

Meanwhile I had gone to Lancaster and Cambridge to work on the IELTS. The discussions and conversations with language proficiency specialist were encouraging. I realized that when they were describing increasing levels of language their terms and ideas were similar to the conversations we had with teachers in Melbourne, and the idea formed about describing literacy and numeracy in descriptive terms demonstrating levels of increasing competence. The idea of described scales (or developmental continua) emerged. We called them "profiles" because this was a neutral term and we needed teachers to be comfortable with this new form of monitoring accountability. When I returned to Melbourne we undertook a survey of teachers to record their observations about student learning in literacy and numeracy. We scaled these data using Rasch model software (Bical) and began to

formulate the ideas of developmental progressions in reading, writing, speaking and listening. With the data on numeracy we formulated a developmental progression in number, measurement, space and data. These developmental progressions were called "profiles of learning". The first of the books that were published on this by the State government documented a new approach to observing student learning using the literacy profiles. The logic of the developmental progressions reversed the process of assessment and reporting. The developmental progression became the report (or the means of communication) and the teachers were free to use whatever method they liked to gather the evidence in order to place the student at a level on the developmental progression. The report became the governing principle of assessment. At first the teachers lacked confidence in judging a student level but with practice and training they improved. Within two years the teacher judgment data were more reliable than the data from a standardized test we used for criterion validity!

In 1989 the State and Federal government ministers met in Hobart to decide upon a national curriculum. The literacy and numeracy profiles became the model of that national curriculum based around developmental learning and developmental assessment. Australian curriculum became known as the "national profiles and curriculum statements".

At the same time, in the United Kingdom Prof Paul Black and his Task Group on Assessment and Testing (TGAT) were developing descriptive progressions called the "key stages of development". In Indiana Jerry Herste was developing descriptive scales to describe student development in the Language Arts. In three locations around the world measurement and assessment experts were independently following up the idea of criterion referencing, and were enabling teachers to monitor student progress through stages of increasing competence (as defined by Bob Glaser in his AERA presidential speech of 1981). These three approaches to assessment and curriculum would have a profound influence on curriculum in many countries. However it was not all plain sailing. In Australia we experienced strong opposition to the idea of developmental progressions. It was regarded almost as heresy to argue that students could develop from low to high proficiency in reading comprehension. Many of the proponents of whole language instruction argued that reading comprehension was a dichotomy: You can either read or you could not. I searched for people in positions of influence who shared my view – I asked them to help convince teachers that reading could be developmental. Patricia Smith, later to do a doctorate with me, was the president of the Australian Reading Association. She became convinced of the logic of developmental learning; her courage and leadership allowed the idea to be discussed amongst language teachers without rancor. The State government also had an advisory board which formulated policy recommendations. The director and deputy director of the State Board of Education, Bill Hannon and Helen Praetz, championed the idea of profiles and led the campaign to have the idea presented to the Australian Education Council in Hobart in 1989. The impact of that work took hold at a national level.

In 1989 I was approached to become the head of department at the Phillip Institute of Technology in Melbourne. I was promoted and held the inaugural chair of assessment (and the foundation chair of the Institute). This Institute later became part of RMIT University. I also held the chair of assessment at that University. I spent the next seven years as head of department and director of a research center which I founded when I first arrived at the Institute in 1989. As a head of department all I had to do to establish the Assessment Research Centre was to declare its existence and to separate out the budgets and income generated by the Assessment Research Centre from the core funding allocated to my department. (This could not happen now!) I began by organizing professional development days for teachers from the Adult Migrant Education Program. As I had just returned from the United Kingdom working on the IELTS, I offered a half-day professional development program for 20 teachers and charged them a fee of $50 each. With the thousand dollars I employed an administrative assistant to help me write research proposals to funding agencies. This was the beginning of a 25 year program of directing research through the Assessment Research Centre which now exists at the University of Melbourne. We have spent many millions of dollars, and now our one-year projects and commitments require that we find almost 3 million dollars just to break even.

Until recently in Australia national approaches to curriculum have not been successful. In this case several states decided to develop their own version of the profiles. In my own state of Victoria the Department of Education developed what they call the Curriculum and Standards Framework. The work on national profiles and state variations of these national profiles continued into the early 1990s. By 1993 profiles in curriculum statements had been prepared for eight key learning areas and became the new recommended Australian curriculum. The Victorian curriculum and standards framework (CSF) however was a variation on the national approach. In 1995 Victorian CSF was mandated to be implemented across all schools in Victoria. In order to aid this implementation the state government decided to introduce state-wide, full cohort testing at grades three, five, seven and nine. In 1995 the Australian Council for Education Research was commissioned to undertake the Learning Assessment Project (LAP) as a first step in monitoring the implementation of the new curriculum. Some difficulties were encountered by the project during the implementation of the LAP program and the government approached the Assessment Research Centre to develop and implement the tests in 1996. This was supremely ironic because a few years earlier I had developed the idea of profiles so that teachers could monitor student progress without resorting to tests. Now I was given the opportunity of implementing the state-wide testing program in reading, mathematics and science in order to facilitate the implementation of the standards framework.

The Assessment Research Centre (ARC) became a focal point of research projects in a range of topics – vocational competency assessment, literacy and numeracy, teacher effectiveness, formative and summative forms of assessment and so on. As we became more successful and more financially stable, the center began to employ

additional research staff and also attracted graduate students ("postgraduate" in Australian terminology) to undertake masters degrees by research, and doctorates. The center became the national center for vocational assessment research. We recruited additional staff-members who had completed their doctorates in the areas of focus for our research program. The number of students and staff increased steadily between 1989 and 1996. By 1996 the campus was closing and all staff were to move to an outer suburb of Melbourne. Luckily, at that time I was approached by the Dean of Education at the University of Melbourne to ask if I was interested in moving to Melbourne to take up of the chair of assessment. This would be my third chair of assessment in three institutions and I eagerly agreed to the offer. In 1996 the assessment research center, with nine staff and 14 graduate students, moved to the University of Melbourne. We have remained there ever since.

UNIMELB AND THE TRANSITION

During the ensuing years at the University of Melbourne the center has grown in status and impact. One of the first projects that it attracted after moving to Melbourne, was the state-wide testing program for year nine students in Tasmania. Tasmania is a small state system with only 39 high schools. It was a perfect opportunity to practice the craft of full-cohort testing and to undertake some experimental assessment activities. Working with people from the Office of Education we devised a take-home test for the students in year nine. The students were asked to map the space allocated to various aspects of a newspaper, using its first and last 10 pages. Once the structure of the newspaper had been clearly identified they were instructed to place, in an appropriate section of the paper, an advertisement for a product that would attract the readers' attention. We didn't take into account that in Tasmania some local newspapers were small and did not have 20 pages! Nevertheless most of the students enjoyed the task. However some of the more capable students were critical of this project because there was no correct answer, while some of the less able students were very supportive of the project because there was no correct answer! Many students had realized that we had made incorrect assumptions about newspapers in Tasmania. We soon found that the students who challenged the assumptions were the higher performing students.

With my colleague from the Tasmania Office of Education (now Prof Callingham), I explored the reasons why students would challenge the assumptions underpinning projects they were given. We decided that we would deliberately plan exercises in mathematics and invite the students to identify and challenge the assumptions in a way that they could demonstrate their capacity for higher-order thinking. This led to a new hierarchy of problem-solving skills. It also enabled us to identify a meaningful way of writing rubrics which would subsequently yield assessment instruments with phenomenal reliabilities based on teacher judgment.

The Tasmania testing program lasted for two years and led to considerable changes in assessment strategies employed by projects in the Assessment Research

Centre. At about the same time, 1997, the center began a long-term relationship with the North Shore Development College in Sydney. On their behalf we began to organize national problem-solving competitions for students in primary and lower secondary schools. This competition continues after 16 years.

One program that carried over from RMIT to the University of Melbourne centered on my work in Vietnam. In 1992 I was accompanied to Vietnam by Prof Nguyen Xuan Thu. The work in Vietnam lasted for 20 years and yielded 18 doctoral graduates, numerous masters' degree holders, and continuous project work with the World Bank, the Ministry of Education and Training, and other aid agencies such as Australian AID. The range of projects and graduates has had a huge influence on education in Vietnam. Several of the graduates now occupy senior positions in universities, government and aid agencies. The projects included the first-ever national study of grade five achievement in reading and mathematics. This study involved testing 72,000 students and 3600 teachers. It was modelled on the SACMEQ study which in turn was modelled on the IEA approach. My experiences as national research coordinator in Hong Kong proved to be valuable but the collaboration with people such as Ken Ross and Neville Postlethwaite was far more valuable. The report from the study prepared by Neville Postlethwaite has been published by the World Bank in three volumes. It became the gold-standard for large-scale assessments in developing countries.

The World Bank commissioned the center to develop profiles of teacher competence for the Vietnamese Ministry of Education and Training. The profiles of teacher competence were signed into law in May 2007 and affected some 380,000 elementary school teachers. There was also a review of the Australian scholarship program, an evaluation of the Teaching Research and Innovation Grants (TRIG) for higher education institutions in Vietnam, and there were numerous training programs in testing and item banking.

In 1997 Ken Ross and Neville Postlethwaite asked me to join their team as a measurement specialist for the SACMEQ project. Ken also encouraged me to teach at the UNESCO headquarters in Paris on a regular basis. The SACMEQ project investigated achievement levels at the end of primary school in 15 sub-Saharan African countries. The study was repeated every four years.

Ongoing work in Australia has established the Assessment Research Centre as having a central role in the debate regarding competency assessment in vocational education. The training reform agenda in Australia declared that competency was to be described as a dichotomy: People were competent or not competent in a range of skills. The Assessment Research Centre brought to this debate the idea of developmental competence and the application of item response modelling. It is a debate that continues, with some leeway in further education or community college institutions to allow grading, but this is not the same as developmental assessment.

The developmental interpretation of competence was also studied in another national study using State Emergency Services as the context for developmental competence. We studied higher order decision making and problem solving in a vocational education

setting. These projects enabled us to refine the ideas of rubrics first developed in the Tasmania full cohort mathematics testing program. Later on the use of rubrics was to find another application in dealing with students who had intellectual disabilities. Locally these students were referred to as students with additional needs, and the acronym was SWANS. The development of rubrics to help teacher judgment led to an assessment system where teachers could observe students' work in the classroom and use rubrics to identify developmental levels and intervention points for instruction in communication and literacy, interpersonal skills and intra-personal skills. The assessment strategies were based on teacher observation and judgment. Astonishingly, the minimum alpha reliability of each of these instruments was 0.94. The highest reliability was 0.98. The development of rubrics has consistently produced instruments based on judgment which yield reliability of this order.

The ongoing project on the problem-solving competition led to a national study to explore new forms of problems based on game-like interactions between the student and the computer. This later became an integral aspect of the Assessment and Teaching of 21st Century Skills project which began in 2009.

Throughout the 25 years that I have led the Assessment Research Centre there have been regular projects in Hong Kong. The two major projects were a longitudinal study of the native English-speaking teachers (NET) program in primary schools, and a follow-up study with the same ideas in high schools. I've also been a member of the committee overseeing the evaluation of the restructuring of the Hong Kong education system from the 13 year curriculum to a 12 year curriculum. Interestingly in 2012 I also became part of a project funded by Australian Aid relating to the extension of the Philippine school curriculum from 10 years to 12 years. Through these projects I have developed a better understanding of curriculum-change procedures at national and systemic level. When this is added to the influence of the profiles in the Australian curriculum my measurement background has been augmented by experience in curriculum and evaluation over a 20 year period. In the 33 years since I completed my doctorate I have been privileged to be a part of so many large projects and to have worked with so many specialist skilled people from whom I have learned a great deal.

For the past 10 years my time has been almost entirely consumed by research in literacy and numeracy. I've led the establishment of an online testing system that caters for the assessment of approximately 40,000 students each year. We evaluated the introduction of notebooks to primary schools. We produced a method of reporting which describes the student in terms of Vygotsky's zone of proximal development rather than a score or a grade. We developed teacher competencies both for Australia and Vietnam. In Vietnam the teacher profiles were signed into law and now they are used to appraise the competence of almost 400,000 teachers. Together with a colleague in the medical faculty we developed an instrument called the School Entry Health Questionnaire. This is used nationally and assesses all students as they begin school. Hundreds of thousands of students have been assessed with this instrument. We have also developed competency standards for school principals.

Possibly the most noteworthy project in my career has just finished. Funded by Cisco, Intel and Microsoft along with ministers of education from Australia, Singapore, Finland, Netherlands, Costa Rica and the United States my center has developed methods of assessing collaborative problem-solving using student interaction over the Internet. The project has been so successful that the OECD has decided to test collaborative problem-solving in 2015, as a core skill in the global PISA project.

THE BASIS OF THE WORK

There is a common theme to all of my research: It is based on my unshaken belief that education enables people to grow and develop intellectually, socially, and emotionally and in many other ways. If they are growing and developing we should be able to identify what that looks like. I use item response modelling in order to map out the developmental hierarchies within these domains. This enables teachers, students, and parents to monitor progress along developmental pathways. I believe this is the central plank upon which my research has been based for 40 years. It began in the classroom of Sea Lake high school in Victoria when I began to realize that I could not teach all the students in the class the same way.

I don't believe anybody can succeed without support and help from other people. It is traditional of course to say that the family has been a pillar of this development and this is true. The intellectual prompts and the support have come from two main sources. The first was John Izard who was my first head of Department at the Phillip Institute of Technology. He taught me about measurement. This gave me the opportunity to develop the skills, to write and to influence others.

The second person to whom I owe a great deal is the late Neville Postlethwaite. I was in Paris presenting an analysis of the SACMEQ tests during which I pointed out that they were developed using classical test theory. If they were to be developed using item response theory a different method of structuring, building and interpreting the tests became available. Neville seized upon this idea and helped to steer the SACMEQ project in this new direction for the next 15 years. I owe Neville a great deal for his intellectual support and his friendship. He was my patron.

FAVORITE WORKS

Assessment for Teaching (2014).

Performance Assessment of Higher Order Thinking. (2014).

Assessment and Teaching of 21st Century Skills. (2012). With Care and McGaw.

Development of the Assessment Design and Delivery of Collaborative Problem Solving in the Assessment and Teaching of 21st Century Skills Project. (2013). With Bui, Care, and Zoanetti.

Judgement-based performance measures of literacy for students with additional needs: seeing students through the eyes of experienced special education teachers. (2012). With Woods.

Developmental Assessment: Lifting literacy through Professional Learning Teams " (2010). With Care, Murray, Perri, Thomas, and Woods.

Teachers' Use of Assessment Data. Educational assessment in the 21st century. (2009).
The comfort of competence and the uncertainty of assessment. (2007).
*Assessment and Reporting – A New Approa*ch. (1991). With Nix.
Predicted Futures and Curriculum Change. (1985).

REFERENCES

Griffin, P. (1985). *Predicted futures and curriculum change*. Melbourne, Australia: Victoria Ministry of Education.

Griffin, P. (2007). The comfort of competence and the uncertainty of assessment. *Studies in Educational Evaluation*, *8*, 87–99.

Griffin, P. (2009). Teachers' use of assessment data. In C. M. Wyatt-Smith & J. J. Cumming (Eds.), *Educational assessment in the 21st century* (pp. 187–212). Dordrecht, The Netherlands: Springer.

Griffin, P. (Ed.). (2014). *Assessment for teaching*. Melbourne: Cambridge University Press.

Griffin, P. (2014). Performance assessment of higher order thinking. *Journal of Applied Measurement*, *15*(1), 1–16.

Griffin, P., & Nix, P. (1991). *Assessment and reporting: A new approa*ch. Sydney, Australia: Harcourt Brace Javanovic.

Griffin, P., Care, E., Bui, M., & Zoanetti, N. (2013). Development of the assessment design and delivery of collaborative problem solving in the assessment and teaching of 21st century skills project. In E. McKay (Ed.), *Epedagogy in online learning: New developments in web mediated human computer interaction*. Hershey, PA: IGI Global.

Griffin, P., McGaw, B., & Care, E. (Eds.). (2012). *Assessment and teaching of 21st century skills.* Dordrecht, The Netherlands: Springer.

Griffin, P., Murray, L., Care, E., Thomas, A., & Perri, P. (2010). Developmental assessment: Lifting literacy through professional learning teams. *Assessment in Education: Principles, Policy & Practice, 17*(4), 383–397.

Woods, K., & Griffin, P. (2012). Judgement-based performance measures of literacy for students with additional needs: Seeing students through the eyes of experienced special education teachers. *Assessment in Education: Principles, Policy & Practice, 20*(3), 325–348.

ERIC A. HANUSHEK

FINDING THE RIGHT FOCUS

Perhaps there are people who know from early life what they want to do for their life's work, but I suspect they are rather rare. The actual process of getting to the right place, at least from my experience, involves a series of iterations that require learning one's own skills, matching skills with life plans and objectives, and probably something that looks a lot like luck. This essay represents my attempt to extract the separate facets of arriving at my current position as an economist who tries to match evidence about education with policy.

I took a nonstandard route to my current work. I knew as an undergraduate that I wanted to do things that advanced the well-being of society. In itself this goal was not especially surprising. I was an undergraduate at the U.S. Air Force Academy, an institution that preached service to country. Such motivation does not nevertheless point clearly to what I currently do. Thus, I have a military phase with several components; this was followed by an academic phase that morphed into a joint academic-policy phase. Parts of this career are idiosyncratic, but others fit into a clear development path.

THE PATH OF THE MILITARY

Undergraduate Study (1961–1965)

The military phase, lasting from 1961–1974, covered academic training and initial teaching and research. I was a very good student in high school, but the high school was located in an outlying suburban area of Cleveland, Ohio, where at the time there was some interest in college attendance but it was not excessive. The majority of college bound students from North Olmsted were headed toward quite local colleges. I started looking in a wider circle, focusing more on East Coast engineering schools: Rennselear Polytechnic Institute (RPI) and Massachusetts Institute of Technology (MIT).

But I also became intrigued by reading about the U.S. Air Force Academy (AFA). This was a new institution with modern aluminum and glass buildings at the foothills of the Rocky Mountains in Colorado. The U.S. military had previously been served by military academies for the army (West Point) and the navy (Annapolis). The development of a separate branch of the service for the air force after World War II led to the establishment of this new military school with an inaugural graduating class in 1959.

M. de Ibarrola & D. C. Phillips (Eds.), Leaders in Educational Research, 93–105.

Military academies are hybrids that merge traditional college with military preparation. While there is a continuous emphasis on military routines and on athletics, the academic side is that of a traditional college with a broad common curriculum and separate disciplinary majors. I applied to the Air Force Academy to be part of its seventh graduating class. This application was not a standard one, however, because it required not only meeting the requirements of the Academy in terms of both academic and physical minimums but also being supported by a member of the U.S. Congress. My parents generally were not particularly favorable to a military academy, but they also had a general view that their children should choose their own paths. Thus my father arranged, through some of his industrial connections, for an interview with our local U.S. representative to Congress, and I was subsequently offered admission to AFA. Again, while my parents thought RPI or MIT would be superior, they supported my choice – based largely on adventure – to attend the Academy.

I began as an engineering major at AFA, but in my junior year I switched to a political science major. This move presaged an interest in how ideas and evidence related to societal outcomes. I became intensely interested in college with how ideas interacted with policies and politics. As I was developing the courses in a political science major I also took my first economics course. The introductory economics course was taught by a person who would end up as my long term mentor, John Kain. It was not a good course. Kain was not a gifted teacher and had limited interest in many of the topics covered in introductory economics. But that course sparked a certain interest in the logic of economics – and in its relationship to things that were observed in society.

I enjoyed school and academic work. But I had never really thought much about continuing in an academic career. Indeed I also enjoyed a variety of things at the Air Force Academy and was motivated toward an Air Force career. I did well in my course work, but I also did well in the military aspects of AFA. In my senior year I was commander of my squadron. (The Academy was organized into military units of roughly 100 people across the four classes. There were 24 squadrons in total, each organized in a clear military hierarchy.)

In my senior year I changed to be an economics major, and I entered into a special program that was designed to lead to a one year master's degree at Georgetown University. This program required that students from the Academy complete a set of graduate level courses while still at AFA. The import of this was direct exposure to a group of clearly exceptional faculty members in the economics department. John Kain, who subsequently went on to an illustrious career as a tenured member of Harvard's economics department, was surrounded by an unusual group. Somewhat by accident, the economics department at the Academy had recruited an unusual faculty – a future president of Brigham Young University, a future tenured faculty member at Ohio State, a future special assistant to the U.S. Secretary of Defense, and a number of well-trained and interesting military officers who spent a time on the faculty. This faculty was atypical of the Academy – emphasizing academic training

and devotion to the discipline of economics more than taking it just as another temporary military assignment.

Over time I came to realize how unusual my training at the Air Force Academy really was. I not only got first-rate preparation in economics, but I also got mentoring in economic thinking and in academic life – something not typical of students at AFA.

Somehow, and I am not sure how, I got the idea that I should apply to graduate programs other than the pre-arranged one at Georgetown University. I collected applications and applied to Harvard University and to MIT. And, somehow, I got accepted at MIT for their Ph.D. in economics. (I remember talking about this possibility with the Associate Dean of the Faculty, who asked me if MIT really had an economics program. By chance, there was a ranking of economics departments in a national news magazine that listed MIT as the second best program in economics at the time, so I could convince the Dean that this was a legitimate program).

Academy graduates were expected to go to pilot training and to begin careers in flying, since that was the only way to become a top leader in the Air Force. Thus, it was rather expected that I would turn down any academic program and go into flight training. (The special nature of the Georgetown program was that students delayed entry into pilot training for one year while they finished their master's degree). However, I applied to the Air Force personnel office for permission to go to MIT instead of entering pilot training. This set off a real conflict among the leadership of the AFA. Because of accidental events that triggered competition between the Dean of the Faculty on the academic side and the Commandant of Cadets on the military side, the Dean became my champion in the unusual quest to go immediately to graduate school upon graduation. And the Dean prevailed, as the military assigned me to graduate school at MIT instead of pilot training.

My early military phase is readily summarized. Compelled by an academic field that I found inherently interesting, I wandered upon an exceptionally good faculty (at a school not known for advanced academic work). While constrained in career paths, because attendance at the Air Force Academy implied a minimum of four years of commitment to military service, I choose a completely novel route of immediate attendance in a Ph.D. program.

Graduate Study (1965–1968)

MIT had (and has) an exceptional Ph.D. program in economics. My first two years of coursework were very standard, ranging across microeconomics, macroeconomics, econometrics, international trade, and public finance. None pointed obviously to a specialization or a dissertation topic. But at this point random events again enter the picture.

During my second year, the U.S. government published the monumental Coleman Report (Coleman et al. (1966). This report, developed by its lead author – the sociologist James Coleman – really introduced the idea of quantitative analysis of schooling issues. The U.S. Office of Education was charged by Congress under

the Civil Rights Act of 1964 to investigate the extent of inequality of educational opportunity afforded to U.S. students. This charge related to the continued struggle to eliminate racial discrimination and was almost certainly designed to show how schools for blacks in the southern states of the U.S. were inferior.

Coleman and his team surveyed some 600,000 students across different grades and across the nation. But instead of just recording the characteristics of the students' schools, they ventured into understanding the outcomes of schooling by giving mathematics and reading tests to all of these students. They then tried to parse out why black students in different regions achieved less than white students. This involved a statistical analysis of how schools, families, and peers affected achievement. Their analysis was widely interpreted as indicating that families were most important in determining achievement, peers next most important, and schools minimally important. These conclusions gained immediate and widespread attention. (Strangely even those in the schools quickly latched onto these results, because they meant that the schools were not responsible for any student failures).

Because of the controversial nature of these findings, Daniel Patrick Moynihan (Harvard professor and later U.S. Senator) and Frederick Mosteller (Harvard statistician) organized a faculty seminar to try to understand both the analysis and policy implications of the Coleman Report. John Kain, my mentor from the Air Force Academy, had joined the Harvard economics faculty by then. He and I had remained close, and I had even done some research assistance for him. He managed to get me invited (as a second year graduate student from MIT) to this on-going Harvard seminar that lasted an entire year.

And that is a key beginning to my current work. From graduate school, I could have worked on a wide range of economics topics – tax policy, international trade, economic theory. I knew that I wanted to work on issue closely related to policy topics. I was still in the Air Force as a graduate student, but I was not inclined to work specifically on military topics. I was slated to return to normal air force duty on completion of schooling, but the Air Force did not require any particular specialization. In the end, the Coleman seminar led me to the study of education.

The Coleman Report was not a very good study from a scientific and statistical viewpoint. In fact one of my first publications, joint with John Kain, was a critique of the Coleman Report (Hanushek and Kain (1972)). But the Coleman Report did two things. It introduced the idea of scientific, quantitative study into education, and it demonstrated that scientific research could enter into policy debates and could influence policy discussions. Both captured my attention and set the course of my career.

I built upon the Harvard seminar and the Coleman Report for my thesis. While the study of education in economics was almost unheard of at the time, I developed a statistical analysis of student achievement for my dissertation. A driving force behind this work was my skepticism that schools had little influence on achievement. I re-

analyzed some of the data collected for the Coleman Report and was led to different conclusions: while families were undoubtedly important, so were schools.

Teaching and Research, Military Style (1969–1974)

Attending graduate school while also being an Air Force officer had several implications. First, I did not have the luxury of leisurely graduate study. The normal military assignment to graduate school was one or two years. I convinced the Air Force that I should stay a third year, largely on the grounds that I had no degree at the end of two years so that it would take at least another year to accomplish anything. In fact the incentives led me to finish my degree in three years. Second, there was no natural next assignment for somebody with a PhD in economics, so I had to be aggressive in finding a position in the Air Force that could use my training. In fact, the department chairman at the Air Force Academy who had assembled such an unusual faculty when I was a student arranged to hire me back on the faculty. Third, with schooling came an ever longer commitment to serve in the military. The four year service commitment at graduation from the Air Force Academy grew to a nine year service commitment upon completion of my graduate studies.

I had no regrets about this military service and career. It seemed like my marginal impact on the Air Force would exceed that of a normal academic research and teaching career. After all, there were few in the Air Force trained in economics, and this seemed like a field with obvious application for the military. But, after two years of teaching at the Air Force Academy, another fortuitous event with long term but wholly unforeseen ramifications added to my current situation. I discovered that I could take a year of temporary duty away from teaching where I would work in Washington, DC, on the staff of the President's Council of Economic Advisors. Again, while still in the military, I had an opportunity to work on the very small staff of economists who give economic advice throughout the federal government. It was exciting, covering a broad range of governmental activities.

After a year, I returned to teaching at the AFA – and faced an event that permanently changed my career trajectory. While teaching, a friend organized a seminar across the military academies on a variety of defense related topics. He asked me to write a paper for the conference, which I did along with a friend – Bill Hogan, currently a chaired professor at Harvard's Kennedy School. The paper focused on how various personnel policies of the Air Force were not in the best interests of the Air Force because they were inefficient and made management of the system difficult.

Who would guess that the Secretary of Defense would attend the seminar? And who would guess that the Deputy Chief of Staff for the Air Force, upon then reading our paper, would be personally offended by the idea that improvements were possible? I was, as a direct result of this economic analysis, fired from the faculty of the Air Force Academy. That was, however, different than being fired from the Air Force, since I

still had many years remaining on my service commitment. This led to a considerable battle about what I would do in the Air Force. (This period was the most intense time of the Vietnam war, so my participation in that was always an option).

Leaving the Air Force Academy but remaining in the air force led to a somewhat bizarre period only interesting in terms of military sociology. My case was championed by the chairman of the Council of Economic Advisers and ultimately led to a temporary assignment (decided by the Secretary of Defense) to the Cost of Living Council. (This was part of a short period where the federal government controlled wages and prices). When the Cost of Living Council shut down permanently after I had been there for a year, I returned to assignment at a military base. The assignment was ostensibly an analytical one, but there was in reality little interest in much analysis. (I did use the time to make progress on writing a statistics text for social scientists, since original research was not easily done at that time. My squash game also improved with the limited demands on my time.) After a short period of time, the Air Force and I mutually agreed that I would not be very useful to them, and I was relieved of my service commitment.

The military period: excellent education, somewhat unplanned field of specific study, experience with the interplay of analysis and policy, and an open career. In short, a personal commitment to public service led without prior design to advanced study in economics, to initial research on education, and to uncertainty about future research and career.

A CAREER PROFILE (1974 TO TODAY)

Economists did not analyze education. I had been attracted to it by the special circumstances of the Coleman Report, but the number of economists working on education per se (as opposed to how education affected the labor market) could be counted on one hand in the mid-1970s. Lucky for me, Yale University was starting a special institute to study social policies, and I was offered a job in that institute and in the economics department. At that time, however, I was not committed to studying education. I did a variety of studies of urban housing and of labor markets, but there was a continuing interest in education out of my prior work.

After four years at Yale, I was offered the chance to direct a new degree program in public policy analysis at the University of Rochester. This appealed to me, because of my interest in training people for public service. I had my first tenured appointment as Professor of Economics and of Political Science. After an interesting and exciting four years in the public policy program, I shifted my attention to being chair of the economics department – a job I held off-and-on for some ten years. In terms of administrative work, I subsequently founded the Wallis Institute of Political Economy, a joint venture of the Rochester economics and political science departments. I did this administrative activity for eight years. Starting new activities – the public policy program and the Wallis Institute – were enjoyable and interesting

because of the entrepreneurial aspects, but administration itself was not. I did the administrative chores largely because "somebody had to do it."

I did take leave from the University of Rochester in the mid1980's to serve two years as the Deputy Director of the Congressional Budget Office (CBO). CBO is the economics office for the U.S. Congress and is charged with evaluating the implications of all federal legislation. As Deputy Director, I could range across the full extent of federal government programs. The CBO is formally charged with estimating the cost of all new federal legislation. It is also at the frontline of converting research and evaluation into policy. This experience at CBO further heightened my appreciation for the value of reliable evidence in making policy decisions. Relevant and reliable evidence does not always win the day, but it certainly expands the possibility of good government decisions.

CBO was a short interlude from 22 years at the University of Rochester. The Rochester experience included working with a small but very highly ranked economics department. It also included a strong dose of interdisciplinary thinking and research.

In 2000, I was offered my current position as senior fellow at the Hoover Institution of Stanford University. This position is a full time research position. Although I always enjoyed teaching and thought that my teaching was important, I have taught just a few courses at Stanford – concentrating on research.

EDUCATION RESEARCH

By about 1980, I began to specialize my research activities in the economics of education. This specialization simply evolved. It was not part of any grand plan. The evolution partly reflected some of the early research success in influencing the course of the newly developing subfield of the economics of education.

My research has traversed a wide set of topics. From my earliest work, there was an interest in the determinants of differences in student achievement. This topic, which economists tend to label an educational production function, largely focuses on how differences in inputs to education (families, peers, schools, and abilities) affect student outcomes (Hanushek (1979). A second major line of work looks in the opposite directions: how do differences in student achievement affect later outcomes such as continuation in school, labor market success, or overall productivity in the economy.

There are many detailed studies along these two major themes. I have always thought, however, that intellectual influence comes from invention: the most powerful impact of research comes from producing new and lasting changes in the way people think about issues. Thus, I think that my research career is best understood by identifying what I consider to be my key research findings. Each of these lines of research has been the center of controversy – largely because each has direct relevance to public policy. Perhaps it is one's own rose colored glasses, but it

seems that the key conclusions from initial studies have survived controversy and have become rather the established wisdom.

Finding #1: There is no consistent relationship between school spending and student achievement. As part of my research, I compiled all of the existing evidence on how school resources were related to achievement. And, I was stunned to discover that the prevailing evidence provided little support for improving schools by simply increasing the funding of schools.

When I first described these results in the early 1980s, the world was completely skeptical (Hanushek (1981)). Indeed, those who had advocacy positions that called for increased school spending held that these results were truly evil – often trying to suggest that the findings were politically, and not scientifically, motivated. This finding did a lot to shape the nature of research by economists and other quantitatively inclined people for the next two decades (Hanushek (1986, 2003)). A number of new researchers, including an increasing number of economists, were drawn into the study of education, and there was continuing debate about whether added resources were or were not correlated with student outcomes. There were on-going debates about how to do the appropriate analyses, about how to aggregate the results across studies, and about the implications for policy (Burtless (1996), Hedges, Laine, and Greenwald (1994), Hanushek (1994), Krueger (1999)). Gradually the scientific consensus shifted to the current widely acknowledged view: It matters much more *how* money is spent than *how much* is spent.

Finding #2: Teachers are the most important part of schools, and there is a large variation in the effectiveness of teachers. In my earliest research growing out of my thesis, I investigated how to measure the relevant aspects of teachers and schools. This work quickly centered on the role of teachers, but not as measured by the standard identifiers of teacher quality: graduate education, experience, certification and the like.

The key perspective, first published in 1971, was to focus on an outcome-based measure of teacher effectiveness (Hanushek (1971)). In simplest terms the perspective was that an effective teacher is one who gets large learning gains from her class; an ineffective teacher is one who gets limited learning gains. The important issue, of course, is separating the portion of any student learning gains that can be attributed to the teacher from student learning gains that come from other sources.

The investigation of value-added of teachers has shown the range of effectiveness of teachers. In a study of mine published in 1992, it was found that a good teacher could get 1 ½ years of learning from her students each academic year (Hanushek, 1992). A poor teacher could get ½ year of learning in an academic year, implying that there could be a difference of a whole year's worth of learning in a single academic year depending on a student's assignment to a particular classroom. This outcome-based measure is the heart of all current discussions of teacher value-added. It has also developed into a large and vibrant research area. It is the subject of considerable

current controversy, particularly as versions of this are discussed for the evaluation of teachers and for the pay and retention of teachers.

This discussion has also moved directly into the policy realm. A number of state legislatures have directly called for using student outcomes in evaluating teachers. Other state policy agencies have been working to develop value-added measures. And, various districts including Washington, DC, have begun using value-added measures along with other evaluation measures to give bonuses to teachers and to dismiss teachers.

Finding #3. Student achievement, as measured on international assessments, is closely related to aggregate long run economic growth of nations. With much of the quantitative research on education focusing on student achievement, it is important to understand the implications of having higher achievement. In work beginning in the 1990s, I have shown that economic growth of nations is closely related to skills as measured by mathematics and science scores (Hanushek and Kimko (2000), Hanushek and Woessmann (2008)).

Of course, such correlations across nations are unconvincing by themselves. This correlation does not prove causation, and indeed there is wide disagreement about how to interpret these results. In other work, however, we have been able to eliminate a number of possible threats to causality such as cultural differences and variations in the quality economic institutions (Hanushek and Woessmann (2012)). The relationship shows huge impacts of skills on economic performance of nations. For example, if Peru (a very low performer) had achievement at the developed country average, the estimates suggest that its growth would be 2 percentage points higher over the past half century. On the other side, if Korea's achievement were not high but instead the developed country average, its growth over the period would have been 2 percent less. In other words, the skills measured on these tests indicate the skills of the labor force, and these skills directly affect economic growth.

THE RELEVANCE OF EDUCATIONAL DATA

One of the most gratifying developments over my career has been the growth of the economics of education. While it was a lonely field in the beginning, many of the best PhD students in economics now enter into the subfield. This partly reflects the growing recognition that education has an enormous impact on individuals and on society. But partly it reflects the increased availability of relevant data that make rigorous empirical analyses possible.

One of the early catalysts for the area was the development of large administrative data bases that recorded student performance over time and could be used to relate outcomes to various programs and school inputs. Perhaps the forerunner to this development was the Texas Schools Project. Begun by the initial input of John Kain and developed as a joint venture with me and subsequently with Steve Rivkin, this

research center at the University of Texas at Dallas showed how the regular school and student accountability data could be put together into a longitudinal data base for students (http://www.utdallas.edu/research/tsp-erc/). By collecting multiple years of student achievement information across different grades, it was possible to develop large scale statistical models that could test for the effects of various factors from teachers to special education to school desegregation to charter schools (Hanushek, Kain, and Rivkin (2002, 2009), Hanushek et al. (2007), Rivkin, Hanushek, and Kain (2005)).

The power of analysis of such panel data on student performance became quickly evident. A similar center was established in North Carolina. Florida expanded on the idea by developing a state data warehouse that brought together data from a variety of sources in one comprehensive data structure. And, New York State and New York City began releasing data to researchers. Now a wide variety of states, encouraged by grants from the federal government, have constructed databases that are usable for research.

New researchers can now efficiently enter into work on the economics of education with a wide range of relevant data sources. And this has been compelling to a large number of economists.

INTERACTIONS WITH THE COURTS

I define my career as one of scientific research, trying to bring rigorous analysis to the field of education. But there is one important offshoot. Since the early 1970s, I have been involved in some 20 different school finance court cases.

In the U.S., the funding of schools is largely an activity of states and local school districts with the federal government providing just ten percent of the overall funding. Since the late 1960's, a number of parties have tried to use the legal system to alter both the level of funding and the distribution of funding across districts. The nature of my research has brought me into these court cases – almost exclusively as an expert witness for the state government that is the defendant in the case. As an economist who was trained in public finance issues and who had studied the determinants of student achievement in my dissertation, it was natural that I would be involved. The courts have drawn varying conclusions from the evidence on schools and their finance (Hanushek and Lindseth (2009)), but there is no denying that these cases represent a very direct path for using evidence in making educational policy.

The involvement in these court cases highlights another aspect of working close to the policy side of education. In court cases, people are clearly lined up on one side or the other. And, the issues being discussed are ones that people get emotional about. Partly the decisions could directly affect the jobs and careers of some. Partly people just have strong opinions about education. As such, involvement opens one up to a variety of attacks that go far beyond normal academic disagreements.

The courts heighten the emotions that are tied to educational research, but the same emotions are present outside of the courtroom. This facet of educational research – one that took me a while to understand – is simply part of working in an important area where research findings can quickly enter into the policy dialogue.

WHAT DOES IT MEAN?

At this point I am personally satisfied with how the various random elements came together to put me in my current position. I probably could have been happy as an international trade economist studying the impacts of tariffs and trade barriers, or as a researcher in a wide variety of areas. Education is surely not the only area where research relates directly to social outcomes. Nor is economics the only way to approach a number of these questions.

An important part of my career (any career?) is crossing paths with important mentors and colleagues. John Kain, who was best known for studying urban economics and not education, had an enormous impact on how I developed – and only late in his career did he move into education, largely as my mentee and collaborator. Steve Rivkin and Ludger Woessmann became lifelong collaborators soon after meeting. And various students such as Dennis Kimko, Lori Taylor, and Javier Luque passed from student to colleague.

Nonetheless, my study of the economics of education – unplanned and having fortuitous random events – demonstrates how working through the various decisions that enter into most career developments can lead to satisfying results. Predictable? No. The only path? No. Productive and satisfying? Yes.

At the beginning of the career path, less is the result of active decisions and more is the result of chance occurrences. Over time the mix of active choices and random events tends to move more toward clear-cut choices. Nothing of course predicts the individual people who become important elements of the research program, but it is possible to predict that somebody will fill that role.

FAVORITE WORKS

Teacher characteristics and gains in student achievement: Estimation using micro data. (1971).
Education and race: an analysis of the educational production process. (1972).
Throwing money at schools. (1981).
The economics of schooling: Production and efficiency in public schools. (1986).
The trade-off between child quantity and quality. (1992).
Making schools work: Improving performance and controlling costs. (1994).
The failure of input-based schooling policies. (2003).
Teacher deselection. (2009).
New evidence about *Brown v. Board of Education*: The complex effects of school racial composition on achievement. (2009). With Kain and Rivkin.
Schooling, labor force quality, and the growth of nations. (2000). With Kimko.
Schoolhouses, courthouses, and statehouses: Solving the funding-achievement puzzle in America's public schools. (2009). With Lindseth.

Endangering prosperity: A global view of the American school. (2013). With Peterson and Woessmann.
Does school accountability lead to improved student performance? (2005). With Raymond.
Harming the best: How schools affect the black-white achievement gap. (2009). With Rivkin.
The role of cognitive skills in economic development. (2008). With Woessmann.
Do better schools lead to more growth? Cognitive skills, economic outcomes, and causation. (2012). With Woessmann.
Teachers, schools, and academic achievement. (2005). With Kain and Rivkin.

REFERENCES

Burtless, G. (Ed.). (1996). *Does money matter? The effect of school resources on student achievement and adult success*. Washington, DC: Brookings.

Coleman, J. S., Campbell, E. Q., Hobson, C. J., McPartland, J., Mood, A. M., Weinfeld, F. D., & York, R. L. (1966). *Equality of educational opportunity*. Washington, DC: U.S. Government Printing Office.

Hanushek, E. A. (1971). Teacher characteristics and gains in student achievement: Estimation using micro data. *American Economic Review, 60*(2), 280–288.

Hanushek, E. A. (1972). *Education and race: An analysis of the educational production process*. Cambridge, MA: Health-Lexington.

Hanushek, E. A. (1979). Conceptual and empirical issues in the estimation of educational production functions. *Journal of Human Resources, 14*(3), 351–388.

Hanushek, E. A. (1981). Throwing money at schools. *Journal of Policy Analysis and Management, 1*(1), 19–41.

Hanushek, E. A. (1986). The economics of schooling: Production and efficiency in public schools. *Journal of Economic Literature, 24*(3), 1141–1177.

Hanushek, E. A. (1992). The trade-off between child quantity and quality. *Journal of Political Economy, 100*(1), 84–117.

Hanushek, E. A. (1994). *Making schools work: Improving performance and controlling costs*. Washington, DC: The Brookings Institution.

Hanushek, E. A. (1994). Money might matter somewhere: A response to Hedges, Laine, and Greenwald. *Educational Researcher, 23*(4), 5–8.

Hanushek, E. A. (2003). The failure of input-based schooling policies. *Economic Journal, 113*(485), F64–F98.

Hanushek, E. A. (2009). Teacher deselection. In D. Goldhaber & J. Hannaway (Eds.), *Creating a new teaching profession* (pp. 165–180). Washington, DC: Urban Institute Press.

Hanushek, E. A., & Kain, J. F. (1972). On the value of 'equality of educational opportunity' as a guide to public policy. In F. Mosteller & D. P. Moynihan (Eds.), *On equality of educational opportunity* (pp. 116–145). New York, NY: Random House.

Hanushek, E. A., Kain, J. F., & Rivkin, S. G. (2002). Inferring program effects for specialized populations: Does special education raise achievement for students with disabilities? *Review of Economics and Statistics, 84*(4), 584–599.

Hanushek, E. A., Kain, J. F., & Rivkin, S. G. (2009). New evidence about *Brown v. board of education*: The complex effects of school racial composition on achievement. *Journal of Labor Economics, 27*(3), 349–383.

Hanushek, E. A., Kain, J. F., Rivkin, S. G., & Branch, G. F. (2007). Charter school quality and parental decision making with school choice. *Journal of Public Economics, 91*(5–6), 823–848.

Hanushek, E. A., & Kimko, D. D. (2000). Schooling, labor force quality, and the growth of nations. *American Economic Review, 90*(5), 1184–1208.

Hanushek, E. A., & Lindseth, A. A. (2009). *Schoolhouses, courthouses, and statehouses: Solving the funding-achievement puzzle in America's public schools*. Princeton, NJ: Princeton University Press.

Hanushek, E. A., Peterson, P. E., & Woessmann, L. (2013). *Endangering prosperity: A global view of the American school*. Washington, DC: Brookings Institution Press.

Hanushek, E. A., & Raymond, M. E. (2005). Does school accountability lead to improved student performance? *Journal of Policy Analysis and Management, 24*(2), 297–327.

Hanushek, E. A., & Rivkin, S. G. (2009). Harming the best: How schools affect the black-white achievement gap. *Journal of Policy Analysis and Management, 28*(3), 366–393.

Hanushek, E. A., & Woessmann, L. (2008). The role of cognitive skills in economic development. *Journal of Economic Literature, 46*(3), 607–668.

Hanushek, E. A., & Woessmann, L. (2012). Do better schools lead to more growth? Cognitive skills, economic outcomes, and causation. *Journal of Economic Growth, 17*(4), 267–321.

Hedges, L. V., Laine, R. D., & Greenwald, R. (1994). Does money matter? A meta-analysis of studies of the effects of differential school inputs on student outcomes. *Educational Researcher, 23*(3), 5–14.

Krueger, A. B. (1999). Experimental estimates of education production functions. *Quarterly Journal of Economics, 114*(2), 497–532.

Rivkin, S. G., Hanushek, E. A., & Kain, J. F. (2005). Teachers, schools, and academic achievement. *Econometrica, 73*(2), 417–458.

MARÍA DE IBARROLA

BECOMING AN EDUCATIONAL RESEARCHER, AS MEXICAN EDUCATION BECAME A FIELD OF RESEARCH FOR THE SOCIAL SCIENCES

When I entered the facilities of the Centro de Estudios Educativos, A.C., (Center for Educational Studies, CEE) in July 1965, in order to ask permission to use their library and finish an academic essay on Sociology of Education, I could hardly anticipate that this would be the first step on the road to my becoming a full time, exclusively dedicated educational researcher in Mexico. In the country, at that time, the only academic full-time profession related to education was that of elementary school teacher. University professors were prestigious professionals who taught 1 or 2 hours a day, in addition to their professional tasks, as rather honorary contributors to the education of young people. Some full-time researchers in different fields could be found at the National Institutes created by the Federal Government, or at the Institutes of Research of the National Autonomous University of Mexico. Educational research was confined, at the time, to drawing up psychometrics tests for grade promotion.

My interest in the Sociology of Education was forced: I had flunked the subject and needed to write a better essay in order to complete my master's degree in Sociology at the University of Montreal, Quebec, Canada.

That first step was of course the consequence of some previous ones, some due to my own decisions, some to my parents' intervention, and some due to the nature of educational opportunities in Mexico at the time.

A CHAOTIC AND INSUFFICIENT SCHOOLING

I had made two early decisions about my vocation: A) I had chosen the *bachillerato* track at the stage of middle education, against the only available alternative in my private Catholic school – Normal education, a three year course to become an elementary school teacher (which was considered a woman´s proper profession at the time). My decision, on the other hand, granted me the opportunity to later achieve a Bachelor's degree, a five year middle level academic program (grades 7–11 at the time) designed and supervised by the National University in order to prepare youngsters for entering university education. B) I decided *not* to study Law; my father, my two brothers, and my uncles were all lawyers, and I had just about had enough of that profession! A third decision, partly mine and partly fostered by my father, was to enroll at the National Autonomous University of Mexico, UNAM.

M. de Ibarrola & D. C. Phillips (Eds.), Leaders in Educational Research, 107–124.

Enrolling at the UNAM was not a normal trajectory for a middle class young girl – in my high school senior class the girls were encouraged to learn what was considered necessary to become good wives, mothers and social hostesses. Furthermore, only about 5% of Mexico's young people were studying at University level at the time in the whole country, but my father was also a "catedrático" (Professor) at the Faculty of Law of the National University and there was never a doubt in his mind that *all* his children should pursue a higher education career. My mother's view about us girls studying for a career was twofold: first that nobody could guarantee, as she said, "the health, the life or the fidelity of the husband"; the other was her own unfulfilled desire to study in a University, since she had only completed primary education.

The decision not to study law was reinforced by the decision to study in the very close (in both a physical as well as a disciplinary sense) School of Social Sciences, which had recently separated from the Faculty of Law. There I was to acquire, in five years, a license degree in International Relations. At that time I imagined I would eventually serve my country in diplomacy, promoting the name of Mexico in the remotest corners of the World.

An opportunity opened by my grades at the entrance examination was to enroll in the Pilot Course, an innovative experimental program designed by the Founder and Director of the School of Social Sciences, one of Mexico's greatest scholars and one of the few at the time to have a Doctor's Degree in Sociology (from the Sorbonne). The experiment consisted of a small group of chosen students studying in the mornings, for a total of 25 hours per week, with a very concentrated curriculum of only two courses every two months. Each course was taught two-and-a-half hours a day, and students had a first-rate teacher and two teaching assistants to help us solve whatever academic problems we faced.

Being such a student at Mexico's National University was the first time I experienced academic fulfillment. Our teachers were young master's graduates from foreign universities, mostly the Sorbonne, and the program was full of great texts. To this day I really do not know if such a demanding regimen of reading was pedagogically sound, but at 17 I was reading and studying Marx, Engels, Max Weber, Hans Barth and others.

I think it was in the second course, the History of Social Ideas, that I forgot anything related to International Relations and Mexico's diplomacy, and fell completely in love with Sociology and the possibilities I thought it offered of *explaining all and every social aspect of life* to my very curious humanistic mind. Some years later I understood that I did not choose Philosophy at the time because I thought it was so very close to Religion, or so I had learned during my religiously-biased bachillerato.

I was extremely happy at the School of Social Sciences – the teachers, the courses, the readings that were required, the student-teacher relations, the academic debates between the Marxists teachers and the very cultivated priests of the parish outside the University, the cultural offerings of the National University in cinema, theater, concerts…you name it!

But my mother was not happy at all. She worried about my moral salvation (seeing how easily I was becoming a fashionable desk Marxist), and she worried about my social position (since none of my fellow students could be classified as a proper husband – health or fidelity aside). So, smart as she was, she offered me the only alternative I would accept: studying abroad. Instead of a university in the USA she chose the Catholic French University of Montreal, whose rector was none other than the Archbishop of Quebec, and furthermore, in her eyes French Canada was not as morally decadent as the USA.

Studying abroad had always been my greatest dream; languages were not a problem because my father had been teaching me French and English since early childhood. (He also had taught me how to use dictionaries, and allowed me to choose books in his extended library; he also encouraged skills in shorthand, typing, geography, bicycling, and driving; he fostered strict punctuality; and he set my brothers and me a great example by having a very strong sense of social and political commitment – twice he had been a candidate for Congress.) So, having almost completed my first University year in Mexico (January-to November), I arrived at the end of October at the Faculté des Sciences Sociales, Económiques et Politiques de l'Université de Montréal, with the idea of spending the next four years of my life there.

But once again I found myself enrolled in a pilot program. It had just been designed by the Dean of the Faculty, and consisted of a one-year course that enabled students to complete what essentially were the last two years of College and thus to obtain their BA; this was followed by the second year's program, plus a research thesis, which enabled students to get a Master's Degree. I suppose another part of the Dean's experiment was talking under his wing the first Mexican student in the Faculty! Evidently he did not consider my age or my lack of proper academic certificates a bar to enrolling me in the experimental program, and his supervision of my performance was constant, very kind and efficient. Thus I ended up with a foreign university Master's degree (achieved with honors) – in fact I had skipped two of the five normal years of undergraduate training in Mexico, and I had ended-up with a post-graduate degree. Back in Mexico my degree was professionally accepted in the academic world, but I was never able to face the tortoise-like procedures necessary to obtain the Mexican License.

The academic experience at the University of Montreal was extremely interesting. I had intensive training in both European and North American anthropology, general and specialized sociology and political sciences, social psychology, quantitative research and statistics. I was also able to study Marxism as an important theoretical line of thinking (together with more than 50 other thinkers) but this was not presented in the mode of the dogmatic ideology favored by Mexican students at the time. Surprisingly enough, it was in Canada where I learnt about Mexican sociology of poverty (Oscar Lewis' *Children of Sanchez*) and was fascinated by all the research on social class, socioeconomic strata, social inequality, elites, and so forth. Also I was able to perceive and question the bias of many so-called scientific positions regarding the North American way of life.

The fact that this demanding program required that I needed to study very intensely was an antidote to the deep loneliness and emotional insecurity I experienced at this time. I lived for those two years among much older and mostly married graduate students, so engaged in the rat-race of getting a degree that they hardly spoke to me for many months.

Having a master's degree from a Canadian University was a very special achievement, so on returning to Mexico I was able to obtain the type of academic position that now is only granted to people who have finished doctoral training. However, about 20 years later in life, I did have to obtain the doctoral degree in order to actually obtain the academic promotion that was appropriate given my academic productivity. My institution, the Center for Advanced Studies, provided a flexible but rigorous customized doctoral program for researchers of my generation: writing a dissertation under the tutorship of an external and highly prestigious doctor in the field. I got my Doctor's degree in 1991 with a dissertation I will later describe, since it is one of my most cherished pieces of research.

WORKING WITH LEADERS OF THE THREE PROMINENT EDUCATIONAL RESEARCH INSTITUTIONS

Mexico's modern educational research started during the mid-1960s with the founding of the Center for Educational Studies that I have already mentioned. Two other important centers followed in the next five years: the (National) University Commission for New Teaching Methods, and the Department of Educational Research of the Center for Research and Advanced Studies. I had the opportunity of working in all three institutions during their initial years – working with the main leaders in Mexican educational research at the time, and also with young colleagues from different disciplines who were as enthusiastic as I was to discover what contributions the social and political sciences and even the hard sciences could make to our understanding of Mexico's educational problems.

Reflecting on my becoming an educational researcher, I now better understand not only the influence of the national context but mainly that of the three institutions in which I had the opportunity to work – and their policies and visions for approaching the educational situation in the country, always with a commitment to knowing, understanding and offering solutions to our national problems. In all three I carried out research of my own, but I also had to respond to different government demands and had different channels for teaching and disseminating the knowledge about education that we were creating. I have always been very curious about almost everything, so I have inquired into many different matters, which accounts for the dispersed nature of my publications.

THE CENTER FOR EDUCATIONAL STUDIES, CEE (1966–1968)

The CEE had been created in Mexico City by Dr. Pablo Latapi, a Catholic Jesuit who had completed his doctoral training in Germany in Educational Sciences. He decided

to create a new institution, aimed at modern research on educational matters and the creation of a public consciousness about the problems the education of the new generations were facing. The origins of "modern educational research" in Mexico are attributed to the Center. (Gutiérrez Serrano, 1999). At this Center I was able to rewrite my flunked essay on Sociology of Education, basing it on the solid data about Mexico's education that the three researchers in the Center at that time had already systematized and analyzed. A year later I was part of this pioneering endeavor while in charge of the yearly macro- evaluation of Mexico's education, confronting official statistics with social and economic criteria, and with concepts drawn from world-wide educational research, that all offered a deeper understanding of the problems an education system could be facing.

My first piece of educational research, *Poverty and school aspirations (1970),* was my Master's degree thesis. My chaotic schooling had the consequence that when the second school year of the pilot program had ended, I was without financial support to stay in Canada – so I obtained the Faculty's agreement that I could write my thesis in Mexico. Based on my initial interest in the role of socioeconomic factors in education, I decided to research the impact of socioeconomic living conditions on the aspirations for future schooling of adolescents facing their first turning point after finishing (at the time) Mexican sixth grade compulsory education. The research went well, and I obtained a distinction from the Faculté, and the Center published it in 1970 as my first research book. I still think that for the time and place – Mexico's school children during the late 1960s – the research was the first of its kind, and it produced interesting additional results on how genre and the school performance trajectory mediated the relationship between socioeconomic conditions and schooling expectations. Some years ago one of my doctoral students told me she had decided to become an educational researcher after she read that book.

THE NEW TEACHING METHODS COMMISSION OF THE NATIONAL UNIVERSITY (1970–1976)

Due to some misunderstanding with the Director concerning my plans for marriage, I was asked to leave the Center, since it seems he did not want married women as part of his much reduced academic staff. After a year without a proper job – perhaps the main obstacle I faced in what later became a smooth career – I was offered a part time position at the National University, at the recently created Commission for New Teaching Methods. After I did get married, and had two daughters, I decided to keep that part time job – just six hours a day – until my daughters were beyond elementary school age[1]. After a faculty strike and political upheaval in 1976, which led to the entry of the Police, I left the National University, utterly disappointed by the radical confrontations between authorities and union leaders. and with what I perceived as a poor academic life. A few weeks later I was invited to work at what has since become my professional home: the Department of Educational Research

(DIE) of the Center for Research and Advanced Studies, a public Federal institution for graduate teaching in all sciences and research, where I have been a full time professor for 35 years.

In 1971 a new president was appointed to an expanded New Teaching Methods Commission. The research project that was assigned to me and to my now long-term colleague and best friend, Dr. Raquel Glazman, was the evaluation of the curricula of the (by then) Faculty of Social Sciences where we both had been students. The main question was this: Why students who had overcome the high dropout rate did not properly finish their studies by completing the professional thesis, at the time the sole requirement for finally obtaining their University professional license. Our approach to the evaluation was largely common-sense, and was based on students' statistics and a documentary analysis of subject matters (their content, extent, duration, organization, and sequencing). The main discovery was simple but relevant, and had not been pointed to before, namely, that there was not a single course or teaching strategy that made reference to the writing of a final thesis. Students were supposed to take all sorts of disarrayed disciplinary courses for five years, and after that do research on a professional problem without any help – there was not even an established role of a thesis tutor among the members of the faculty, who were at that time only engaged by the hour!

The Director accepted the results, but then confronted us with another question that would take us about three years to answer: How could this problem be solved? The resulting *The handbook for the design of study plans* (1973) that Dr. Glazman and I prepared has been perhaps the academic product that has had the most impact (because of its acceptance or even in some cases because of its rejection) in the planning of university careers and study plans in Mexico since it was launched in 1973, and up to the 1993 modernization of education, when competence based curricula were introduced as national policy.

The book was launched with all the academic authority of the National University Commission for New Teaching Methods, and it addressed some of the most important problems that the massive growth of higher education was facing at the time, problems that had arisen as a result of the main educational reform that started in 1970 in response to the 1968 Student Movement. The handbook offered criteria and procedures for the selection and organization of the knowledge that would be the corpus of a university career, in order to communicate what was supposed to be taught and learned during the time spent at the University to all the new and numerous interested parties: The new public universities all around the country, new lecturing staff, barely out of university themselves; new students, most of them the first generation in higher education; new administrators facing an unknown field of administration, mass education. As odd as it may sound, study plans were not public, and sometimes were not even written down. Until then, they had been based on the traditional consensus about professional knowledge documented in respected academic texts, and shared by a very small academic community.

The preparation of the handbook required research on how curriculum design was done mainly in the United States. We studied books by Ralph Tyler, Hilda Taba, Benjamin Bloom and similar authors to find answers or suggestions for the problems we had uncovered during our empirical research. We complemented the definition of the problems based on the important theoretical approaches proposed by researchers of the world-wide student's movements.

The directors and lecturers of most professions who were actually facing the problem of designing the new study plans the Reform demanded, were delighted with our proposals and with the courses we offered to implement it. In contrast, academics in the Humanities and the Social Sciences and other researchers on curriculum denounced our proposal for a long time as the foremost example of educational technology.

Some years later, in a National Symposium on curriculum design, Dr Glazman and I (1978) were able to offer a full recounting of specific experiences we had in curriculum design, fundamental new concepts and procedural changes we had derived from them, and we offered new and more valuable insights on the study plan designs as against the merely epistemological considerations of many of our colleagues. My most original contribution – the notion of the institutional structures of the curriculum – was proposed at the time, derived from research on the agricultural technical high schools in Mexico. I will refer to that further below.

Sometime in 1986 a private university in the north of the country organized an international seminar on curriculum design; there were three keynote speakers – in addition to myself they were Ralph Tyler and Benjamin Bloom. I consider that invitation as perhaps one of the greatest honors I have received in my life. In all the literature on curriculum in Mexico, Dr. Glazman and I occupy a privileged place and in recent years we have been recognized as very important contributors to curriculum theory in the country. (Pinar, 2011)

THE DEPARTMENT OF EDUCATIONAL RESEARCH (1976–)

After leaving the Commission for New Teaching Methods I was invited by a small group of six educational researchers to work with them at the very new Department of Educational Research of the prestigious Center for Research and Advanced Studies. The Department had been in charge of producing the National free text books for the teaching of Natural Sciences at Mexican primary schools. The leader of the project, Dr. Gutiérrez Vázquez, former director of the School of Biology of the National Polytechnic Institute, had organized an interdisciplinary team of scientists and elementary school teachers, psychologists, sociologists, anthropologists and historians, and was also able to foresee the importance of not only doing a long term project but of creating a new research institution within the Center.

My incorporation into this interdisciplinary research group on education, in an institution such as the Center, has certainly shaped my academic career, and that of my colleagues, as I collaborated at the same time in building the institutional rules that

now govern us. The Center was created in 1961 originally as the Graduate School of the National Polytechnic Institute. However, its first director and co-founder, world renown in the field of physiology, Dr. Arturo Rosenblueth, insisted on a different institution – a public institution dedicated only to research and graduate education in various fields, free of the massive demands on higher education burdening most public Universities, manned by full-time researchers with doctoral training (both novelties in Mexico at the time), and whose work would always be evaluated by international peers. The Center was born with ten "genes" of quality, as I wrote in a commemorative volume I coordinated for its 40th anniversary. (De Ibarrola et al: 2002)

When I was invited to join the Department, there were only six researchers, but the Department offered facilities for the performance of all three academic activities: research, teaching, and the dissemination of (educational) knowledge. A new line of research had been started, adapting an anthropological methodology (ethnography) to study the actual teaching and daily conditions of Mexican schools and the way the new text books were received and used. Since those days, the Department has become well-known because of the rich and deep original insights the group has produced following an ever more sophisticated qualitative approach to the educational problems of the country. The small group had also started a master's degree in educational research (there was only one Doctoral program in Pedagogy at the National University). I was invited to take part in the group, help with the master's program and the tutoring of graduate students, and start whatever research line I fancied.

Education and Mexico's Heterogeneous Working Spaces

I really do not remember how it came about that I decided on doing research on the employment of university graduates. But the question that had been bothering me from my sociological perspective was the fact that there had been an incredible growth in the number of university students, as I had witnessed at the Commission of New Teaching Methods. Had well-remunerated employment opportunities kept pace in tune with that growth? What we found was that a specific sector of Mexico's labor structure, the one modern and formal, had a much larger proportion of employees with higher education than the mean for the country, but they were dispersed among all salary categories and all job positions. Higher education was an entrance requirement, but differences in remuneration and status among higher education employees were very large within the sector. This confirmed the view of the critics of the Human Capital theory but also opened the horizons for researching the relations between education and work in other areas of work (de Ibarrola and Reynaga, 1984).

That project started an academic story for me that developed through four long-standing research projects (lasting on average four years each, with interruptions between them), usually with the company of my graduate students who would

contribute to the project with their graduate dissertations. An important part of the academic story has been the development of three intertwined research dimensions: a) the comprehension and description of the heterogeneous nature of labor markets in Mexico and the role a constant increase in the schooling of the population may play; b) the institutional conditions for learning to work that Mexican schools provide for students, and along with these two, c) the public policies on education and work at the middle and upper education levels and the different actors whose interests, pressure exertions, resources and possibilities shape the policies and result in different institutions being created.

A Heterogeneous, Unequal and Combined Labor Structure

A new approach towards this subject was my first original contribution to the study of the relationship between education and work in Mexico. Together with 7 undergraduate students doing their professional theses in Sociology, we began a review of the Latin American literature on the dual labor structures in the region: a modern and a traditional, proposed by the scholars of CEPAL (the Economic Commission for Latin America)—thus the preference for the idea of heterogeneous markets, and we studied every available text on the matter. We went into greater depth through direct observation and analysis of the very different and diffused work experiences that members of the research seminar were able to recognize in the environment, drawing from our own hiring experiences and work relationships, those of parents, siblings, acquaintances, and even also street vendors observed in their places of work, as national statistics did not register any such kind of differences. As early as the late 1970s we affirmed that the notion of work as formal, stable and guaranteed employment for life was undoubtedly the exception in Mexico, achieved only for a reduced part of the labor force and protected by the country's most important labor unions. So we proposed that Mexico's labor market could be better understood as a heterogeneous, unequal and combined structure, the result of the way in which three basic criteria interact and configure different work contexts. Each criterion had important theoretical support: a) the profit motive in work (the accumulation of capital), public service (government, at first; and later, organizations from civil society that offer non-government public services were incorporated) or independent subsistence providing workers with different levels of income, from liberal professions to self-employed street vendors; b) formality—strict adherence to legality and institutionalism—or informality in labor relationships (following the ILO's original coining of that term in Ghana and Kenya) that could result in different combinations of legal compliance or not, according to different issues: hiring, formal delimitation of labor time, space and functions, fringe benefits, and so forth; and c) the hierarchical organization and technical division of work among participants in a work unit, whether large, medium, small or micro units, including the availability and use of technology (advanced or obsolete, modern or precarious) as the deciding factor for this division. (de Ibarrola, 1988)

The identification of different work sectors or "spaces", as we later came to refer to them, had fundamental consequences for understanding the complex nature of the interactions between education and work and also established the limits to the reach of the results found by different research projects.

The Institutional Conditions for Learning to Work in School

A second approach to the study of the relationships between education and work was based on an evaluation of the role the school production cooperative of agricultural technological high schools play as a teaching strategy. The project was commissioned by the Federal Under-Secretary of Technological Education, and was assigned to me and a colleague of the Department, Dr. Eduard Weiss. We undertook comprehensive qualitative research with the participation of my students, most of whom obtained their Masters degree through related dissertations.

After finishing that evaluation, I undertook a case study of four such schools, that I submitted as my doctoral dissertation, later published nationally (de Ibarrola, 1994). In this research I added a double theoretical focus: The actual interaction between the teaching plan and the "real" curriculum, and the daily school conditions.

While doing this qualitative research I was able to come up with another original contribution – the concept of the curriculum's institutional structures, according to which five elements involved in the implementation of the teaching plan are actually understood, decided and established in each school and interact together: Objectives pursued according to normative study plans; actors present or referred-to in daily school life, mainly actual professors hired and their labor conditions; the normative distribution and the real use of time and spaces; didactic and production resources that exist and actually are used; and the way to evaluate and accredit the knowledge acquired by students (Glazman and de Ibarrola, 1987). I discussed the ways in which these *elements actually combine,* configure *different learning contexts*, within or beyond school limits, which can extend or hinder learning opportunities offered by the school and radically modify the nature of pedagogical relationships that occur within them. This conceptualization allowed me to evaluate different middle schools in Mexico, and later I was able to develop a more complex approach: The reasons and the rationale for an educational institution to create and consolidate these curricular structures through its institutional history, and accordingly the potentials or limits of efficiency in their aims and institutional change possibilities.

The research went all the way to reconstruct the national policy that had created the agricultural middle schools during the seventies, the distribution of schools in the country, the kind of students and teachers, the institutional history of the resources available and their actual use, and the role different actors had played. Another interesting finding was that the educational policy had not only created the agricultural middle schools but also certified the new professional profile of an agro-industrial mid-level technician, that had matched place for work only in the

Federal government agricultural support programs and only for a short period. (De Ibarrola, 1994)

Intense Pedagogical Relationships in the Factory as a Place of Learning.

A third research project (De Ibarrola y otros, 2004) was carried out with a different methodological approach; instead of tracking middle and higher education graduates to the job they had obtained, I decided to locate young people at work in the main local industry of a specific city and analyze the different ways in which they had been trained for the work they were performing. I invited graduate students from the local University to take part in the project and five of them wrote their master's dissertation as a result of the project.

This project integrated three additional theoretical approaches: a) the specific labor culture of a regional labor market; b) the different contexts, besides schools, where learning to work is possible, and c) the fallacy that young people follow a simple, linear path from school to the workplace. A sample of 33 shoe manufacturing companies was studied and questionnaires were applied to all 2,200 of the workers – of all ages, salary categories and job positions. The companies exhibited the structural heterogeneity that exists not only in the country as a whole, but especially in the industrial sector. We found large, formal and modern enterprises alongside small, semi-formal companies and small, informal family workshops. Questions about the level of formal schooling achieved were an important part of the survey, and so were questions on formal training in or outside the workplace. However, from the very preliminary interviews, additional and extremely important information appeared – the answer to the question "where did you learn to work" pointed not to the school system, but to the factory itself (86% of workers held this position), and not to formal, structured training, but rather to an extensive network of informal pedagogical interactions among workers, supervisors and even owners, in the context of frequent turnover between different jobs and work centers in the sector. Only those with mid-level technical schooling and higher education gave more credit to educational institutions regarding their work training, but even they always assigned first place to the work itself. Also, only workers with higher education had a significantly higher income than the rest of the workers. Additionally and very importantly, 51% of workers – including owners and workers with higher education – had "quietly" learned the trade working during childhood in spite of child labor legislation. (de Ibarrola and Mijares, 2003)

Lights and Shadows on Other Ways of Learning to Work

The need to identify other forms and other contexts of job learning and their complex interaction, and to consider new conceptual approaches, became the main objective of new research, both my own and that of my new group of graduate students. We

studied differences in employment and income between graduates and dropouts (Sánchez Suárez, 2008); new learning contexts created by agreement between schools and enterprises (Durand, 2010); the construction of labor competences by undergraduate students who study and work at the same time (Cuevas, 2013); the knowledge put into play by informal micro entrepreneurs in marginal areas of large Latin American cities or by street corner workers (Martínez and de Ibarrola, 2013); the school, work and life trajectories of students with different levels of schooling (Messina, Valdivieso, in process). My thesis seminar is opening new and ever more exciting fields of knowledge on the relations between education and work.

A CHALLENGING DETOUR: FIVE YEARS WITH THE NATIONAL UNION OF EDUCATIONAL WORKERS

From 1993 to 1997 I made a very interesting detour in my regular academic life at the Department of Educational Research, after receiving a completely unexpected invitation for lunch from the National Leader of the Union of Educational Workers.

"La maestra" ("the teacher"), as she is referred to, Ms Elba Esther Gordillo, is indeed an extraordinary person, capable of leading a 1,200,000 member educational union. She became the national executive secretary in 1989 and was the national leader until February 2013. When Ms Gordillo was elected in 1989, she implemented many changes and innovations towards producing a more professional union. One of these was the creation of a cultural foundation for the improvement of Mexican teachers and she invited me to be the General Director.

The foundation was a very interesting academic project. A board of prominent Mexicans, of high prestige and moral standing in the academy, the media, and the private sector had been invited to be the highest authority of the Foundation, independent of the Union's political structure. They all had agreed, knowing that changes of Mexican education highly depend on the Union. The existence of this Board, plus the fact that a colleague of mine had designed and created the foundation a couple of years before, convinced me to accept the invitation. After all, I was about to start two consecutive sabbatical years that were owing to me since 1976.

I spent five years at the Foundation; and I still regard my experiences there as the most interesting ones I have had, and my time there gave me first-hand knowledge of basic education teachers and union leaders in Mexico and Latin America. I was lucky enough to meet some of the best teachers of the Mexican Revolution educational epic poem, who were delighted with the idea of the Union's sponsoring a Cultural Foundation. I was able to organize a small group of teachers-researchers and to summon the best Mexican and Latin American educational researchers in many specific academic activities. My colleagues were pretty generous (and I suppose quite curious), participating in three National Educational Congresses, two Latin American Education Conferences, all sorts of training courses for teachers, all sorts of dissemination activities the academic imagination could conceive for and with teachers. Our journal, aimed at promoting educational research useful for daily teaching, was

highly appreciated by teachers and even union leaders who would happily "steal" from available issues. We undertook important research on *Who are our teachers* (de Ibarrola, Silva and Castelan, 1997), a quantitative study on socio-demographic basic data about the Mexican teachers not found elsewhere at the time, and we also won the open competition for a new National Free Spanish Textbook for the 3rd grade.

I should make it clear that in the perception of many, the National Union of Educational Workers is the biggest enemy of educational quality in Mexico. Many government officials, scholars, the press and now some very strong NGOs charge the Union with many valid accusations of corruption. However, as any educational researcher directly linked to schools' daily life will confirm, the actual role and commitment of teachers, many of them working in really bad daily conditions, is the best asset of Mexican education. Indeed Mexico's educational problems are extremely complex and cannot be blamed on the Union's existence or even the corruption associated with it.

TEACHING, DISSEMINATION OF EDUCATIONAL KNOWLEDGE, AND DIALOGUE WITH EDUCATIONAL AUTHORITIES.

After doing the evaluation of the study plans of the Faculty of Social Sciences of the National University, 1974, I was invited to introduce a new optional subject-matter and I decided on Sociology of Education (being fascinated with the possibilities and challenges of this scientific approach to the study of one of Mexico's most important problems). It was my first teaching experience and another source of great professional satisfaction. I designed the program and won tenure (a two hour/week/month engagement) against opposition. As a result of those lectures, I wrote two studies on a sociological view of Mexican Education, questioning classic authors about the pertinence or accuracy of their positions for a country as unequal, underdeveloped and with such a poor and ethnically diverse population as Mexico's. The texts are still used in some Schools of Education and Normal schools in Mexico and Latin America, and to my surprise many students know me because of them.

Some years later I took charge of the graduate course on (modern) Educational Problems and Policies in Mexico in my Department's Masters Degree program and I have been teaching it since then. This allows me to regularly bring up to date my knowledge on the overall educational problems of the country, and to discuss with the always innovative and imaginative minds of our graduate students the nature of the periodical renewal of educational reforms and the turbulent and unpredictable reasons for the lack of solutions. This activity also nurtures my intensive and regular participation in public analysis of the Mexican educational political problems, via various forums, symposia, conferences and editorial commentaries in the press, which I really enjoy. I have several times been the coordinator of dissemination activities for the Department and in 2006–2007 I was president of the Mexican Council of Educational Research (COMIE) that sponsors a prestigious research journal and a bi-annual National Congress. As president of COMIE I became a founder member

of the World Education Research Association, WERA. Since the 1990s I have also been invited to take part in national commissions for the planning of educational reforms: the most important being part of the ten member coordination group of the educational sector for the transition of the Mexican presidency in 2000, and being one of the 16 members of the National Council of Experts in Education: 2005–2007. These activities have given me a theoretical and empirical approach to the possible interactions between educational research and educational policy making, and to the extent, range and possibilities of my commitment as an educational researcher to improve Mexican education.

BEING EVALUATED AND EVALUATING PEERS: CONSTRUCTING THE RULES OF WHAT MAKES AN EDUCATIONAL RESEARCHER

I was appointed head of the Department of Educational Research in 1980, right after the term of the founder, Dr. Gutiérrez Vázquez, ended. The Department had grown with all sort of administrative and academic irregularities, explained and accepted due to the novelty of educational research and the absence of graduate programs in education in the country. Also, Dr.Gutiérrez Vázquez had obtained an important research budget from the Ministry of Education that allowed him to freely engage different people for different purposes during that first decade. I became head of the Department at the same time as a new General Director for the whole Center was elected, who also found many irregularities in the way the different departments had been growing. So, with the initiative of the new director and the participation of the heads of all the Departments, we organized the first commission for the evaluation of the academics of the Center in order to properly assign rank, remuneration and promotion rules according to the evaluation of specific academic training and academic productivity. At the same time we also designed the programs that would solve the existing problems such as the lack of formal doctoral training in most Departments which had been created to address new fields of research in the country (not only Educational Research, but also research in many new Engineering fields). I have now been a member of the evaluation commission of my research center several times, and have become ever more concerned with instilling educational research evaluation criteria equivalent, though not identical, to that of all the other scientific fields in our Center. The effort has required constant discussion to oppose the shortsightedness and the rigid and bureaucratic indicators that seem to some academics the way to define the quality of research and the future career of our colleagues.

In 1984, in the midst of what came to be known as the "lost decade" for the economic development of Latin America, when salaries had drastically fallen in the academic labor market, the Mexican Academy of Science designed a National Researchers' System as the means for increasing the income of Mexican academics and fostering academic productivity – using as the means monetary incentive policies, based on performance evaluation and subject to available budgets. The system's "monthly

scholarships" are still granted (or denied) periodically, according to ever-harder peer evaluation and more rigorous criteria based on formal indicators. I have also been National member and National President of the Humanities Evaluation Commission. However, along with many other colleagues, I have regularly undertaken critical research on the results achieved and written essays against the "perverse" effects of such controversial policies. In my opinion, evaluation has become an end in itself, overwhelming researchers through multiple evaluations. The system has reduced academic life to "research," and worse, it has limited the effectiveness and quality of this academic task to peer reviewed international publications, plus some graduate teaching. I have certainly benefitted from academic evaluations as I have reached a very high academic position in my Institution and the highest rank in the National Researchers' System, but there is no way to ignore that it has also created deep divisions in academic remuneration, since economic incentives may represent as much as 60% of real income. It also generates an undue and freak "superior prestige" for researchers in the Mexican educational world.

THE LATIN AMERICAN CONNECTION

I do not clearly recall my first international invitation. I seem to remember that it was an invitation, in 1986, to Venezuela at UNESCO's Latin American Center for Higher Education. After that I was invited by UNESCO's different offices in the region to prepare Mexico's monographs on Higher Education (de Ibarrola, 1986) and Vocational/Technical Education (de Ibarrola, 1994), and also was invited to many regional conferences in Argentina, Brazil and Chile. But the most important Latin-American academic activities were through my participation at the Latin-American Network of Education and Work, a pioneer academic network operating throughout the region, founded and conducted by a prestigious Argentinean sociologist, Dr. Maria Antonia Gallart, with the financial support of the Canadian IDRC. I had been a member of the network since 1989 and was elected Latin American coordinator in 1998. The network sponsored research on education and work through national case studies and regular Latin-American seminars and symposia organized with the support of UNESCO's and ILO's offices in the region. Many of my publications were developed in that context; perhaps the most important to me was a collective study I coordinated in 1992 with ten experts from different countries on the new challenges of middle education in Latin America (de Ibarrola, Gallart et al, 1994).

FINAL CONSIDERATIONS

Becoming an educational researcher, and contributing to the construction of education as a field of new research for the social sciences and of new institutions dedicated to that aim, has been an extraordinary experience. I still do not know if being selected as a "prodigious student" in some teaching experiments both in Mexico and Canada, and as a consequence missing so many years of formal schooling, was good training,

but the opportunity to work as an educational researcher, almost co-founder, in the three most important educational research centers of the country, and of enjoying the support and confidence of great scholars, was a wonderful learning experience and the best academic place to be in the developing small world of Mexican educational research. I especially cherish my life-long professional relation with Dr. Pablo Latapí – he was the one to return my early papers filled with red corrections, exclamations marks, remarks, even jokes. Even after I left the Center we kept on being good friends. Once he had realized that marriage did not alter my professional commitment, I was always invited to take part in the design and implementation of the many institutions he created in order to foster a national consciousness about educational problems, and to promote and strengthen educational knowledge, where I found an important space for most of my dissemination activities. He also consistently recommended me as participant in every advisory or planning group he was asked to organize by successive Ministers of Education. Two years ago I was very moved when I was granted the Pablo Latapí Research Prize. The other two leaders under whom I had worked, the President of the University Commission of New Teaching Methods (Don Henrique González Casanova) and the founder of the Department of Educational Research (Dr. Juan Manual Gutiérrez Vázquez) were indeed great models on social and academic commitment for an aspiring educational researcher.

Taking part in the blooming of new ways of knowing and understanding the educational problems of Mexico, regularly sharing this knowledge with students, teachers, colleagues and politicians in Mexico and Latin America reminds me of the basic attitude Dr. Gutiérrez Vázquez instilled in our Department – knowledge is the one asset that really increases while sharing it. I still believe that exchange among Latin American educational researchers is crucial for the creation of the educational knowledge that is so needed for the region, since we share the same kind of problems but approach them and offer solutions in many different ways. Having a closer relation over the last decade with educational researchers of many different countries and different disciplines through the International Academy of Education has indeed not only been a great honor but another extraordinary opportunity to keep on learning at this stage of my life, from such solid and prestigious colleagues, and with a more wider perspective for improving education.

NOTE

[1] I cannot complete this autobiography without a specific recognition to my husband of 43 years. In all these years he has been truly generous in sharing all my professional adventures and backing all my professional decisions, while himself being professionally successful in managerial industrial activities and sharing the rearing of our daughters and domestic work. We have shared the life with two beautiful daughters and now enjoy their husbands and seven wonderful grandchildren.

FAVORITE WORKS

Books

Planes de estudios. Propuestas institucionales y realidad curricular. (1987). With Glazman.
Escuela y trabajo en el sector agropecuario en México. (1994).
Democracia y productividad. Desafíos para una nueva educación media en América Latina. (1994). With Gallart.
De Ibarrola, María. (2006*). Formación escolar para el trabajo. Experiencias y enseñanzas del caso mexicano*. Cinterfor. Uruguay 410 pp.

Articles, Book Chapters and Essays

Priorité à la formation scolaire pour le travail au Mexique. Tensions et contradictions entre l'Etat, les secteurs professionnels et les étudiants. (2009).
Siete preguntas clave sobre las relaciones entre la educación y el trabajo. ¿Qué respuestas aporta la investigación educativa? (2009).
Dilemas de una nueva prioridad a la educación técnico profesional en América Latina. Un debate necesario". (2010).
Qué educación queremos para América Latina. (2011).
Los grandes problemas del sistema educativo mexicano. (2012).
Consolidación del Sistema Nacional de Investigadores, profesionalización de la investigación en México (2012).

REFERENCES

Cuevas de la G., José F. *La figura del estudiante-trabajador en el contexto de las relaciones entre educación escolar y empleo*. Tesis paraobtener el grado de doctor en Ciencias con especialidad en investigación educativa Directora de tesis: Dra. María de IbarrolaDIECinvestav IPN, 3 de julio de 2013.
Durand A., María C. *Vinculación entre educación y trabajo. Los espacios formativos para el trabajo en una escuela Conalep*. Tesis para obtener el grado de Maestría en Ciencias con especialidad en investigación educativa. DIE, Cinvestav IPN. 10 de agosto de 2010.
Glazman, Raquel y de Ibarrola, María. (1978). *Diseño de planes de estudio*. CISE/UNAM, 536 pp. (2 ediciones).
Glazman, Raquel y de Ibarrola, María. (1987). *Planes de estudios. Propuestas institucionales y realidad curricular.* Nueva Imagen, México, 336 pp.
De Ibarrola, M. (1970). *Pobreza y Aspiraciones Escolares*. Centro de EstudiosEducativos, México, 175 pp.
De Ibarrola, María y Sonia Reynaga. (1983). Estructura de producción mercado de trabajo y escolaridad en México en *Revista Latinoamericana de Estudios Educativos*, No. 3, Vol. XIII, México.
De Ibarrola, M. (1986). *La educación superior en México*. CRESALC-UNESCO, Caracas, 152 pp. cuad. http://unesdoc.unesco.org/images/0007/000718/071862so.pdf
De Ibarrola, María. (1988). Hacia una reconceptualización de las relaciones entre el mundo de la educación y el mundo del trabajo en América Latina. *Revista Latinoamericana de Estudios Educativos* (México). No. 2, pp. 9–64.
de Ibarrola, María. (1994). *Industria y Escuela Técnica .Dos experiencias mexicanas*. Red Latinoamericana de Educación y Trabajo y la OREALC/UNESCO. Lecturas de Educación y Trabajo no. 1/ Santiago, Buenos Aires, México. http://unesdoc.unesco.org/images/0015/001502/150247so.pdf
De Ibarrola, María. (1994). *Escuela y trabajo en el sector agropecuario en México.* Miguel Angel Porrúa/ Cinvestav/ Instituto Mora/ Flacso.México, 394 pp.

De Ibarrola, María y Gallart, Ma. Antonia (coordinadoras). (1994). *Democracia y productividad. Desafíos para una nueva educación media en América Latina*. Red latinoamericana de Educación y Trabajo /OREALC-UNESCO.Lecturas de Educación y trabajo Santiago, Buenos Aires, México. http://unesdoc.unesco.org/images/0015/001502/150248so.pdf

De Ibarrola, María, Silva, Gilberto y Castelán, Adrián. (1997). *Quiénes son nuestros profesores. Análisis del magisterio de educación primaria en la Ciudad de México 1995.*Fundación SNTE, México, 188 p.

De Ibarrola, M. (2002). *La impronta genética del Cinvestav. Una mirada la excelencia de la institución, entonces y ahora* en De Ibarrola, María, Cabrera pedro, Asomoza, René, Frixione, Eugenio, García, Augusto, Pérez Angón, Miguel Angel, Quintanilla Susana (editores). *El Cinvestav. Trayectoria de sus departamentos, secciones y unidades: 1961–2001.* México, Centro de Investigación y de Estudios Avanzados del IPN, pp. 11–54.

De Ibarrola, María y Alejandro Mijares. (2003). Formación de jóvenes para el trabajo: escolaridad, capacitación y trabajo infantil. En *Cadernos de Pesquisa* (Fundacao Carlos Chagas, Sao Paolo, Brasil) no. 118, marzo de 2003, pp. 119–154. http://www.scielo.br/pdf/cp/n118/16832.pdf

De Ibarrola, María y otros. (2004). *Escuela, capacitación y aprendizaje. La formación para el trabajo en una ciudad en transición*. Montevideo, CINTERFOR/OIT, 222 p. (Herramientas para la transformación, 27) http://www.cinterfor.org.uy/public/spanish/region/ampro/cinterfor/publ/ibarro2/index.htm

De Ibarrola, M. (2006). *Formación escolar para el trabajo. Experiencias y enseñanzas del caso mexicano*. Cinterfor. Uruguay 410 pp. http://www.oitcinterfor.org/publicaci%C3%B3n/formaci%C3%B3n-escolar-trabajo-posibilidades-l%C3%ADmites-experiencias-ense%C3%B1anzas-del-caso-mexican

De Ibarrola, M. (2009). Priorité à la formation scolaire pour le travail au Mexique. Tensions et contradictions entre l'Etat, les secteurs professionnels et les étudiants *Formation Emploi, Revue Française de Sciences Sociales*, n° 107, Dossier "La formation professionnelle en Amériquelatine", juillet-septembre 2009, pp. 25–39.

De Ibarrola, M. (2009). Siete preguntas clave sobre las relaciones entre la educación y el trabajo. ¿Qué respuestas aporta la investigación educativa? En De Alba, Alicia y Raquel Glazman (coordinadoras) . ¿Qué dice la investigación educativa? México, D.F. COMIE, 528 pp. 315–368.

De Ibarrola, M. (2010). Dilemas de una nueva prioridad a la educación técnico profesional en América Latina. Un debate necesario. *Revista La educ@ación*. Revista Digital. Organización de Estados Iberoamericanos. No. 144.

De Ibarrola, M**.** (2011). Qué educación queremos para América Latina. Revista ISEL, (Instituto Superior de Lomas de Zamora, Argentina. (Por invitación) disponible en: http://www.isel.edu.ar/revista/index.html

De Ibarrola, M. (2012). Los grandes problemas del sistema educativo mexicano, *Perfiles Educativos*, XXXIV, (No. Especial), 16–28.

De Ibarrola, M. (2012). Consolidación del Sistema Nacional de Investigadores, profesionalización de la investigación en México, en*: Sistema Nacional de Investigadores Retos y Perspectivas de la Ciencia en México,* México, Universidad Autónoma metropolitana-Xochimilco, 2012. pp. 49–62.

Gutiérrez S. Norma G. (1999). *Orígenes de la institucionalización de la investigación educativa en México.* México. Departamento de Investigaciones Educativas, Centro de investigación y de Estudios Avanzados del IPN: SerieTesis, 30.

Martínez Andrés y de Ibarrola, María. (2013). Les savoirs productifs. Enchaînement et trame des micro-entreprises informelles1. *Revue d'Anthropologie des Connaissances* – 2013/1 291.

Pinar, William (Ed.). (2011). *Curriculum studies in Mexico.* Palgrave/Mac Millan.

Sánchez Suárez, Ezequiel. *Diagnóstico de las consecuencias laborales de la deserción en el nivel superior. El caso de la carrera de Ingeniería en Comunicaciones y Electrónica en la Escuela Superior de Ingeniería Mecánica y Eléctrica. Unidad Culhuacán del IPN,*T esis para obtener el grado de Maestría en Ciencias con especialidad en investigación educativa. DIE, Cinvestav IPN. (15 de diciembre de 2008).

D. C. PHILLIPS

THE DEVELOPMENT OF A (PHILOSOPHICAL) DISILLUSIONIST

ANCESTRAL INFLUENCES

One does not have to be a follower of the philosopher Martin Heidegger to recognize that, at birth, each of us is "thrust" into a pre-existing world that shapes our "Being". I was thrust into pre-World-War-Two Australia, into a rich and complex family setting, all of which certainly shaped (but did not fully determine) who I was to become.

It is often said that the USA is a country of immigrants, and so it is; but so too is Australia, the land of my birth. My parents also were native-born Aussies, as were the two grandparents on my father's side – one has to ascend the family tree another couple of generations to find my English-Protestant and Irish-Catholic forebears. Go back way further and there is a modest chance that I am related to John Milton and Isaac Newton (but I don't hold my breath). My mother's side of the tree was different. Her parents (Sarah and John Sherman) were immigrants from somewhere near Kiev in what is the present-day Ukraine; they had escaped from the anti-Jewish pogroms and had met on a ship heading for the southern hemisphere. Quite a mixed ancestry, one that – had I been canine – would have disbarred me from entry in the Westminster Kennel Club dog show.

But a mixed heritage can also be an extremely stimulating one. My mother's side of the family was not religious (in fact, my maternal grandparents, uncles and aunts and cousins, all seemed to regard religion as "the opiate of the masses") but they celebrated religious holidays with verve for the sake of the food and wine. Although not deeply schooled, they were interested in ideas – especially political ones; and they had a theatrical bent. My grandfather, family legend has it, put his tailoring aside to take the leading role in the first (perhaps only?) amateur performance of *Hamlet* in Yiddish in Melbourne. The elder of his sons (my mother's elder brother) acted on stage and radio in Australia before heading to America where he had a sizeable role alongside Ronald Reagan in the well-received film *The Hasty Heart.* Shortly afterward he escaped back to Australia, working as a cook on a tramp-steamer, keeping just ahead of the US tax-man. His younger brother had a lifelong attachment to Australia's leading experimental theater, located in Sydney; after failing in his day-job as a furrier he worked as a Postal Clerk and, as a union representative, was a thorn in the side of the authorities. Despite their well-developed anti-establishmentarianism, both of my uncles had served honorably in World War

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11. In fact, among my earliest memories are those concerning the family flat in the Sydney surfside suburb Bondi (to where my mother and I had relocated for the duration of war); often there were US and Aussie servicemen on leave, presumably invited by one or other of my uncles (who were mainly in *absentia*); they were camped out on the sofa and the floors. The first movie I can recall seeing was Walt Disney's "Bambi", playing in North Bondi to a packed theater of teary-eyed, mainly US servicemen, on R and R from somewhere in the Pacific. Even seven decades later I am overwhelmed with nostalgia when I see (or even think about) the film.

My father's side of the family was somewhat less exotic. My grandmother (maiden name Mary Angelina Amor) was of Irish Catholic heritage, but she had married Charles George Phillips, who was of English descent, and, to boot, was also Church of England. A genuine "orange and green" relationship. The "green" won out, of course, as all the children had to be raised Catholic; this included my father, who, however, attained the status of "lapsed" as soon as he completed high school (which he did at the age of sixteen). I once asked my grandmother about the Amor family origins, and – uncharacteristically curtly – she replied that it was none of my business! This raised my suspicions, which were borne out more than half-a-century later when I discovered that indeed her great-grandfather had arrived in Australia as a convict in 1830 (he had been given a seven-year sentence for stealing three cravats). This makes me a member of the only aristocracy that Aussies recognize; it is indeed a mark of prestige to be descended from a convict, and an Irish one at that! (Convicts, in the view of many Australians – including myself – were not criminals but brave strugglers against cruel economic and social repression.)

There is a puzzle here. Irish Catholics made up a sizeable percentage of the Australian population at the time of the Great War (1914—1918) and they prevented the government from introducing conscription – the Irish and their descendants did not want to be forced to fight for the British Empire! So enlistment in the armed forces during WW1 was purely voluntary. But volunteer the Amor boys (my grandmother's brothers) did! And they paid dearly for it. One died serving in the ANZAC forces at the notorious Lone Pine ridge on the Gallipoli peninsula; and another while participating in what was probably history's last great cavalry charge, in which the Australian Light Horse brigade captured the Turkish-held wells at Beersheba. My grandmother's surviving brother was gassed on the Western front in Europe, and suffered all the rest of his life. My grandfather also enlisted at some stage (although he was by then the father of three children), and he survived unscathed. Mary Angelina and Charles George (who must have met in a country town well-outside of Melbourne) also adopted the three orphaned children of one of my grandmother's sisters, so they ended-up with a family of six.

My father finished (Catholic) high school when he was sixteen, moved from the country to Melbourne, and obtained employment as a junior State Government clerk in the Department of Fisheries. But his avocation was to be a writer, and eventually he became resident script-writer at one of Australia's last surviving vaudeville theaters (the Melbourne *Tivoli*) – a position he relinquished when he had his own family to

support. (He re-entered the Civil Service and rose to a relatively senior position; but he continued to write, and later in life published several books including an analysis of the work of the Australian poet and story-teller Henry Lawson.) At some stage my grandparents and the rest of their children also moved to Melbourne, and lived very close to us. (The Shermans lived a little further away across the city.)

When, as a youngster, I had first wondered how my parents met, it seemed to be some sort of miracle, for the worlds in which they lived were so different. But eventually I saw that there were some common factors linking their respective families, the most obvious being the interest in the theater. The second factor was "socio-political"; in Australia (and in many other countries) in the early 1930s many young men and women reacted quite strongly to the Great Depression, which they took to display the inherent weaknesses in Capitalism. Some became communists, others socialists; and as they aged they became slightly less radical supporters of the Labor Party and its pro-trade union agenda. Evidently my parents had met in some left-wing political context. (This hypothesis helped me make sense of a discovery I made in my early teenage years; secreted high in a linen-cupboard outside my parents' bedroom were the collected works of Karl Marx – which, to be frank, interested me less than the works of Sigmund Freud that were propped up against them.). Much, much later I fantasized about how surprised my folks would have been if they had known that I was lecturing on Freud and Marx to freshmen at Stanford who were enrolled in the Philosophy Department's track in the "Western Culture" program! They might have been even more surprised if they had learned that I approached the theories of Marx and Freud with a moderate-sized "grain of salt"! But then again, it had always been part of my extended family's ethos not to accept orthodoxies, an orientation toward the world that clearly I absorbed. Furthermore, they might be resting peacefully in the knowledge that, when I was a high school teacher, I was the site representative of the Victorian Secondary Teachers' Association, and years later at Stanford I was elected three times as president of the campus branch of the American Association of University Professors. The world into which one is thrust at birth clearly leaves its mark.

SCHOOLING

The title of this essay, about which I have not yet made any comment, is a playful reference not only to what I consider to be my main philosophical program – the shattering of illusions and delusions, particularly uncritical adherence (by others) to various of the great "isms" or "orthodoxies" of our times – but also to the fact that ever since childhood I have had an interest in conjuring. This had been fostered at the large, steaming hot Christmas day gatherings at my Phillips grandparents' house, during which one of my distant Amor relatives – all of whom bore the courtesy title of "Uncle" or "Aunt" – would amuse us by apparently swallowing the threepenny-pieces from the Christmas pudding and retrieving them from some other bodily orifice. Later in my childhood, when a prolonged bout of "bronchial asthma" nearly

disposed of me, and kept me confined to bed for more than a month, I was inspired by his example to read several books on sleight-of-hand and card tricks, and devoted some of my ample spare time to practicing the "French drop", false shuffles, and how to "force" a card. In short, I became a magician, and in my teens I joined the "Magic Circle of Victoria"; and occasionally with other members I entertained at orphanages and "old folks' homes" – which in itself was a rich (if harrowing) educational experience! In my more advanced years this hobby matured into using my ten-minute magic act as a vehicle for satirical comment upon the professional beliefs and commitments of my colleagues – I had discovered that one could get away with a lot so long as the criticism (explicit or implied) was dressed up as the humorous patter of a bumbling illusionist. I also learned the importance of quickly tweaking the audience's interest. Somewhere along the line I noticed that there had been a merging of styles between my avocation and my vocation. But I jump the gun.

Primary (elementary) school was not particularly memorable, except for an extended period one year when my regular teacher took medical leave, and the formidable Mr.Roach was recalled from retirement to step into the breach. Later I calculated that he must have received his training in the late nineteenth century, providing me with insight into the pedagogy that my forebears had survived. It was the year of schooling in which we were learning to write with pen and ink, the ink being in an "ink well" at each desk, and the pen having a nib that was designed to freely emit ink drops. Mr.Roach patrolled the aisles, glancing right and left as he walked, and smiting the head of any student who had "blotted his or her copybook". I still quake with fear when I recall his booming voice that accompanied the blow; "Phillips, a blot on your book is a blot on your conscience!" I managed to survive, and moved on to Northcote High School – an all boys' school – that was a twenty-minute or so tram (street car) ride from home.

In high school I found myself in a competitive system in which the curriculum became more specialized as one moved up the grades. I was able to make time to appear in several school plays, and my magical proficiency increased. But the pressure was on, for it was a foregone conclusion that only a small percentage of an age-group made it through to twelfth grade (sixth form). Only a fraction of these survivors were selected to enter university, and I made it by the skin of my teeth. And so it was that, several months after my seventeenth birthday, in early March 1955, I entered the University of Melbourne as a candidate for a degree in the sciences (the academic year in the antipodes runs from March until November). I was equally interested in the humanities, but in the later years of high school I had been directed into the "science stream" – I had won a "secondary studentship" that carried a small cash award for the last two years of high school, but the enticement was that it also paid all fees plus a liberal living allowance if eventually I was admitted to university. The catch was, I had to agree that upon graduation I would train as a secondary school teacher – and furthermore I would go and serve for three years wherever in the State of Victoria the Education Department chose to send me! There was one further

catch: although Australia was short of teachers in all high school subjects, there was a desperate shortage of teachers of mathematics and science, hence my being directed to specialize in this general area. As the idea of being a teacher appealed to me, and as the prospect of being able to afford a university education appealed even more, shortly before my fifteenth birthday I made the weighty decision to sign the studentship agreement; and thus it was that about two years later in early 1955 I was riding high, with my first check in my pocket and my first-year science textbooks under my arm.

UNIVERSITY STUDIES

The university was like a blast of liberating air. In the opening months of each year I was active in the rich theatrical life that centered on the university's *Union Theatre* (which was home, in the second half of each year, to the professional Melbourne Repertory Company), acting in plays and revues with some individuals who later had notable careers – Germaine Greer being the most prominent. ("Germs" wrote *The Female Eunuch* which made her an early central figure in the world-wide women's movement, and she also became a TV personality in Britain.) I was immensely proud of a "notice" I received in a Melbourne daily paper; writing about a student revue in which I had appeared alongside Germaine; the theatre critic said that there was some "sublime buffoonery" from Denis Phillips! But I also devoted time to my studies. During my undergraduate years I branched out intellectually, taking a variety of courses in vertebrate and invertebrate zoology, botany, physiology and biochemistry, cytology and genetics, physics, chemistry, and pure mathematics; my major field was biology, which I knew nothing about in my high school days. Crucially, I also managed to fit in a year-long course in the history and philosophy of science that I imagined would be useful for me in my career as a high school teacher.

With the benefit of hindsight, three aspects of this program stand out as being of great importance for my later intellectual/professional life as a philosopher. The first was the sense it gave me of the many forms of scientific inquiry, of the ways in which theory and field or laboratory work were interrelated, and of the precision with which scientific arguments were developed and measurements were made. (Traces of some of these influences can still be found in my most recent work; see Phillips, 2006.) My undergraduate experiences also made me receptive to Thomas Kuhn's concept of "normal science" when I met it more than a decade later – one of my Physics professors had laboured all his life measuring a physical constant more precisely. (Later still I became annoyed by the widespread misapplications of Kuhn's work, by the uncritical acceptance of the relativistic aspects of it, and also by the lack of awareness on the part of many educational theorists of the great complexities involved in assessing Kuhn; see Phillips, 1987, especially ch.8. For the past thirty years or so I have been teaching a Stanford course "Popper, Kuhn and Lakatos", which undoubtedly was my favourite, and during which I unashamedly drew on examples from my undergraduate studies.)

The second thing that had enormous impact on me was my exposure to the theory of evolution; what first impressed me was the way it served to bring order to what otherwise would have been an overwhelming mass of disconnected facts. The light-bulb flashed for me in an advanced course in vertebrate zoology and comparative anatomy; we were expected to remember the anatomy of a large number of different vertebrates, especially of the thorax and the intricate arrangement of the blood vessels and nerves and their relationship to the gills or lungs and also to the heart, and in the laboratory exam at the end of the year we had to perform a dissection of one of the systems of one of the species that had been studied. At first all was confusion in this course, with severe memory overload, until the instructor suggested we open Gavin de Beer's treatise *Vertebrate Zoology* (1951) at pp. 284–285, where we found six diagrams – from fish to mammal – showing how the archetypal pattern of aortic blood vessels around the gill slits had gradually been modified in the course of the evolution of the higher types, as gill arches were lost and the lungs evolved. Suddenly the anatomical arrangements in the six vertebrate species depicted made sense, and the pattern of progressive development became crystal clear (although it was still complex)! The well-worn diagram from that text, with its mass of pencilled notes, is still one of the treasured souvenirs from my undergraduate days.

Thus began my lifelong interest in the theory of evolution and its impact on Western thought – my attraction to William James and John Dewey initially stemmed from this, as did my interest a little later in Jean Piaget and developmental and cognitive psychology; my master's thesis in education (in the early sixties, which became my first publication in an edited volume) explored the different ways in which Herbert Spencer and Dewey used evolutionary theory, and my subsequent work on holistic thought and systems theory had the same root. In general, as I later discovered, the theory of evolution had much the same impact on me as it had on Dewey and many others – I became a convinced naturalist in the philosophical sense, although as yet I did not know the term and certainly had only reflected superficially. (For a recent account that I have given of the spread of naturalism, see Phillips, 2000, ch.5.)

There is no doubt, however, that the third influence upon me in my undergraduate days turned my world upside-down. The course in history and philosophy of science – that I took more-or-less on a whim – covered several of the standard issues in philosophy of science, and devoted a great deal of time to the history of optics, and to Descartes. The instructor, Gerd Buchdahl, was the epitome of the disorganized scholar, and I fell under his spell immediately – how could one resist a man who came to class muttering "My wife is thinking of divorcing me, and she is citing Descartes as co-respondent!" One of the essays I wrote for him was on justifications of induction – no doubt a precursor of my lifelong interest in Popper, of which more later – and another was on operational definitions; on one of these he wrote "I have learned from you", which was a heady comment for an eighteen-year-old to receive, one that convinced me that my future lay along a philosophical path. (So did the final examination result, which placed me second in a class of about forty.) Unfortunately, at the end of that year Buchdahl left Melbourne for a readership at Cambridge.

HIGH SCHOOL TEACHING

Upon graduation, as contracted, I entered the one-year teacher-training program in the Faculty of Education. I will pass over in silence my first exhausting classroom experiences. I was somewhat shocked by the pabulum served-up in some of the coursework, but enjoyed the course that surveyed the history of educational thought (Plato to Dewey, via Locke, Rousseau, Newman, Spencer, and others long forgotten) – this was the nearest thing to philosophy of education that was on offer. Dewey I found to be rather mysterious, and I could not see how the summaries to many of the chapters in *Democracy and Education* related to the body of the chapters. I surprised myself in the course on comparative education, which reputedly was the toughest course, with the highest failure rate. I was certain that I had failed, but after reading my way up the published result sheet from the bottom, and becoming more and more anxious as my examination number did not appear, I was astounded to find myself at the top of the approximately 150 candidates. Thus the year ended well, and I was assigned to teach in a well-established middle class suburban high school that needed a biology teacher, and I spent three years there until I received promotion to a school on the outskirts of Melbourne, in a tough neighbourhood adjoining a migrant camp; I was just twenty-four, and found myself senior mathematics and science master, with the additional heavy responsibility of being the school's first-aid officer. I spent two challenging years there, and although my proficiency at staunching the flow of blood from cuts did not noticeably improve, I felt I really learned how to teach. In particular, the lesson that was emerging from my magic was reinforced at this "difficult" school – the secret was a Deweyan one, namely the importance of very quickly capturing the attention of the students/audience and engaging them in a relevant and interesting problem or mystery. (In later years I have been much mystified myself at philosophers who – for example – launch into a detailed analysis of the possible positions with respect to the body/mind problem, without first ensuring that their students actually *feel* the problem. It has always seemed obvious to me, since those early days, that if you don't appreciate the problem then you will not understand the possible answers.)

Intellectually the five years I spent teaching were very productive, for at both schools I was within convenient driving distance of the university. The Faculty of Arts (in which, of course, philosophy and philosophy of science were located) did not offer late afternoon or evening courses, but the Faculty of Education did, and so I decided to pursue further work there while I was teaching, specializing as much as possible in the history of educational thought. I converted my year of teacher-training into a second bachelor's degree by doing several years of evening coursework, and – having done well enough to enable me to proceed – I was admitted to the M.Ed program, which consisted entirely of writing a thesis. My topic was the one mentioned earlier, comparing Spencer's and Dewey's different use of evolutionary theory. I argued that Spencer used it quite mechanistically and stressed the role of natural selection; and furthermore he used it in domains (such as in a discussion of

"the genesis of knowledge in the individual") where it was not obvious that it was applicable. On the other hand Dewey was more impressed by the role of chance variations and the novelties and unpredictable elements thus introduced into nature – culminating of course in the greatest novelty of all, human intelligence.

During this period I learned a lot through my wide background reading – but I learned a great deal more, and at first suffered a great deal of mortification, at the hands of my supervisor Barbara Falk. She was an historian who had been trained at Melbourne and Oxford, and she had mixed in circles with Gilbert Ryle, but she did not know much about my topic; however, she had the most incisive mind I have met, before or since, and almost without looking at my draft pages she could detect vagueness, obfuscations, ambiguities, beatings around the bush, and more stylistic sins than I care to remember. And she meticulously noted these in red ink, using straightforward prose along these lines: "this is bullshit", "this is a cop-out", "what is this supposed to mean", "this sentence has four possible interpretations….am I supposed to guess what you actually mean?". For months I felt tears welling up when I received her feedback, but I persisted and gradually the red ink appeared less frequently. I owe her an inestimable debt (as, I believe, do my own advisees whom I persist in treating in the same manner!), and under her tutelage I not only finally learned how to write, but I came to see that formulating one's ideas vaguely was a form of hypocrisy – I had held many of my beliefs (like Descartes?) because they were not "clear and distinct", and if I wanted to avoid self-delusion I had to strive for the utmost clarity. On Barbara's suggestion, I took the time to carefully work through *An Introduction to Philosophical Analysis*, by John Hospers, and found that this gave me further tools to enhance the clarity and precision of my writing, not to mention my thinking!

DOCTORAL TRAINING

My Master's thesis was well-received, and was awarded the Freda Cohen Prize (Phillips, 1966). Although newly married, I was emboldened enough to resign my teaching post, and with the support of one of my examiners, D.A.T. Gasking, a logician and former student of Wittgenstein's (and chair of Melbourne's Department of Philosophy) I applied to, and was accepted by, two doctoral programs – one in the Philosophy Department in the Institute of Advanced Study at the Australian National University, where I would work with the distinguished historian of philosophy and chairperson, John Passmore. But for family reasons I accepted the offer of a handsome fellowship at Melbourne, where (unusually) I had two supervisors – Barbara Falk from Education and Douglas Gasking's wife Elizabeth, from History and Philosophy of Science. (Passmore later served as one of the external examiners of my doctoral dissertation; the other, from the USA, was Philip Weiner, editor of the *Journal of the History of Ideas*.) In 1964 there was no doctoral coursework in Australia (which followed the British system); instead, I was supposed to spend three years or more (full time) writing a dissertation that would then be examined by one person internal

to the university and two who were experts in the topic and who would come from "somewhere else in the world". But I felt that before writing I needed to fill-in some of the enormous gaps in my philosophical background, and during the first two years I took a number of year-long courses and seminars in philosophy, logic, and philosophy of science. Meanwhile my topic evolved, and eventually became *Organicism and its Influence on the Philosophical and Educational Writings of John Dewey*. Essentially I analysed a group of holistic ideas that were current in the late nineteenth-century (the best known of which are "the whole is more than the sum of the parts" and "the parts of an organic whole are dynamically interrelated or interdependent"); I showed these were derived from Hegel's "principle of internal relations" (Phillips, 1970; 1976, ch.1), and I went on to discuss their influence on Dewey – for example, his horror of "dualisms" in part stemmed from his view that they artificially divided aspects of a "whole" and set these up as separate entities (Phillips, 1971). A few years later I expanded the scope of these ideas to cover among other things systems theory and functionalism, and thus was born *Holistic Thought in Social Science* (1976), which was published in the UK and the USA, with an Italian translation in 1980 and later one in Chinese.

It was while I was working on this doctoral dissertation, during an advanced seminar I was attending in philosophy of science in 1966 or 1967, that another important milestone in my intellectual development was reached – for it was then that I read Karl Popper's *Conjectures and Refutations* (1965), relatively shortly after its publication. I had met Popper's philosophy of science briefly before, but this book had an enormous impact on me. The clarity and vigour with which a non-native speaker of English could write simply amazed me, as did the way in which he lucidly (and interestingly) dealt with many of the great problems of philosophy. Even the book's title struck me as masterful, capturing in three words the essence of his thought. I became an instant fan, and although over the years the problems have become more apparent to me, the attraction of his work remains. Popper reinforced in me the lessons about writing and thinking that I had learned from Barbara Falk – for he was explicit in stressing that clarity of expression is part-and-parcel with openness to criticism and "error-elimination", and hence is vital for intellectual progress. A decade or so later he wrote what is perhaps my favourite piece – a devastating critique of certain Continental philosophers who fostered in their students "a cult of un-understandability" and whose convoluted prose was (and is) often mistaken for deep scholarship, when in fact it was its abrogation – and he had the gall to publish it as the climactic chapter in a volume edited by sinners (Adorno et al., 1976)!

A few years after Popper had made this strong initial impression on me, I started to see close resemblances between much of his work and much of Dewey's, and I wrote a (fictional) dialogue between them that almost entirely consisted of their own words strung together in conversational mode. I submitted this piece first to the *British Journal of Philosophy of Science*, and Imre Lakatos (then the editor) wrote to me that he had much enjoyed it; subsequently however two reviewers, evidently

fervent Popperians, expressed their indignation that anyone would be so misguided as to suggest there were parallelisms between Popper and … that man! The essay appeared in *Educational Theory* (1975).

On several occasions over the years I was an "academic visitor" in Popper's department at the London School of Economics (the first was in 1972, a few years before my Popper-Dewey dialogue was published); and although Sir Karl had retired and was never a presence, the visits gave me opportunities to interact with Ernest Gellner, Imre Lakatos and John Watkins. The latter helped me to get my book on holism published in the UK, and the first two captivated me with their sparkling, clear prose, the touches of irreverence, and their flashes of sheer brilliance when writing on topics that were, simply, of extraordinary interest (witness Gellner's essay "Concepts and Society"). At times I felt almost overwhelmed by Imre, with his magnetic personality, his drive, and his penchant for histrionics (and of course his intellect). I have a vivid memory of him, at one of the first departmental seminars I attended, interjecting in his heavy Hungarian accent, in the midst of a visitor's presentation, "Oh, Wittgenstein! He only said two things: one of these was trivially true and the other was trivially false!" To my eternal shame I cannot now locate the sheet of paper on which I wrote down the specifics of Imre's insight!

Many years later Popper made a brief visit to Stanford (to which he had donated his personal papers – a goldmine), and I spent a memorable Saturday morning with him, during which he railed at great length against former friends and students whom, he felt, had betrayed him by unfairly criticising his work. For a man whose philosophy stressed the importance of giving and receiving strong criticism, he obviously felt it was more blessed to give than to receive! He must have discovered that I did not believe that he had solved the classic epistemological problem of induction, for on his second visit to campus I was dropped from the guest lists to the various social gatherings, despite the fact that I was the only person on campus who taught a course based largely on his work.

EARLY ACADEMIC CAREER

But again I am jumping the chronological gun, and need to return to my doctoral-student years: Shortly before I had completed my dissertation, two significant events occurred. The first was the formation, by a small group of faculty members and graduate students, of the Philosophy of Education Society of Australasia (PESA) – the latter term denoting that some interested individuals came from New Zealand. I became a foundation member, and a few years later was elected Secretary-Treasurer, a position I held until my move to Stanford. The second event was the opening up of a job opportunity – a rare occurrence – and after due process I was appointed Lecturer (assistant professor) in Education at Monash University, Melbourne's second and very young and vibrant university.

I could not have been luckier, for Monash had been founded at a time when there was a large pool of talented young scholars, in all fields, looking for academic

positions – and as a result my colleagues were stimulating and cooperative, and the social interaction between us closely resembled the famous Monty Python skit about the "Philosophy Department at the University of Woollomooloo" and its irreverent "philosophers song". I learned a great deal about empirical educational research, and about theories of learning and the like, from these colleagues; and my co-teaching of a required course in history of educational thought with John Cleverley (an historian) not only helped me go deeper into topics in the history of ideas, but also led to us collaborating on a book first published in Australia and later, with some extensive revisions, by Teachers College Press under a new but informative title *Visions of Childhood: Influential Models From Locke to Spock* (1987). It was during my seven years at Monash that I wrote some papers on systems theory in the social sciences (these are holistic, and reproduce in modern guise the nineteenth-century ideas about wholes that I had discussed in my doctoral dissertation); and the section from my dissertation that analysed the Hegelian basis of these holist/organicist ideas appeared in *Journal of the History of Ideas* (1970). I also wrote several papers critiquing Paul Hirst's influential theory concerning "structure of knowledge"; he had argued that forms of knowledge differed along four dimensions, and using this as his analytic net had arrived at the conclusion that there were seven basic forms of knowledge (which was heaven-sent news for curriculum planners, as the high school typically had seven periods each day!). I argued that the four characteristics Hirst had used were not logically discrete, and I also provided examples to show that some forms of knowledge contained branches within them that had quite different "Hirstian" structures. (Later I expanded this work and published it as Phillips, 1987, ch.11.)

By this time my research trajectory seemed to be pointing in a number of different directions, a phenomenon that caused me to reflect on my role as a philosopher working in a School of Education. I decided that I had three general audiences, each of which occasionally I should try to address: professional colleagues in philosophy of education; colleagues in departments of philosophy; and non-philosophical colleagues in education and practitioners (and I thought of this last category as being wider than teachers, but also as including researchers in education and the related social sciences, evaluators, curriculum designers, policy-makers, and perhaps parents). As a rule of thumb I am still guided by this.

Late in my time at Monash I also began working on an essay with a young psychologist colleague. This collaboration stemmed from a faculty-lounge conversation about cognitive and social development in children, during which we discovered a shared scepticism about hierarchical stage theories of development and their underlying logic. This paper eventually became the first that either of us had published in the Harvard Educational Review (Phillips and Kelly, 1975); and no doubt it paved the way for my later sceptical treatment of the concept of "cognitive structure" (Phillips, 1983), and my writings about the structural defects in Piaget's theories (Phillips, 1978), and about the techniques used to avoid refutation in Lawrence Kohlberg's stage theory of moral development (Phillips and Nicolayev, 1978, in the course of which my co-author and I made use of the philosophy of science

of Imre Lakatos, for it was an ideal tool for displaying the adjustments made to a research program over time as it confronted what appeared to be negative evidence). But completion of this first paper on what turned out to be an important intellectual path for me was delayed, for late in 1973 or early in 1974 a letter turned up out of the blue, with a Stanford return address, that inquired whether I would be interested in being considered as a candidate for a position on their faculty; the signatory was "Lee J. Cronbach". I immediately responded in the affirmative and put hierarchical theories on the back – burner, and thus began a series of sometimes harrowing events that led to my arrival, on Friday September 13, 1974, on the Stanford campus.

AN ACADEMIC IN AMERICA

Again I was extremely lucky. Shortly after I had been offered the position at Stanford but was still at Monash, Lee Cronbach sent me a draft of the paper he was going to deliver when he was honoured with the gold medal of the American Psychological Association (it later appeared in the *American Psychologist*, as the famous "Beyond the Two Disciplines of Scientific Psychology", 1975). On the whole the content was new to me, but after several readings I was certain that I had detected an important logical flaw in the argument, and following much soul-searching I summoned enough courage to convey this to the rather daunting author (my concern was that I might have been so ignorant with respect to the material that I was quite mistaken about the existence of this flaw). But I was right, and Cronbach was delighted with my feedback, so delighted in fact that he wrote to invite me to join a group he was forming – the Stanford Evaluation Consortium (SEC) – the mission of which was to rethink the nature (purpose and methodology) of educational and social program evaluation.

I arrived on campus in time to attend the second meeting of this group, and for several years I faithfully attended the two meetings a month, and gradually learned a great deal about evaluation and research design. The meetings were exciting, for Cronbach's reputation attracted social and behavioural scientists from around campus (usually there were twenty or more faculty at each meeting, and several amazing doctoral students), and often we had impressive visitors who presented papers or sought to get advice on an evaluation problem they were facing. After two or three years a group of eight of us, led by Cronbach, started meeting weekly to write a book based on what we were learning; this turned into a two-year commitment, but eventually the influential volume by Cronbach and Associates, *Toward Reform of Program Evaluation* (1980), was published. (The initial print-run of the volume sold out within a few days.) During this period the SEC spawned a training program, and upon his retirement Lee designated me as its director. I had moved from being a complete ignoramus to at least having a strong philosophical and methodological interest in the field; my thinking had been honed by countless intense interactions with Lee, who as an unrelentingly tough critic ran a very close second to Barbara Falk. After taking over the leadership of the training program

I occasionally published on program evaluation issues, and with my colleague Milbrey McLaughlin (formerly a RAND-based evaluator and social scientist) I edited a NSSE Yearbook that celebrated what we rather arbitrarily identified as the twenty-fifth anniversary of the birth of the modern field of program evaluation. (In this volume we invited the intellectual giants of the field, such as Ralph Tyler and Michael Scriven, to revisit the issues in one of their classic essays that had helped to shape thinking during the past quarter century; Milbrey and I provided summaries of the relevant classic works. See McLaughlin and Phillips, 1991.)

It is difficult to select other highlights of my intellectual life since arriving at Stanford, as the environment has been so rich and full of opportunities – almost everything has been a highlight! But I have been struck, on reflection, with how important chance events and opportunities (like the one involving Lee Cronbach) have been in what I hope has been my continuing development as a scholar, and how much I have learned from working with colleagues. Several things stand out as warranting brief comment. First, in the early 1980s – the period in which I still was thinking about cognitive and developmental psychology, and theories of learning – I wrote an essay highly critical of research on the "cognitive structure" of learners, and among those whom I lambasted were James Greeno and Richard Shavelson. Within a few years Greeno became a colleague at Stanford, and a few years later Rich Shavelson was appointed Dean! It is an understatement to say that I was impressed by the professional way in which they responded to criticism. After a year Rich invited me to become his Associate Dean, a role I filled for seven years; it was an appointment I regarded as flattering until, in the middle of my term, I realized it might possibly have been his way of obtaining revenge. Jim Greeno (who was a philosophically-able cognitive psychologist) started a weekly interdisciplinary seminar on cutting-edge issues in the learning sciences (the "symbolic systems seminar"), to which I was invited. Over the years of my attendance the readings and discussions prepared me for producing new editions of a small volume, aimed at undergraduates, *Perspectives on Learning* (1st. edition 1985, co-authored by Jonas Soltis of Teachers' College) – which now is in its fifth edition and has been translated into six languages.

Second, at the surprise invitation of the Swedish educational researcher Torsten Husen, I had contributed a long entry (sixteen thousand words) on the field of philosophy of education to the first edition of the mammoth Pergamon Press reference work, *International Encyclopedia of Education* (1985). This gave me an entrée to Pergamon's education and social science editorial staff who evidently had liked my piece, and who used it for several years in their instructional brochure as the sole example when commissioning authors for their other encyclopedias. Taking advantage of the opportunity, over the next few years I proposed several books based on various groupings of my published essays, the first of which surprised me by going through five printings (Phillips, 1987). The second – clearly aimed at protecting social scientists from philosophical "beasts" – came out in 1992, and eventually I updated it with a different publisher who did something that by then was impossible

for Pergamon, namely, make it available in a (relatively affordable) paperback edition. This book had the most beguiling title of anything I have published: *The Expanded Social Scientist's Bestiary* (2000); it is the book I am proudest of, and it has been well-received by my wife, children, and the dozen or so friends and students who have read it. There was also another unforeseen consequence of my having accepted Torsten Husen's invitation to write for his encyclopedia; he became a kind of distant mentor, and nominated me for membership in the International Academy of Education, an organization he had been central in founding.

Third, an event occurred in 1991 that gave me an opportunity to express the theatrical side of my nature – I became President of the U.S. *Philosophy of Education Society* during its fiftieth-anniversary year. I found the strain of preparing my presidential address to be almost intolerable – it is extremely daunting to know that on a certain date in the not-so-distant future one has to have prepared a presentation that was rather special! Relief came when the idea occurred to me to tackle the age-old question of the relevance (or otherwise) of philosophy to the field of education, but to tackle it in the form of a dialogue. Perhaps, I thought, a philosopher could die in his sleep – at no less an event than during a presidential address! – and would then be confronted by St. Peter at the Pearly Gates, who needed to be convinced that the philosopher had spent his life in such a way that he was worthy of admission to Heaven. My wife Valerie – who is almost as big a theatrical ham as I am – read the part of St. Peter (for after all, Heaven is an affirmative action employer). It certainly was not the most profound presidential address ever given at PES, but clearly it was the most novel.

Fourth, in the late 'nineties the American educational research community became concerned that the Federal Government was about to become draconian and would in future allocate educational research funding only to projects that were rigorously scientific, which was defined in terms of the use – and only the use – of randomised experimental designs, the so-called "gold standard" which of course excludes rigorous ethnographic or other qualitative work. The National Academies of Science had been brought into the fray, and its "working arm", the National Research Council, set up a panel to produce a report clarifying (and many hoped liberalizing) the nature of scientific research in education. I was invited to serve on this panel, and greatly enjoyed the experience of meetings and public hearings in Washington, and the sessions in which the panel members jointly worked on the report (NRC, 2002; parts of this report drew heavily from a monograph on postpositivism that I had authored with Nick Burbules – see Phillips and Burbules, 2000.). I did not enjoy the subsequent fallout, for the report (and its authors) were attacked from both left and right; I even had lively exchanges with friends who accused me of authoring things that were nowhere to be found in the report (which later they admitted never having read)! My longer-term response has been to write a number of essays making clear how bizarre the view of science is that underlies this funding policy; scientists do a great many things worthy of support other than conducting randomized experiments, as the work of Newton, Darwin, and William

Harvey nicely illustrate. I have argued that it is fruitful to view the work of scientists as involving the construction of cases that support or warrant their claims, and these cases contain a variety of types of evidence and argument forms. For rhetorical purposes I labelled the construction of good cases as the "platinum standard" (see for example Phillips, 2006).

Fifth, over the years I have profited a great deal from opportunities that arose in conjunction with sabbatical leave (which these days too often is regarded by university administrators as an expendable perk). In addition to the time spent at the London School of Economics (in Popper's former department, discussed earlier), I spent several months at the Centre for Research in Science and Mathematics Education at Curtin University in Western Australia, at the London Institute of Education, and at the School of Education in the University of Auckland, NZ; with the support of Stuart Hampshire (a noted British philosopher whom I came to know during the five years he spent at Stanford after retiring from Oxford) I was elected Christensen Visiting Fellow at St. Catherine's College, Oxford – a wonderful experience except for the day upon which I discovered that my Senior Common Room wine bill was not covered as part of the fellowship; and I spent 2001–2002 as a fellow at the Centre for Advanced Study in the Behavioural Sciences.

Finally, when I was giving some invited lectures in Australia on issues in philosophy of science and how these might be relevant to science educators, on one occasion my presentation was interrupted by a heckler from the audience who accused me of imposing my own usage of terminology upon everyone else – the word "gold" (which I had used in an example) could mean what anyone who used it wanted it to mean. Language was constructed by each user (which of course is partly right and partly wrong). This was my first and very unproductive interaction with a so-called "radical constructivist", and it prompted me to do a great deal of reading and reflecting on an ideology that, I discovered, had come to a position of dominance especially in the research and curriculum development communities in mathematics and science education. I wrote the first of several papers that have attempted to clarify and separate a number of different issues that are being run together under the label of "constructivism" (such as the construction of the public disciplines of knowledge, and on the other hand the personal cognitive construction of understanding that is involved in individual learning), and "*The Good, the Bad, and the Ugly"* appeared in *Educational Researcher* in 1995. It turned out to be my best-known work, now cited well over a thousand times. Maybe Clint Eastwood will play me in the film version that, I am confident, eventually will follow.

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FAVORITE WORKS

Books

Holistic Thought in Social Science (1976).
Visions of Childhood (1987), with J.F. Cleverley.
Philosophy, Science, and Social Inquiry (1987).
Perspectives on Learning (5th ed., 2009), with Jonas Soltis.
The Expanded Social Scientist's Bestiary (2000).
Postpositivism and Educational Research (2000), with Nicholas Burbules.

Essays and Articles

Hierarchical theories of development in education and psychology (1975), with Mavis E. Kelly.
Popper and pragmatism: A fantasy (1975).
Kohlbergian moral development: A progressing or degenerating research program? (1978). With Jennie Nicolayev. (See also ch.14 of *Philosophy, Science, and Social Inquiry*).
On describing a student's cognitive structure (1983). (See also ch.12 of *Philosophy, Science and Social Inquiry*).
Was William James telling the truth after all? (1984).
Philosophy of education (1985).
The good, the bad, and the ugly: The many faces of constructivism (1995).
Coming to grips with radical social constructivisms (1997).
John Dewey's *Child and the Curriculum*: A century later (1998).
Muddying the waters: The many purposes of educational inquiry (2006).

REFERENCES

Adorno, T. (Ed.). (1976). *The positivist dispute in German sociology*. New York, NY: Harper & Row.
Cleverley, J. F., & Phillips, D. C. (1987). *Visions of childhood: Influential models from locke to spock*. New York, NY: Teachers College Press.
Cronbach, L. J., & Associates. (1980). *Toward reform of program evaluation*. San Francisco, CA: Jossey-Bass.
McLaughlin, M., & Phillips, D. C. (Eds.). (1991). *Evaluation and education: At quarter century. 90th NSSE Yearbook*. Chicago, IL: University of Chicago Press.
National Research Council. (2002). *Scientific research in education*. Washington, DC: National Academies Press.
Phillips, D. C. (1966). The idea of evolution in educational thought. In E. L. French (Ed.), *Melbourne studies in education 1965*. Melbourne, Australia: Melbourne University Press.
Phillips, D. C. (1970). Organicism in the late nineteenth and early twentieth centuries. *Journal of the History of Ideas, 31*, 413–432.
Phillips, D. C. (1971). John Dewey and the organismic archetype. In R. J. W. Selleck (Ed.), *Melbourne studies in education.* Melbourne, Australia: Melbourne University Press.
Phillips, D. C. (1975). Popper and pragmatism: A fantasy. *Educational Theory, 25*(Winter), 83–91.
Phillips, D. C. (1976). *Holistic thought in social science*. Stanford: Stanford University Press & London: Macmillan.
Phillips, D. C. (1978). The Piagetian child and the scientist: Problems of assimilation and accommodation. *Educational Theory, 28*(Winter), 3–15.
Phillips, D. C. (1983). On describing a student's cognitive structure. *Educational Psychologist, 18*(2), 59–74.
Phillips, D. C. (1984). Was William James telling the truth after all? *The Monist, 67*, 419–434.

Phillips, D. C. (1985). Philosophy of education. In T. Husen & N. Postlethwaite (Eds.), *International encyclopedia of education.* Oxford: Pergamon Press.

Phillips, D. C. (1987). *Philosophy, science, and social inquiry*. Oxford: Pergamon Press.

Phillips, D. C. (1995). The good, the bad, and the ugly: The many faces of constructivism. *Educational Researcher, 24*(7), 5–12.

Phillips, D. C. (1997). Coming to grips with radical social constructivisms. *Science and Education, 6*(1–2), 85–104.

Phillips, D. C. (1998). John Dewey's *The child and the curriculum*: a century later. *Elementary School Journal, 98*(5), 403–414.

Phillips, D. C. (2000). *The expanded social scientist's bestiary*. Lanham, MD: Rowman & Littlefield.

Phillips, D. C. (2006). Muddying the waters: The many purposes of educational inquiry. In C. Conrad & R. Serlin (Eds.), *Sage handbook for research in education*. Thousand Oaks, CA: SAGE.

Phillips, D. C., & Burbules, N. (2000). *Postpositivism and educational research*. Lanham, MD: Rowman & Littlefield.

Phillips, D. C., & Kelly, M. E. (1975). Hierarchical theories of development in education and psychology. *Harvard Educational Review, 45*, 351–375.

Phillips, D. C., & Nicolayev, J. (1978). Kohlbergian moral development: A progressing or degenerating research program? *Educational Theory, 28,* 286–301.

Phillips, D. C., & Soltis, J. (1985). *Perspectives on learning* (1st ed). New York, NY: Teachers College Press.

GAVRIEL SALOMON

BIOGRAPHY OF A RESTLESS SCHOLAR

The above is the title used by a colleague who edited a Festschrift to celebrate my retirement. He added a brief and humorous biography of mine. It was an appropriate title for him to use, as moving around – geographically and academically, changing places (wives as well) and areas of research – characterizes my professional and personal development over the years.

EARLY LIFE

I was born in Tel-Aviv, then Palestine, under British mandate, a year before the outbreak of WWII. My early childhood – while quite happy – was accompanied by the war, by its shortages, by the fears it aroused, and mainly – by the (justified) worries for my mother's relatives, still living (?) in Europe. When the first refugees arrived at our shores I was not spared listening to the firsthand accounts of the horrors of the Holocaust. At that time, one became a serious and active participant in the ongoing dramatic events, despite being only five or six years of age. This also pertains to sharing my mother's mourning over her family's tragic fate.

Then came the fight against the British, and Israel's war of independence. It was as if WWII never ended; it just continued right into our homes and neighborhoods. At that time I was already 10 years old and very much an expert on weapons, front lines, tactical moves and lists of casualties. Just by way of an example The British did not allow us any radio station which they did not fully control. But we (the Hagana underground forces) had one nevertheless. When the "station" (a suitcase with an antenna) came to our neighborhood all of us kids knew about it and about the broadcaster and felt exceedingly grown-up and responsible by keeping the secret. We were kids, and yet very serious ones. But being since birth part of a society in war could not but leave long-lasting residues. War ignited my childish imagination but it also scared me quite a bit. All this surfaced when some 60 years later I established the Center for Research on Peace Education. Peace education became my field of expertise and my ideological conviction.

My early school years were not easy. I was a restless and mischievous child, not easily cooperating with the (then) rigid regimentation of an intellectually unchallenging school. When things became too much and I became a truant, I was moved to another school. That school was based on a progressive Dewey-like approach, with students' self-disciplining, much team-based inquiry, and much

M. de Ibarrola & D. C. Phillips (Eds.), Leaders in Educational Research, 143–159.

artistic activity. I finally flourished and became a model student. I learned a lot from the years at that (politically oriented) school. I am still trying today, some 60 years later, to implement that approach wherever I have the opportunity to do so or to write about it. (Today it is called "constructivist pedagogy"). It may not be the perfect approach that fits all, but it fit me well. When, some 15 years ago, I designed and studied the *Classroom of the Future* around actual life-like inquiry projects, I saw how well the approach meets many students' expectations and styles, and how much learning it can produce. Yet, it does not fit all of the students ("Professor, do we *have* to work in teams and do research *again*? Can't you just *teach* us?"), as if anything in education is one-size-fit-all. Hence emerged my skepticism about wholesale, quick or fashionable educational fixes, even if they are wired.

The years in high school were characterized by two parallel paths: Studying in school, and in life by way of the youth movement. The former was tolerated as an unexciting necessity whereas the latter became the center of my social and political life. Youth movements at that time (the 50s) in Israel were very ideological and Left-leaning. The ideal was to establish a kibbutz and become modern farmers. My parents insisted that I study and pass my matriculation exams (like the German *Abitur*), and I waged a losing war with them about that: Why did I need a matriculation certificate if all I wanted was to become a *kibbutznick*? This battle exemplified the rift between the world of the school and that of the youth movement. The two worlds were in constant conflict but despite of it, they resided quite well side by side. When today I encounter the claim that the Internet-generation lives in a world very different from the so-called fossilized world of the school (and thus, the latter needs to give way to the former) I am reminded of how well we negotiated the two worlds of our youth.

THE YOUTH MOVEMENT AND THE MILITARY

As an active member of the youth movement, I was chosen to become a young counselor of kids five years younger than I. After some basic training I started on the long journey of becoming an educator, a route I am travelling still today. I was then 16 years old, full of enthusiasm and desire to change the world through education. Working with the kids then meant inventing experiences, adventures, simulations of historical events to be enacted, scout-like activities and gentle ideological coaching. Unlike youth movements in some other countries, this was not straight indoctrination but rather a debating club, a collision of views and experiences. I loved it and learned from it – among other things, how important it is to be "going beyond the information given", as Bruner put it, and how fruitful the exchange of conflicting views can be.

At the same time, while attending high school I also attended an evening art academy, studying sculpturing. I was the youngest student there and greatly enjoyed the artistic activity. After graduating from high school and from the Academy, I did not touch clay or stone for 56 years. It is only recently, since my retirement five years ago, that I returned to sculpturing. It is like returning to bicycle riding after a long

pause. The sculptures I am doing now are evidence that I am an artist with a very promising past….

During my three year military service (1956–1958) – something most every youngster, male or female, undergoes in Israel – I was sent (as a soldier on leave) for a year to head a regional club of the youth movement. I now had the opportunity to exercise leadership, design and implement my ideas of what good out-of-school "pioneers'" education ought to be. I greatly enjoyed my responsibilities and freedom to initiate educational novelties, but this did not last for long; I returned to active duty, jumping off planes and crawling in the mud. I hated military service, yet little did I know that 14 years later I would return to (voluntary) active duty as a front-line psychologist (with the rank of major) during and immediately after the October War of 1973.

After those 3 years I finally could act upon the ideology on which I was brought up. Together with my peers I joined a kibbutz in the South. Did I feel that I was fulfilling my promise? No, not exactly. I was simply bored and felt that I could serve my young country and realize my potential doing other things. I left the kibbutz after two years and went to a new immigrants' town to become a school principal, the youngest (then) in the country. I had no training but my intuitions and enthusiasm seemed then sufficient to head a school in a new township with no electricity, no paved roads, and hardly anybody speaking Hebrew. So, I had to learn a modicum of polite Moroccan and a touch of Persian. That year in *Ma'alot* taught me two things: That education was my calling, and that I was totally ignorant in that field. Intuitions are simply not enough, and thus I turned to the Hebrew University to pursue my studies in education and psychology. (I was accepted right away as any new student coming from a new immigrants' place like *Ma'alot* was considered a breakthrough. The fact that I am initially from Tel Aviv and not a new immigrant from Morocco became clear a bit too late).

HIGHER EDUCATION

And so began my initiation into higher education. Of all my instructors and professors I was particularly inspired by two of them; even now, nearly 50 years later, I look upon them as my role models. They were young, daring, very knowledgeable in both European and American scholarship, and could provide a wide perspective on educational issues. Both were, as we called them, rebellious intellectuals – slaying sacred cows, provocative, offering new interpretations, and original. They were the kind of scholar I wanted to become. It seems that I have emulated a few characteristics of my role models (Lamm, 1972).

Graduating (Summa Cum Laude), the Hebrew University offered me a scholarship to go abroad and study for my PhD, return, and become a faculty member. This came as an absolute surprise. Now, equipped as I was with an MA I thought of entering the actual world of education – becoming a school principal or a governmental official,

so I could build a school modeled after my elementary school experiences. But to become an academic? Researcher? Faculty member? This never crossed my mind as a career. I did have my two role models, but who was I to follow in their footsteps?

But the offer had its appeal and soon I started wondering what exactly I wanted to study and specialize in. Education and psychology were my fields, but this did not specify any particular focus or specialty. I left it open. Will not subjective uncertainty become my specialty? Of all places, it was Stanford that accepted me and since it had a wide collection of fields, foci and specialties, I decided to go there. The person to accept me there was no other than Lee J. Cronbach. He was considered the Guru of educational psychology and educational measurement, and being accepted as his student and advisee was an honor I could not let pass.

Still, Stanford School of Education was no picnic for me. Coming from abroad with only high school English, and used to a rather relaxed pace of study was a poor preparation for the pressure cooker called Stanford. Reading a book, a whole book, in two days for Tuesday's class? I used to sit in the student lounge and allow myself a cup of coffee only every 20 pages. Self-monitoring it is called nowadays, but I regarded it as harsh self-disciplining with reinforcements and punishments. I also took the GRE, for I considered moving to the Communication Department (my minor). But I flunked it. Who on earth, outside the USA, can possibly know the analogy between the Supreme Court and baseball? So, I prepared myself for a second round, and passed the exam with flying colors. But at that time a radical change took place.

Playing volleyball (part of the reinforcement scheme), I hurt my ankle and was hospitalized. Suddenly, Cronbach appeared. Did he come to visit *me*? He came to my bedside to invite me to become his teaching assistant. This was a true turning point. From being (I thought) just an anonymous foreign student who was barely hanging on, I suddenly had become Cronbach's TA! The idea of becoming a university researcher and instructor gradually sank in. Quite immediately I started feeling at home, not considering anymore moving to another department or university. I started loving Stanford and educational research.

There was more to this turning of my career. Being Cronbach's TA meant being his apprentice and general assistant. That meant being exposed to a great mind and learning to examine events and issues the way he did. And not only his way. Belonging now to "the grownups", I started working also with Richard E. Snow (himself Cronbach's right hand, later to become my advisor and close friend; a classic work is Cronbach and Snow, 1977), and with Nate Maccoby in the Communication Department. I received much encouragement from these scholars and others, and I used the Stanford opportunity to widen my horizons as much as possible. I took courses in a range of topics – from social psychology to anthropology, from measurement to curriculum planning and from developmental psychology to educational philosophy. I am still proud of my wide and varied choices, as they served me well later on in my career.

EARLY RESEARCH

Stanford is a university that molds and shapes you to become a serious scholar (in both the theoretical and the empirical aspects of the term). You don't only acquire the necessary skills, and a great deal of knowledge – but also the disposition, the appetite for research, and the identity of a researcher. And you develop the desire to establish your own stall in the academic market place; to be original, innovative and interesting. During my second year at Stanford, I started carrying out research of my own. I wanted to combine the study of learning with the affordances of the visual media (these were the days of audiovisual hype). My first study was about the learning effects of self-viewing on videotape by students in the teacher training program. At that time, this was still relatively uncharted territory as the only few studies on self-viewing were conducted by the US army in courses for personnel chosen to serve overseas, or in clinical contexts. The study was published in a well-known educational psychology journal and, encouraged, I quickly turned to my second and third studies.

One of these studies was my PhD dissertation. How do you choose a topic? An exciting focus? Something innovative? I wanted to combine learning with particular cognitive aspects and, again, with the visual media. This was not supposed to be yet another AV study to show that you can teach swimming (or tennis, or debating, or teaching) with 8mm (or 16 or 32mm) film, or compare the effects of a colorful film with a black and white one. There were too many studies of those kinds and most of them had little if any scientific value.

I had pretentious intentions, and much uncertainty to accompany them. The state of uncertainty which I experienced is a perfect stimulus for deep soul-searching. Wasn't it a topic worth pursuing for my dissertation? And researching, I discovered that this very state of mind is something I wanted teachers to experience when they face a classroom full of kids. So, I read whatever I could find about subjective uncertainty. David Berlyne's books (e.g. his 1965) became my Bible. But Berlyne was not an educator and he did not study how to make one generate, and then make the best of, experienced uncertainly. So, here I had an exciting challenge: Develop a theory of how to arouse and how to generate uncertainty. And the visual media? I used them for both arousing uncertainty and training the generation of it. I had now a satisfactory plan for a dissertation study. Participants either viewed the rich paintings of Breughel and were required to list a pre-set number of details they noticed. Others were shown a scrambled short film and had to generate a pre-set number of hypothetical plot lines of the film. Results were as expected: Those who were detail-oriented showed greater ability in generating alternative explanations, and plot-generators showed greater facility in noticing details. Higher levels of uncertainty were attained. The study also showed that to understand the components of a psychological state, you might try to strengthen each of those components. A series of studies resulted from that initial work (Salomon and Sieber-Suppes, 1970) and I was underway on a professional career.

But there were troubling doubts. Reading *Flowers for Algenon* by David Rogers, where a scientist greatly improves the intelligence of a retarded youngster only to watch him relapse, made me contemplate what it was that I was doing. Dare I fiddle around with other people's minds? What if I am effective and they now come to generate more uncertainty? Do I have their permission? Moral questions like this are usually not part of graduate education…

I left Stanford exactly two years after arriving there, the only foreign student to do so. This was one act that I have regretted ever since. What on earth was the hurry? Why did I have to leave this intellectual heaven to pursue a career in other places when I could stay around and enjoy the affordances of Stanford? Silicon Valley was then in its infancy and young computer companies were trying to penetrate education. I had something to offer, but I did not stay around for that. I rushed to leave. Not a wise decision – a restless young scientist indeed.

I had been given three years to study for my PhD by the Hebrew University, meaning that I still had one year to spare. I was offered positions in a number of universities in the USA, but none for a single year. Only Indiana University was happy to have me for that period, and so I accepted their offer. It was there that I began my research into media symbol systems and their impact on young minds. The beginning had in fact been at Stanford during courses on film and film history where my interest was not so much on the contents of films as on the medium's evolving language. Rudolph Arheim's *Film as Art* and *Visual Thinking,* Marshall McLuhan's *Understanding Media* and *The Medium is the Message* greatly excited me. Now at Indiana University I had the opportunity and the time to connect the elements of the languages of film and cognition: Do we learn to *think in terms* of these languages much like we think with words, numbers and sounds? Do children who are heavily exposed to television think in these terms?

There was hardly any literature that dealt with such questions (Gigerenzer's *From Tools to Theories*, 1991, appeared a number of years later), so I had to start developing a psycho-semiotics of my own. Luckily enough, the semiotician Thomas Sebeok was on campus and Umberto Ecco could be reached by mail for consultation. Also, at the same time, David Olson of OISE, Canada, started to plan the 1972 NSSE yearbook he was to edit, entitled *Media and symbols: The forms of expression, communication, and education.* I was invited to contribute a chapter (which I considered a great honor. See Salomon, 1974), and thus met during editorial meetings such scholars as Jerome Bruner, Rudolph Arnheim, David Perkins, and Howard Gardner. Perkins and Gardner introduced me to Nelson Goodman's writings and to Project Zero which they had founded at Harvard. I gradually found my own niche in the academic world: Symbol systems as they relate to thinking and to learning.

All this was of no minor significance for me for at least two reasons. First, I had found my academic direction and could start on a series of planned studies. As the saying goes, Have gun, will travel…. Second, I now belonged to a rather impressive group of scholars with whom I could share my thoughts, ideas and plans. I travelled

to Project Zero at Harvard and became an aficionado of the philosopher Nelson Goodman's work (e.g., *Languages of Art: An Approach to a Theory of Symbols*, 1968). I found in Goodman something that resembled my two role models of earlier years: A new, fresh and daring perspective. I loved the very thought of *the languages* of art, not just its *contents*. Thinking differently, originally, even provocatively, was very much the direction I wished to take.

BACK TO ISRAEL

Returning home to the Hebrew University in Jerusalem, Israel, I quickly found myself immersed in teaching and in academic responsibilities. The first couple of years were difficult with all those academic and family responsibilities. Still, I managed to obtain a few small research grants, and launched a series of studies and experiments. The School of Education was still housed on a small and very modest campus with no offices for young instructors. Luckily enough, Louis Guttman had room in his Institute for Social Research and offered me a desk and computer facilities. This generous offer also allowed me to carry out a few survey studies and learn some of Guttman's ways of analyzing data. This came very handy later on when I came to formulate the distinction between *analytic* and *systemic* research in education. But the developing routine was suddenly interrupted when the 1973 October war broke out and I became (quite incidentally) a front-line organizational psychologist.

I did not have much, if any, prior training for this, but under fire you learn things very fast and, being the only psychologist around, by necessity I became a superb improviser. I faced unexpected problems, such as advising a new regimental commander how to gain a modicum of his men's trust when all he was able to do was talk to them over the radio; also, how do you teach commanders the value of sharing information and news with their dead-tired troops?

The half-year at the front line was not only traumatic but also instructive: I learned to appreciate the strength of the system in which people operate in their assigned roles, not just idiosyncratically. I worked individually with numerous commanders, trying to help them share information with their men – only to discover that the reluctance to do so is rooted in social norms and traditions. One needs to work with the system and its ethos not (only) with individual proclivities and dispositions.

Returning after half a year on the front line, I found university life sterile and meaningless. Indeed, after having to deal with issues of life and death, morale, bereavement, trust and fear, teaching standard deviations and the impact of media looked very much detached from "real life". Salvation came in the form of a call from the Chief of Staff asking me if I'd be willing to serve for a year as a divisional psychologist in the Sinai desert. I was the first in the Israeli army to serve in that position. I received the rank of major, took a year's leave and returned to the role of social and organizational psychologist. Again, I had to improvise and invent, something I truly like and am apparently quite good at.

Back at the university after this year of absence, my focus of interest changed dramatically. I came to appreciate the importance of the *Gestalt* of social and organizational pressures and forces that impact on one's learning, cognitions, feelings and behavior. I became a fan of Kurt Lewin, Roger Barker, Uri Bronfenbrenner, Seymour Sarason, Carl Weick (1969), and similar "situational" and "interactional" psychologists. Becoming the head of the graduate educational psychology program, I had the opportunity to shift the program's focus of studies from the search for, and treatment of, individual learning difficulties and behavioral problems, to the contexts that interacted with them. This was a major shift as it marginalized such cherished tools as the Rorschach and IQ tests, a shift not welcomed by the educational psychological establishment. But the shift prevailed and is now the norm.

However, I also continued with my research on symbol systems, carrying out a number of studies, both experimental and correlational, that showed – as far as such studies can validly show – that we can and do learn to think in terms of the visual media. But still being influenced by the recently-acquired more holistic perspective, I started research on the fact that TV, being a relatively easy form of media to process while print is more difficult, results in more intelligent children forgoing exerting mental effort in processing TV content while less intelligent ones find it more challenging. Having now accumulated a number of studies, I became convinced by a senior colleague that it was time for me to summarize all this in a book. But to do so, I needed to get away from the daily teaching and administrative responsibilities. I needed a sabbatical, and soon this became possible.

SABBATICALS

I spent a two-year sabbatical at Stanford where, among other activities, I wrote my first book: *Interaction of media, cognition and learning* (1979). These were still the days when a book was written by hand with a typist at your side. A Spencer grant allowed me that luxury. When the book was published it was exceedingly well received, possibly because it approached the issues of media and learning from a rather new point of view – the "languages" of the visual media – instead of their common instructional or violent contents. Also, not only was it the best book around, it was the only one of this ilk. Nine years later the book was declared a Citation Classic by *Current Contents*.

During that sabbatical, I also re-analyzed school governance data which revealed, again, the forces of the context, the collective silent agreements, and the interactions between individuals and these forces. The concept *interaction* intrigued me increasingly more – beginning with Cronbach's work on Aptitude-Treatment-Interaction, and all through to the ideas of reciprocal influences. Becoming exposed to the ideas of the Mental Research Institute (MRI) in Palo Alto (Gregory Bateson, Paul Watzlawick), I came to define communication as a matter of attribution of a communicational intent (if I wink my eye, do you think that I intend to tell you something or is it that you think I have a tick?) with the consequence that meanings

greatly depend on the nature of the interaction between communication partners. The book (*Communication and education: Social and psychological interactions*, Sage, 1982) was not well received. It was critically reviewed in *Psych Review* with the title of "A knack for the provocative". Provocative it was; perhaps a bit ahead of its time?

Back at home, the study of symbol systems began to bore me. Hurray academia! It allows you to shift foci and nobody can tell you if you are right or wrong. You are on your own! But, what now? For a while I wandered between different potential areas of interest and discovered that what interested me now were the issues of attribution of intent and of mindfulness vs. mindlessness. I carried out two studies about attribution only to discover that I was trying to enter a rather crowded field with little room for me. Did I not want to develop my own little unique corner? The same applied to the study of mindfulness where Ellen Langer and her colleagues at Harvard had already cut deep and wide paths.

But then, during a sabbatical at Project Zero at Harvard, two relatively novel (for me) areas started surfacing. One area was the employment of computing for teaching and learning, an area that just then began to develop. My possible contribution was the transfer of my knowledge and experience with previous (endless and quite futile) studies on media and learning. It turned out that with every new medium or technology, the same old questions are asked without being informed by past research and theorizing. That was the case with educational radio, teaching machines, filmstrips, film, television and now – computers. Howard Gardner and I published a paper that tried to inform the new generation of educational computing researchers about lessons that can be learned from the past:about "how not to repeat naïve errors and follow predicable blind and futile alleys" (Salomon and Gardner, 1986).

Relatedly, the second area of interest was transfer of learning. The interest was triggered by the studies about the effects of children's Logo programming. Did it indeed cultivate "powerful ideas", as claimed by Seymour Papert (1980), the guru of the field? Does it teach planning? Does anything transfer from the programming activity to any other activity? Research yielded negative answers. One wondered why, after all, the ideas expressed in Papert's *Mindstorms* were so widespread? David Perkins (the partner of Gardner in heading Project Zero) and I, tried to solve the puzzle. We entertained the possibility that there is more than one road to transfer knowledge and skill and that the Logo programming activity takes neither. The same appears to apply to the many studies that failed to show the existence of transfer. Thus a new theory of transfer emerged: "Rocky roads to transfer: Rethinking mechanisms of a neglected phenomenon" (1989). Basically, the theory postulates that transfer can take place via the "low road", as we called it: Practice of A till automaticity is reached (e.g., driving) becomes applied to B by virtue of perceived similarity of elements. The alternative is the "high road" whereby a principle is *mindfully* abstracted from A (e.g., get hold of the center in chess) and is then applied to entirely different instances (e.g., a political campaign). We felt good as it appeared that we had somehow salvaged an educationally important field from its

inconsistent findings and neglect. A number of papers were published on this topic and its educational implications.

THE TEL-AVIV YEARS

Transfer had yet another aspect for me: I transferred from the Hebrew University to the Tel-Aviv University. I felt a bit bored at Hebrew U. and was challenged by the move. The issue of transfer from programming, the popular (and unproven) way of introducing the world of computing to children and teachers (who came to hate it), was another challenge for me. Now, equipped with Perkins' and my theory of transfer, the challenge was: Can we put programming to a valid test? A doctoral student of mine carried out an important study: Do expert programmers and expert medical diagnosticians apply anything from their respective professional life to the solution of important daily problems? The answer was that they do not. Example: A top programmer considered buying a summer house, not a small thing in Israel. How did she decide whether to do this? Her answer was simple: She asked a cousin who was known to be the family's "meivin" on such issues… A novice would not have done it any differently.

Still, computing in education was the exciting fashion (fad?) and much research was needed to determine both when and where its use is effective, with whom, and for the attainment of which learning outcomes. I dug into this topic, being both excited and skeptical. I was excited for the many intriguing questions involved, and skeptical because the experience of the years of TV-research carried out all over the world, taught me that no technology, advanced as it is, is an educational panacea. I carried out a series of studies – both experimental and correlational – reaching the conclusion that indeed it is not the technology that matters but the kinds of pedagogies within a social context (and hence mental operations) that it affords. Computing, in and of itself, was a marginal matter. In the eighties and early nineties this was still considered a bold and unorthodox conclusion that flew in the face of computing advocates and devotees.

But pedagogies, afforded by computing or by other means, do not pop up all on their own. They belong to particular contexts of activities, contents, relations and personalities – in other words, to learning environments. So, I moved again, from the study of computing to the design and study of whole novel learning environments. At that time constructivism (the pedagogy) became something to seriously consider and it fit exceedingly well with my emerging ideas about computing-afforded learning environments. Other pieces of the puzzle started to fall into place: It is not the single activity or variable that matter, but the whole *Gestalt* within which they take place (Salomon, 1996).

While on a retreat arranged by the US Social Science Council on computing and society, yet another piece of the composite fell into place: I learned about the idea of distributed cognitions. Discussions with Roy Pea while strolling on the Tortola beach deepened my understanding and appreciation of this cognitive and social

phenomenon, leading a bit later to the edited book *Distributed cognition* (Cambridge, 1993). Another piece that fit into the larger picture was my growing dissatisfaction with the common, usually linear and reductionist kind of educational psychological research (I had my own share in it as did others). I started looking at learning processes, classrooms and teaching as *composites* rather than as simple combinations of independent factors affecting the process one by one. Metaphorically speaking, I came to distinguish between the study of the flute and that of the orchestra. Processes of learning were more like the latter, and while the study of each factor is important for the understanding of how it contributes to learning on its own, the story that this yields is quite limited: No factor operates on its own. Hence the distinction between *analytic* and *systemic* research (Salomon, 1991). The former is appropriate for hypothesis testing and the latter affords the study of composites where each factor affects and is affected by other factors often constituting reciprocal relations. The much earlier work with Louis Guttman suddenly proved useful: Guttman's Small Scale Analysis (SSA), whereby you examine the spatial relations among a system's components, now came to be very handy.

Three years after I moved to the Tel-Aviv University I took a leave and went to the University of Arizona, ostensibly for one year. The reason was family-related, and for that reason the single year stretched to become five years. I badly wanted to return home; being an immigrant did not suit me, and I felt very much a fish out of water. Still, the five years in Tucson, AZ, were productive: I developed the distinction between analytic and systemic research, dug more deeply into the more theoretical questions of computing in education and – together with a local school district – developed a new model of learning environments. One study had American and Israeli high school students jointly explore, via e-mail, the contribution of technology to life in the desert. The project exposed the difficulties of carrying out such an overseas project and its benefits. But learning became exciting!

HAIFA, CASBAS, AND PEACE

After those five years I finally returned home to the Haifa University where I became the dean of the Faculty of Education. I had to learn budgeting, hiring and firing, the intricacies of establishing new programs and in general – how to be a leader of scholarship and a manager of a large organization. The five years I served as dean were both very productive (as dean) and quite unproductive (as a researcher). I justified focusing more on serving as dean than on research by believing that this is a way to repay the academic system for what it had allowed me to do as researcher. Still, I managed to design a new learning environment in a number of schools (the *Classroom of the Future*) and study it. Successful as this was, I quickly learned the difference between small scale implementation led by the designer of the innovation, and its scaled-up implementation in a whole school system. System-wide changes are quite dissimilar from school-wide ones, facing the designer and researcher with challenges one is unprepared for (Salomon, 1996). I faced this challenge of

up-scaling again a few years later while studying peace education in a region of intractable conflict and ethnic tension.

I was lucky to be invited to the Center for Advanced Study in the Behavioral Sciences (CASBS) at Stanford right upon completing my tour of duty as dean. This came at a fortunate time as I badly needed to rest and retool. And rest I could, although – as it turns out – after five years of hectic deaning – resting is a demanding and tiring challenge. No phone calls, no appointments, no crises, no pressing deadlines. So, what instead?

Shortly before I left Israel for the year at CASBS I was invited to meet with the president of my university, and was told that some money has been received dedicated to the improvement of Jewish-Arab relations in Israel. Would I want to make use of it? The opportunity of combining my research skills and my public and political leanings was quite appealing. But this meant a total shift of focus, from mainly cognitive to social psychology, coming to master a totally new field of activity and scholarship. Was I ready for that? I was, but I first had to "clean my system" of previous interests.

CASBS is the ultimate Garden of Eden, with every book you need being brought to you, and any scholar of the Center's fellows being available for conversation. You have all the time in the world, and if you really need tranquility and serenity, the deer surrounding the place are available as well.

So, to "clean my system" I needed to reach closure in the field of computing and education. I had to update myself in that field but found the process lacking a focus. You can meander around reading a bit here and a bit there rather aimlessly. I decided that a better route to take is to write a book about the role of computing in education and update myself while writing; it was like building the boat while sailing it. This infused me with energy and excitement. I could finally say what I really thought of the field. The book that resulted became a "must read" in Israeli colleges (Salomon, 2001); and writing it gave me the desired feeling of closure. Now I could turn to the new challenge of research on peace education.

The field of peace education around the world was then (and to an extent still is) an amalgam of curricula, conceptions, goals and good intentions that have hardly a common base or common theoretical grounding: In scope it ranged from nuclear disarmament education to non-violence education, and from conflict resolution to the promotion of empathy. Moreover, the very definition of "peace education" varied widely from regions of social tranquility to regions of strife and conflict on ethnic, religious, historical, territorial and material grounds. This state of the art welcomed me; I felt like I was entering a relatively muddled and poorly defined territory with much to contribute to it. While still at CASBS I convened a bi-weekly meeting of some fellows there to try to put handles on the field, particularly with respect to regions of intractable conflict (coming from Israel led to this bias). The seven participants were outstanding scholars from around the world coming from a variety of disciplines. I could not have thought of a better and more instructive forum.

One of the concepts discussed in this forum, a concept that became a cornerstone of my approach to peace education, was *collective narrative*. It fit well into the socio-political and educational-psychological perspectives I came to entertain, shedding (for me) new light on the whole complex and seemingly intractable conflict. Intractable conflicts stand on both the "tangible" leg of conflicting interests about resources, control, dominance, etc., and on the psychological leg of hatred, fear, animosity, frustration and such. Both legs feed each other and justify each other thus creating a dynamic system that prolongs the conflict. Collective narratives are the central bone of the psychological leg which helps to provide both understanding of ethno-political conflict and a target for educational intervention. Eventually I went home through Europe, meeting relevant scholars in Northern Ireland, Norway, Spain and the Basque Region. I now had a new and exciting research agenda ahead of me.

Together with a colleague – Prof. Baruch Nevo – who also finished his deaning tour of duty, we established the *Center for Research on Peace Education* (CERPE) with a strong sense of mission. There are hardly any such centers in the world that emphasize *research* on peace education in a region of intractable conflict. Although the focus is peace education, the basis is still to a large extent social psychological and to a lesser extent political psychology. The first issue on our agenda was clarification of a number of basic concepts such as peace education, conflict resolution, empathy, collective narrative and reconciliation. Toward this end we contacted a number of well-known scholars from around the world, from Northern Ireland to Rwanda and from the USA to the Palestinian Authority, and invited them for a three-day workshop at the Haifa University to discuss the meanings of these and similar concepts. This was a bold move as we had hardly any money to support such an international meeting (we did have a small grant from the Spencer Foundation). But then, as the fairy tales go, the goddess of fortune showed up in the form of a local family who had the means and the will to support our endeavor.

The meeting culminated in some clarity of concepts and ideas, leading to an edited volume that summarized all that (Salomon and Nevo, 2002). It turned out that the book was a welcome response to pressing needs of the field, offering basic distinctions and presenting effective peace education principles. It was well received by the wider society of peace educators, scholars and researchers.

The book was the beginning of relatively long series of studies (mainly PhD dissertations) with Israeli and Palestinian youth participating in dialogue workshops and seminars. These studies examined a variety of peace education processes and outcomes such as whether and how friendship with an adversary generalizes following a joint workshop, whether and how jointly planning and producing a film about the opposing narratives affect minds and hearts, or whether jointly training and playing soccer produces a *social ripple effect* positively affecting the players and their relatives.

While findings were often positive, we found that although many of the contact conditions were met, such effects turned out to be short-lived. Do they simply vanish under the pressures of adverse socio-political pressures? Again, it is the whole social

system, with its conflict-related ethos in the prevailing collective narrative (e.g., "we are the victims; they are the perpetrators"), that can easily erode the attained changes of attitude, reduced stereotypes and prejudices, increased willingness for contact. However, the eroded effects do not totally disappear. Reviving the old idea of *forced compliance* through role playing the other side's position restores the allegedly eroded changes and maintains them. So do peer teaching of the lessons learned in bi-national dialogue meetings, as well as reflection on what took place there. Still, the dominant collective narrative continues to reign, and the positive effects gradually disappear. We also discovered the importance of strong negative feelings (they strengthen entrenchment) and the role of having common and *subjectively important* goals for any joint activity (Salomon, 2006, 2011). We also found that peace education can change mainly peripheral attitudes and beliefs but not strongly held convictions and thus whatever can be changed via educational intervention can as easily be reversed by external forces – parents, the school curriculum, politicians, the media.

A number of papers were published, as well as a *Handbook on peace education* (Salomon and Cairns, 2009). Publications aside, the research outcomes did not make me particularly fond of peace education dialogues or short-term joint activities among adversarial youth. It became clear to me that in contexts of intractable conflict one needs more than effective programs for youngsters. For one thing, youngsters have no influence on any political process and it is questionable whether the attained effects at age 17 endure for another ten years. For another, if the conflict-related collective narrative that concerns a group's identity, history, memories and beliefs is indeed as powerful as my theory has it, then affecting the minds and hearts of a small handful of youngsters is quite useless. One does not sweeten the ocean by adding a few teaspoons of sugar. It follows that political and educational-psychological processes have to work alongside each other: Top-down political solutions on the one hand, and bottom-up educational processes of psychological changes, on the other. Hence, educational-psychological perspectives have to join forces with political ones.

After some 14 years of researching peace education, am I disappointed with what seems to have surfaced? To an extent – yes, I am. Given the gravity of the consequences of conflicts as they are felt in Israel/Palestine, Sri Lanka, Bosnia, Congo and even in Europe with the tensions associated with Moslem immigrants, should not well thought-out peace education programs offer some relief? While they should, they cannot be the only route to mutual understanding, acceptance of responsibility and legitimization of the other's collective narrative. It may well be that peace education in combination with political solutions is the answer. Of its own, neither the political solution nor changing hearts and minds is likely to reduce the tensions and animosity between conflicting collectives.

Since my retirement in 2007 I have been exceedingly busy. I continue directing PhD students doing research on peace education, but I am also engaged in public activity: I am the Jewish co-chair of a Jewish-Arab NGO designed to promote greater equality between the Jewish majority and the Arab minority, and I am the chair of the board of an Arab teacher training college. I feel that now, finally, I complement

my academic work with some serious public service. This service is ideologically-colored and is not always in line with the prevailing political atmosphere. But I feel good about it; I am applying what I truly believe in.

REFLECTION

Reading over this document, I wonder what lessons have I learned from more than 40 years in academia. I had a good time and enjoyed this life, but what is the residue of all this? The world undergoes great changes and only a handful of scholarly works published now will be noticed a few years after their publication. Will mine? I strongly doubt it.

And yet, scholarship of the past serves as a foundation for current scholarship. Would research on computing in education be the same today in the absence of past research on TV and learning? Would the future practice of peace education be the same without the lessons (sad as they may be) of current research? Areas of research such as the role of symbol systems in communication, cognition and transfer of learning, or peace education, does not fade away; these fields are likely to inform more and better scholarship and other, related fields. Or so I console myself while looking back on my professional career.

But it is not just the particular theories, methodologies and findings that may (or may not) influence future scholarship. There are at least two lessons on a higher level that I have learned. One lesson concerns the importance of educational research in shaping our beliefs, aspirations and practices. As Cronbach wrote in 1966, it is not the single finding that is so important but the new concepts and distinctions we have learned to make that matter. Second, the other lesson pertains to the importance of entertaining wide intellectual perspectives. I was lucky to be exposed to a variety of disciplines, perspectives, approaches and theories, allowing me to wander, combine, shift and bridge disciplines, areas and foci. Restless? Yes, indeed, but with some disciplinary grounding. So, if the question arises whether graduate education should encompass a wide array of areas and fields, the answer is a strong yes; it should!

FAVORITE WORKS

Books

Interaction of media, cognition and learning. (1979; 1994).
Distributed cognitions. (1993).
Peace education: The concept, principles, and practices around the world. (2002). With Nevo.

Book Chapters

What is learned and how is it taught? The interaction of media, message, task, and learner. (1974).
Introducing AIME: An assessment of children's mental involvement with television. (1981).
Effects *with* and *of* computers and the study of computer based learning environments. (1991).

Individual and social aspects of learning. (1998). With Perkins.
Do technologies make us smarter? Intellectual amplification *with*, *of* and *through* technology. (2005). With Perkins.
Israeli-Jewish Narratives of the Israeli-Palestinian Conflict: Evolvement, Contents, Functions and Consequences. (2006). With Bar-Tal.

Journal Articles

Learning to generate subjective uncertainty. (1072). With Sieber-Suppes.
Internalization of filmic schematic operations in interaction with learners' aptitudes. (1974).
The computer as educator: Lessons from television research. (1986). With Gardner.
Artificial intelligence in reverse: Computer tools that turn cognitive. (1988).
Rocky roads to transfer: Rethinking mechanisms of a neglected phenomenon. (1989). With Perkins.
Partners in cognition: Extending human intelligence with intelligent technologies. (1991). With Globerson and Perkins.
Transcending the qualitative/quantitative debate: The analytic and systemic approaches to educational research. (1991).
A narrative-based view of coexistence education. (2004).
Does peace education *really* make a difference? (2006).
Four major challenges facing peace education. (2011).

REFERENCES

Bar-Tal, D., & Salomon, G. (2006). Israeli-Jewish narratives of the Israeli-Palestinian conflict: Evolvement, contents, functions and consequences. In R. I. Rotberg (Ed.), *Israeli and Palestinian narratives of conflict: History's Double Helix* (pp. 19–46). Bloonington, Indiana: Indiana University Press.

Berlyne, D. E. (1965). *Structure and direction in thinking*. New York, NY: Wiley.

Cronbach, L. J. (1966). *The role of the university in improving education* (pp. 539–545). Bloonington, Indiana: Phi Delta Kappan.

Cronbach, L., & Snow, R. (1977). *Aptitudes and instructional methods: A handbook for research on interactions*. New York, NY: Irvington.

Gigerenzer, G. (1991). From tools to theories: A heuristic of discovery in cognitive psychology. *Psychological Review, 98*, 254–267.

Lamm, Z. (1972). *Conflicting theories of instruction*. Jerusalem: The Hebrew University.

Papert, S. (1980). *Mindstorms: Children, computers and powerful ideas*. New York, NY: Basic Books.

Salomon, G. (1974). What is learned and how is it taught? The interaction of media, message, task, and learner. In D. Olson (Ed.), *Media and symbols: The forms of expression, communication, and education* (pp. 383–406). Chicago, IL: The NSSE Yearbook. (Translated into Spanish and published in *Technologica educativa*, 1976, *2*, 145–165).

Salomon, G. (1974). Internalization of filmic schematic operations in interaction with learners' aptitudes. *Journal of Educational Psychology, 66*, 499–511.

Salomon, G. (1979). *Interaction of media, cognition and learning.* San Francisco, CA: Jossey Bass.

Salomon, G. (1981). *Communication and education: Social and psychological interactions*. Thousand Oaks, CA: Sage.

Salomon, G. (1981). Introducing AIME: An assessment of children's mental involvement with television. In H. Gardner & H. Kelly (Eds.), *Children and the world of television* (pp. 89–102). A quarterly in the series new directions for child development. San Francisco, CA: Jossey-Bass.

Salomon, G. (1988). Artificial intelligence in reverse: Computer tools that turn cognitive. *Journal of Educational Computing Research, 4*, 123–139.

Salomon, G. (1991). Effects with and of computers and the study of computer based learning environments. In E. De Corte, M. Linn, H. Mandl, & L. Verschaffel (Eds.), *Computer-based learning environments and problem solving*. Springer-Verlag.

Salomon, G. (1991). Transcending the qualitative/quantitative debate: The analytic and systemic approaches to educational research. *Educational Researcher, 20*(6), 10–18.
Salomon, G. (1993). *Distributed cognitions*. New York, NY: Cambridge University Press.
Salomon, G. (1996). Studying the computer vs. the whole learning environment: Relating analytic and systemic paradigms. In S. Strauss (Ed.), *Development and learning environments*. New York, NY: Ablex.
Salomon, G. (1996). Studying novel learning environments as patterns of change. In S. Vosiniadou, E. De Corte, R. Glaser, & H. Mandl (Eds.), *International perspectives.*
Salomon, G. (2001). *Technology and education in the age of information*. Zmora-Bitan (Hebrew).
Salomon, G. (2004). A narrative-based view of coexistence education. *Journal of Social Issues, 60*, 273–288.
Salomon, G. (2006). Does peace education *really* make a difference? *Peace and Conflict: Journal of Peace Psychology, 12*(1), 37–48.
Salomon, G. (2011). Four major challenges facing peace education. *Peace and Conflict: Journal of Peace Psychology, 17*, 46–59.
Salomon, G. (2011). Four major challenges facing peace education. *Peace and Conflict: Journal of Peace Psychology, 17*, 46–59.
Salomon, G., & Cairns, E. (Eds.). (2009). *Handbook of peace education*. New York, NY: Psychological Press.
Salomon, G., & Nevo, B. (Eds.). (2002). *Peace education: The concept, principles, and practices around the world*. Mahwah, NJ: LEA.
Salomon, G., Perkins, D. N., & Globerson, T. (1991). Partners in cognition: Extending human intelligence with intelligent technologies. *Educational Researcher, 20*, 2–9.
Salomon, G., & Gardner, H. (1986). The computer as educator: Lessons from television research. *Educational Researcher, 15*, 13–19.
Salomon, G., & Perkins, D. N. (1989). Rocky roads to transfer: Rethinking mechanisms of a neglected phenomenon. *Educational Psychologist, 24*, 113–142.
Salomon, G., & Perkins, D. N. (1998). Individual and social aspects of learning. *Review of Research in Education, 23*, 1–24, (Special issue editors: P.D. Pearson & A. Iran-Nejad).
Salomon, G., & Perkins, D. N. (2005). Do technologies make us smarter? Intellectual amplification with, of and through technology. In D. D. Preiss & R. Sternberg (Eds.), *Intelligence and technology* (pp. 71–86). Mahwah, NJ: LEA.
Salomon, G., & Sieber-Suppes, J. (1970). Relevant subjective response uncertainty as a function of stimulus-task interaction. *American Educational Research Journal, 7*, 337–349.
Weick, K. (1969). *Social psychology of organizing*. New York, NY: Mc-Graw Hill.

WILLIAM H. SCHUBERT

PLAY: A BASIS FOR BECOMING AN EDUCATIONAL RESEARCHER

As I pondered how, why, where, and when I have become an educational researcher, my somersaulting mind stopped time-after-time on play – and then rolled on. Play for children is their most serious work. Early childhood educators from Friedrich Froebel and Maria Montessori to Erik Erikson and Fred (Mister) Rogers have shown this with great verve.

Having retired a few years ago, I now have opportunity to reflect on where I have been, and memories of my imaginative play often come to the fore. So I want to explore how play shaped my life as a researcher. It is important to reiterate the phrase *shaped my* life, because I am convinced that being a researcher is not just a job or even a vocation; instead, it is an inseparable dimension of life. For me the quests of research – I prefer the term *scholarship* – are inseparably integrated with my quest to become a person in a flowing ecological world.

I was born into a rural Midwestern United States milieu when World War II was a year from concluding. Toys were scarce and expensive. I had a Teddy Bear for which my mother sewed three different covers in four years, and a tin baking powder can with a thread spool trapped inside to make a rattle. Surely I wondered what made the rattling noise inside. Wonder, of course, is a source of the most genuine research, and Alfred North Whitehead (1938) brilliantly observed that "Philosophy begins in wonder. And in the end, when philosophic thought has done its best, the wonder remains" (p. 168).

The wonder was kindled and enflamed for me by imaginative play. Sometimes toys were a starting point, but not the end, a notion that became one of my most worthwhile curriculum observations – that the journey trumps the destination, for the journey is spirited by imagination. Imagination holds power to root out *inert ideas* which Whitehead (1927) saw as anathema to the aims of education. As early as I can remember, I began to pursue what John Dewey (1916) said was the definition of education: "It is that reconstruction or reorganization of experience which adds to the meaning of experience, and which increases ability to direct the course of subsequent experience" (p. 76). Long before I knew of these philosophers, their questions or quotations, something of their spirit must have been within me. I already had embarked on a journey of creating my life, seeking meaning, pursuing wonder, and discarding inert ideas. As an educator my research and teaching have often become united to encourage the search for and creation of new pathways for

M. de Ibarrola & D. C. Phillips (Eds.), Leaders in Educational Research, 161–176.

teachers and learners (in and out of schools) to pursue together. At its best, this is a playful endeavor – play with persons, stories, things, and ideas.

My parents (Walter Schubert and Madeline Grube Schubert) were rural educators in northeastern Indiana and northwest Ohio. I was born in Indiana, near my maternal grandparents' farm in Butler during the summer of 1944, and my mother's mother and aunt (also teachers) helped teach Mom to raise me for a few weeks, until she returned to Pemberville, Ohio, where my Dad was school superintendent and coach. These towns consisted of less than two thousand persons. My teachers were my family members – in and out of school. Even though they were highly regarded school teachers, much of their best teaching for me occurred outside the institutional constraints and expectations, in an ambience of play.

When I was about four years old, we moved from Pemberville to Butler, where Mother had grown up. I was fortunate that she stayed home from her teaching career while I was of pre-school age. Throughout her teaching career Mom was awarded accolades by students and colleagues; moreover, she was my high school teacher of algebra, United States History, and U. S. Government. However, it was in her everyday life with me that I saw her teaching in full bloom, unencumbered by district and state requirements to cover and disseminate knowledge – often inert – as commodities to be acquired and stored. Mother and I cut out paper dolls and drove them in shoebox cars as they explored new vistas – and even went to college – in the nooks and crannies of our living room, in and out of corners, through undulations of floors, chairs, sofas, stools, and tables. We cut out pictures of animals, pasted them on cardboard, and I had a zoo in the corner of the dining room. When Mom cleaned house, the piles of throw rugs were mountains to climb. We ate lunch at the kitchen table which was a dining room on the Queen Mary as we sailed across the Atlantic, and we conversed with fellow travelers, Johnny and Mary. As Mom did laundry in the basement I tried to help and mostly swung on a swing that my Dad had attached to the beams near the wringer wash machine. I pretended to pilot a plane to England to visit the Queen, i.e., Mom, who I interviewed.

When I was eight our fictionalized travels became real. The farm was vacant due to my grandfather's retirement. So, my Mom, Dad, and I lived there for the next decade. Sans the daily work of a family farm, summer vacation from school embraced more freedom and we decided to see North America by car for three or four weeks at the beginning of each summer. So my curriculum of heretofore fictionalized travel took on a practical character when the six of us (Dad, Mom, Grandpa, Grandma, Great Aunt Pearl, and I) piled into the car to see new parts of North America. I began to playfully gather travel books and maps each spring and lobbied for places to visit. That was likely my initiation to curriculum development and planning! Participating in decisions about the why and where of our travels was an apprenticeship in curriculum theorizing. In a youthful way I was already doing the kinds of research I have done throughout my career as a curriculum scholar. I implicitly asked: What is worthwhile (to do on vacation travels)? Why? Where should it be done? How? When?

I feel sure that such reflection was a basis for my perspective on curriculum (Schubert, 1986), which in three decades I would fashion into a *synoptic text*, a term coined in my first book (Schubert & Lopez Schubert, 1980, p. 76–77) to refer to new conceptualizations of the state of the art of work in the curriculum field, i.e., a way to convey essential questions, ideas, and research or scholarship under one cover. Since busy school leaders could not be expected to read the hundreds of books and thousands of articles or chapters on the topic, a new synthesis was deemed necessary every few years. The first example of a synoptic text was *Curriculum Development*, by Hollis Caswell and Doak Campbell (1935). My Ph.D. mentor, J. Harlan Shores exemplified the synoptic text tradition in the 1950s and 1960s by authoring *Fundamentals of Curriculum Development* (Smith, Stanley, and Shores, 1950), and I strove to provide a synoptic text for the 1980s and 1990s by writing *Curriculum: Perspective, Paradigm, and Possibility* (Schubert, 1986).

On our family trips I helped Grandma Grube and Great Aunt Pearl gather information to record what we did and where we went. Notebooks and envelopes were filled with memorabilia. When we returned home each year, it took several weeks to assemble the notes and artifacts (post cards, photos, specimens of flora, maps, ticket stubs) into a large trip book along with narratives penned in manuscript printing for each day, records of costs of food and lodging at mostly "mom and pop" restaurants and motels. We were qualitative and quantitative researchers without realizing it. We had contests to see who would incur the least expense. Our research was documentary, quasi-ethnographic, narrative, and even then we implicitly realized that it was absurd to abruptly dichotomize qualitative and quantitative research. When quantities could illuminate qualities we displayed them, and when quantities seemed dry and brittle, we portrayed qualitative nuance and amplification.

All of my elders were educators who shared stories of teaching in and out of school, so my scholarship has pertained to out-of-school education (Schubert, 1981; 2009c; 2010c) as well as that which occurred in school. Listening to their stories of teaching, it is no wonder that decades later with a group of my graduate students and former teachers I initiated The Teacher Lore Project (Schubert, 1991; Schubert. 1992; Schubert, 1993; Schubert and Ayers, 1992; Schubert & Lopez Schubert, 1993). We started it to oppose the massive degradation of teachers and schools in *A Nation at Risk* (National Commission on Excellence in Education, 1983), and strove to assert that teachers have worthy insights to offer research on teaching and curriculum. We were convinced that it was indeed unfortunate, and still is, that teachers who teach for many years, retire into obscurity with no one interested enough to ask: What did you learn?

The lore of educators that I experienced daily, beginning in my earliest years, convinced me that their insights should be listened to seriously. It surely is not that I think teachers' views provide *the truth*; however, they frequently embrace "small truths". A book, articles, chapters, and over a dozen dissertations grew out of The Teacher Lore Project. In harmony with this orientation, my graduate school studies helped me connect my own perspectives on curriculum research with John Dewey's

(1929) broad orientation to educational research when he declared, "The sources of a science of education are any portions of ascertained knowledge that enter into the heart, head, and hands of educators, and which, by entering in, render the performance of the educational function more enlightened, more humane, more truly educational than it was before. But there is no way to discover what is *more truly educational* except by the continuation of the educational act itself. The discovery is never made; it is always making" (pp. 76–77).

This stance was well articulated by Joseph Schwab (1970) as *practical* inquiry, and it is best if done with an eclectic capacity to draw on a wide range of theory and research as situational analysis necessitates. Such drawing uses three arts of eclectic: first, matching extant theories with situational needs; second, tailoring and adapting theories and research to fit situational needs; and third, engaging in the *anticipatory generation of alternatives* or what I call imaginative invention of possibilities. After I finished six years of elementary school teaching and took a sabbatical leave to pursue Ph.D. study in Curriculum Studies full time at the University of Illinois at Urbana-Champaign, I asked myself what I had learned and thereby wanted to contribute by sharing with teachers and curriculum leaders. My answer was that I wanted to share the value I found in honing my philosophical imagination through study and through interaction with learners. I see this as practical inquiry as characterized by Schwab in the pragmatic tradition of Dewey. But without much direct consciousness of these theories, my elders somehow intuited a playful, fluid inquiry that constructed learning within a milieu of interests, needs, and wonders that I experienced as a child.

In doctoral studies I parlayed all of my course work and independent study, under the guidance of Shores, to fashion a dissertation that helped me better understand the place of philosophy and imagination in teaching. My dissertation, *Imaginative Projection: A Method of Curriculum Invention* (Schubert, 1975) used a range of forms of inquiry: history, philosophical analysis, philosophical speculation, literary and artistic criticism, action research, comparative empirical study, ethnography, participant observation, and autobiography before anyone wrote of mixed methods. It seemed natural to use whatever modes of research could enlighten the phenomenon of my inquiry. In essence, I played with diverse research traditions that enabled me more fully to play with substantive ideas about the value of philosophical imagination which I contend is born in play and at best never leaves play behind; in fact, "no play left behind" might be an apt motto. (Yes, I realize I used the word *play* five times in the last sentence, and I wanted to do so, especially in view of my implicit and explicit critique of No Child Left Behind!). It must have been at least an implicit motto, as well, for many of my elders. For instance, I begin with my maternal grandfather.

These stories were doubtless a key to what I have long advocated as the basic curriculum question that needs to be asked in each situation encountered: What's worthwhile? (Schubert,1986). More specifically: What's worth knowing, needing, experiencing, doing, being, becoming, overcoming, contributing, sharing, and

wondering? (Schubert, 2009a, b, & c) Surely, these morality plays were also an early impetus to my questions about the interplay of love, justice, and education, which I attribute to John Dewey's (1933) devastating critique of *acquisitive society*, and his advocacy of seeking utopias that can never be actualized fully – always in the making (Schubert, 2009b). Just as readily, this search for justice through education and love have origins that reside in play with my Grandpa Grube.

Collections, too, were a foundational aspect of my childhood play and a basis for my orientation to research. Grandpa Grube told me about the different kinds of farm animals – varieties of milk cows, pigs, horses, beef cattle, and chickens, and he could walk through the woods and quickly find diverse forms of mushrooms and other edible plants. He could name all of the trees in our vicinity. I made leaf collections. Research invariably involves classifying and naming, He gave me his collection of local Native American arrow heads that he found when cultivating the fields, and I began to imagine cultural practices and scenarios based on artifacts. He gave me his marble collection – glassies, cat eyes, and *aggies* (made from clay) – and I kept them in a secret hiding place my Dad built, concealed in an old clothes shoot. While I looked at his marble collection alongside my more modern store-bought marbles, I decided to take only mine to the school playgrounds for games that resulted in winning and losing marbles in heated contests with other elementary school students.

My grandparents had old coins too: Indian Head Pennies, Liberty Nickels, Morgan Dimes, Quarters, and Silver Dollars. My parents and I started a coin collection in the blue Whitman Coin Folders when I was about four or five. We examined coins from the bank, from school concessions, and from change in our pockets and purses, and over the years we amassed a substantial amateur collection. Studying about coins taught me about history; and collecting, trading, and bargaining for and buying them helped me learn about aspects of economics. Yet, it was not arduous study; rather, it was playful.

When I began to be interested in philosophy and literature in college and later moved into curriculum theory, I searched wide and far for books to round out my emerging book collections. My late wife, Ann, was a bibliophile too, and my first book, noted above, was compiled with her: *Curriculum Books: The First Eighty Years* (Schubert & Lopez Schubert, 1980). It is a history of the curriculum field, 1900–1980, which was initiated during my Ph.D. studies in the wonderful University of Illinois Library in Urbana, Illinois, partially through the inspiration of Harlan Shores, who advised me on the first day of Ph.D. work to keep a written record of all I read (there were no personal computers in the early 1970s!), so I did this assiduously on note cards in an eventually bulging brief case. While the card file served well the process of constructing my dissertation (Schubert, 1975), it was not until I was an assistant professor that I decided to provide fellow scholars with what I had longed for as a student – a comprehensive guide to the literature of the curriculum field since its inception at the beginning of the Twentieth Century. For nearly a decade, we collected hundreds of curriculum books and amassed

information on many more from scouring libraries and bookstores in cities to which we traveled for conferences (no Internet or Web existed, of course). When we eventually felt we had an exhaustive bibliography, we tried to set the books in cultural and educational context throughout the decades of the field's evolution (Schubert & Lopez Schubert, 1980). We continued to revise and expand the project and published a more comprehensive version two decades later called *Curriculum Books: The First Hundred Years* (Schubert, Lopez Schubert, Thomas, & Carroll, 2002).

Pondering the books, authors, and transformations in key ideas brought fascination with interrelationships among curriculum scholars and inspired more questions: Who studied with whom, formally and informally? Who were the star members of the field whose work transformed into new ideas and how did this happen? Intrigued by the intellectual history that transpired through mentor-student connections, we created what we called *curriculum genealogies* and tried to explain trees and branches of influence that portrayed the growth of the curriculum field (Schubert & Posner, 1979; Schubert, Lopez Schubert, Herzog, Posner, & Kridel, 1988). Seeds of such questions were doubtless planted in abovementioned collections, and also in discussions with Grandpa Grube and Dad about the history of sports, and stories of their own athletic experiences, that lie deep within me. I re-enacted these stories in the yard by myself, throwing baseballs at the brick milk-house walls or the concrete foundation of the barn and catching them as they bounced unpredictably off rough, undulated terrain. I announced play-by-play broadcasts to fictional audiences and made up games where players from one era competed with those of another.

With this background, it is no wonder that as I became immersed in the curriculum field in subsequent decades, I would imagine how curriculum scholars of the early twentieth century might converse with those of the mid or late part of the century. Sometimes I asked students to write or role-play such meetings. Early in my career, I often brought together four or five of my favorite curriculum scholars in symposia at conferences such as the American Educational Research Association (AERA) Annual Meetings to engage in dialogue – mini all-star teams, if you will. Such events cultivated my interest more fully to write intellectual histories based on mentor-student relationships (Schubert & Posner, 1980; Schubert, Lopez-Schubert, Herzog, Posner, & Kridel, 1988).

I will return to sports as imaginative play soon, but now move back to my earlier childhood to set the tone for it through other imaginative experiences in my early life. Grandma Grube and her twin, my Great Aunt Pearl, were teachers in rural schools of northeastern Indiana when they were still teenagers themselves. Born in 1893, educated in two-year Normal Schools immediately after high school, they taught in tiny country school houses that had several grades, e.g., 1–4, 5–8, or even 1–8 in one room. In the early 1950s Grandma and Aunt Pearl were my first school teachers. My great aunt was my first grade teacher in Butler Elementary School, in town, and when I moved to the farm, Grandma Grube was my teacher in a one-room rural

school that had grades 1 through 4. They were good teachers, well-regarded in the community; however, as with my mother, I experienced their best teaching in play-filled times. Grandma Grube read and paraphrased wonderful stories so that key characters came alive to me: Tom Sawyer, Huckleberry Finn, and Oliver Twist. We extrapolated the stories in imaginative play. She would be Becky Thatcher and I Tom Sawyer as we visited the Moon and met beings who spoke seemingly nonsensical languages of high-pitched gurgling sounds we mutually understood.

Two decades later, I found it easy to capture interests and pursue needs with elementary school students as a teacher early in my career in education, because of my fortunate legacy of imaginative play. I guess I simply considered it natural to teach about prehistoric times by being a prehistoric man, or to survey world religions by conversing as advocates of different sets of beliefs. I urged students to beware of propaganda by engaging them in reenacting and analyzing popular advertisements. We imagined what it could have been like before language was invented and how language and cultural practices evolved to meet situational needs. We looked carefully at non-human parts of our environment, such as trees, pretended to know them, and reported what we learned. We fashioned new board games and wrote instructions, proudly presenting them to children in lower grades, observing their use and making revisions accordingly. We wrote books and put them in the school library. We redesigned the classroom as an art experience. We read classics and developed new stories based on them – making, for example, many new stories for Sinbad the Sailor. We asked what was worth learning that we had never learned about in school and figured out ways to make such learning available through school. We brought broken objects (toys, radios, cameras) from homes and pooled expertise, scientific knowledge, and imagination to repair them. We investigated one another's areas of expertise and taught each other.

Such experiences became my basis for teacher education by encouraging pre-service and in-service teachers to draw on their experiences, especially in childhood play. Sometimes I would ask students or educators to recall their favorite works of literature or art. I asked them to share how these works influenced them, how they could see them as curricula and how the authors or artists might be considered teachers or curriculum developers. In essence, how did they reach others with their meanings? How could these teachers use such approaches in their teaching? Such teaching experiences led me to study ways in which arts and literature influenced perspectives of noted curriculum scholars, by presenting autobiographical narratives of how the arts helped 35 curriculum scholars better understand, imagine, and enact curriculum and teaching (Willis and Schubert, 1991).

My interest in the power of stories in lives of teachers and curriculum scholars also emerged for me from a salient feature of life in Indiana, namely basketball, which was apparent to me shortly after we moved there from Ohio. I had just turned four and the annual state basketball tournament sifted through all aspects of Hoosier life. Basketball was like another religion, and the teenage stars were viewed as knights who defended the honor of each town.

Dad coached teams from a school so small that it had no town – only a congregation of farms that surrounded the K-12 school. Dad was principal, driver's education teacher, commercial teacher, and coach of all three sports: basketball, baseball, and track. There were only about 20 boys in the high school to choose from to make teams and the gym was smaller than regulation so Scott Center had no home basketball games. The baseball field was a cow pasture. The team practiced basketball crossways on their tiny basketball court to get the feel of a regulation size court. Dad found some good athletic potential in those strong farm boys, and in 1952 led them to the finals of the sectional tournament, against state-ranked Auburn who four years earlier made it to the final four of the state tournament which started with over 700 teams. Al Covell, Don Clark, and Rudy Stegelmann were my heroes and became part of my repertoire of imaginary players. Scott Center's Cinderella performance surprised fans of bigger schools and the media basketball dignitaries from nearby communities trekked to the tiny Scott Center gym to praise their accomplishment. For years that followed, Dad, Mom, and I annually constructed the state tournament pairings on a big chart and predicted winners at each level. I played on Butler's high school team, though not a star, and developed a great interest in basketball history. These experiences transformed smoothly into my later work in curriculum history. Collecting statistics on teams, players, and accomplishments was easily transformed into books, titles, authors, and stories of the expanding conversation of curriculum scholars throughout the Twentieth Century in my aforementioned *Curriculum Books* and other projects.

As an only child on a farm with few children nearby, imaginary players were some of my best friends! One winter weekday I came home from fifth grade and began to announce and play the game as usual. My imagination soared, improbably based on a geography lesson about petroleum. As I announced the game, the word *petroleum* stuck in my mind. As I threw the balloon basketball I heard myself say, "Smith passes to Jones who passes to Petroleum; he jumps, shoots, and scores!" After several repetitions, I determined that *Petroleum* was a ridiculous name for a player and had to be changed, so I changed it to Pat Rolleum. I built a whole imaginary team around him, as a sharp-shooting, hard driving, incredibly fast, high-jumping guard or forward, who looked uncannily like Laker star Jerry West, whose silhouette later became the model for the NBA logo. Rolleum was a star in all sports – a pitcher and third baseman in baseball, an incredible runner and jumper in track, a football quarterback, and a decathlon champion ready for the Olympics.

I constructed statistics and elaborate records of the Bakersville Victors – Pat's high school team, which I imagined being in Connecticut, since I liked the name *Bakersville* and that is where I found a small town in the atlas by that name. For Christmas following the inauguration of Bakersville, one of my presents was an army set – little dark green rubber toy soldiers, but I did not like to play army and something about killing offended me, even though I had been exposed to many cowboy movies and TV shows. So, I transformed the soldiers into Pat Rolleum and his teammates, as well as members of rival teams which I augmented over the years

with other inexpensive toy soldiers. Bakersville's games were often played in a shirt box gym with wooden circular pieces from a Carrom board game as baskets and a small clay marble for a basketball. Bakersville's teams also played in *other venues* – the one of their birth with balloons shot at imagined baskets atop doorways in the living and dining rooms, and on the real basket attached to the barn in warmer weather, or on other basketball courts I found outdoors in parks, hay lofts, or in the plentiful gyms of Indiana school buildings. Bakersville and its opponents had intricate histories and repeated ever-evolving scenarios. After several years of graduation classes, Bakersville's all-star team played impressively in exhibition games against the great Boston Celtics of the 1950s, in my shirt box gym!

At about age 13, I was astounded to learn that my new friend Sheldon, who grew up on a farm on the other side of Butler, also attending a one-room country school, had coincidentally constructed fictional basketball teams of his own. After this discovery, Sheldon's teams and mine met during lengthy phone calls on *party lines* much to the chagrin of others who shared the line and could not make calls while we announced games. All this was a half century before the invention of Fantasy Basketball. Sheldon and I constructed scorebooks and records of a large fantasy professional basketball league that included teams from several cities from the United States and Canada, long before professional basketball or baseball had any teams outside the continental U.S.

We did not stop with basketball, however. When I visited Sheldon's farm we created a new sport which we called "Over the Tree Kick and Catch" built around his football and a huge tree; the game had myriad intricate rules – some made spontaneously and which changed often during the flow of the game. Before that, I had invented another new sport in my backyard – known as the *barnyard* on Indiana farms, due to its proximity to the barn, but distinguished from the "back barnyard" where the cattle lived. I say this because when an older schoolmate heard me mention my invention of Barnyard Kickball, he asked if one of the rules was "no tackling in manure piles" which would have been relevant for back barnyards! Barnyard Kickball games started by having *the kicker* kick a volley ball at a basketball basket from about fifty feet away. If the ball went through the hoop, an almost impossible event, the game ended immediately with the kicker's victory, but that never happened. I decided that teams should be located in Canadian and Mexican cities as well as several in the U.S. I called this set of teams the North American Barnyard Kickball League (NABKL).

This international emphasis was probably derived from my annual family travels and is likely germinal of my long-term interest in curriculum practices of different countries. In recent years, a substantial portion of such interest derives from studies, by Ming Fang He (2003, 2010), of living in-between or in exile from cultures, states, and nations. My own work today focuses on practices in which educators in diverse cultures have created alternatives to school systems that benefit state and corporate power more than lived experiences of teachers, students, and communities. Moreover, the idea of emergent and ever-changing rules as experienced in Over the Tree Kick

and Catch or in the NABKL, I believe, connects with my wariness of governmental and corporate control of education. I have portrayed my disdain for BIG Curriculum (Schubert, 2006), and for curricula that dominate education in acquisitive societies (Dewey, 1933; Schubert, 2009a) and thereby transform educational meaning, edification, curiosity, and wonder into mere commodities, such as test scores, grade point averages, diplomas, and prizes. Seeing education through lenses that reside *in-between* (He, 2003) enables me to perceive curriculum from a posture of *exile* (He, 2010), which helps me reflect critically on other dimensions of my experience with play as a basis for research.

Growing up in nearly all-white, almost all-European communities, I was frustrated by another pervasive phenomenon that made my play more somber, although I barely comprehended it at the time. This was the dilemma of race. Although I did not sense the impact of race relations directly in the small towns of my immediate experience, I did hear racist commentary and of course saw racial issues connected with poverty and wealth when I visited Fort Wayne, the closest city; and also during our summer road trips when I first became acquainted with large cities and the rural South. Nonetheless, I rarely talked with others about racial inequity, and no one seemed to discuss it much, not even in school.

Why, I wondered, did the National Basketball Association (NBA) in the early 1950s have only four or five Black players and no Black coaches? How, I wondered, would the best NBA players fare if they played the Harlem Globetrotters? Why did the best African American high school and college players have to play for the Globetrotters or teams in other countries? Why did the Globetrotters have to play like clowns? Why was another all-Black team in Indiana called the Indianapolis Clowns? In my mind Globetrotter star *clowns* – Goose Tatum, Meadowlark Lemon, and Marques Haynes – were as good as or better than most NBA players. They even proved it in after-season exhibition games against the NBA champion Minneapolis Lakers. Even the peerless Wilt Chamberlain went to the Globetrotters after starring for the University of Kansas, before becoming the most dominant player in NBA history. A critical consciousness relative to race was stirring within me.

Similar to the world of basketball, I wondered about baseball, perhaps the sport I played best. Why were there separate Negro Leagues? I heard stories about outstanding catcher Josh Gibson who hit more career home runs than Babe Ruth, and how pitcher Satchel Paige could strike out the finest hitters from the American and National Leagues. I wanted to know why they and others from the Black Leagues were not in the Major Leagues, which were just beginning to accept Black players such as Jackie Robinson, Larry Doby, Roy Campanella, Hank Aaron, and Willie Mays, though very few others in the late 1940s and early 1950s. I began to see rudimentary answers on our family vacations in the Deep South, when I was a surprised child whose parents pulled back from a water fountain after which I saw a *Negro Only* sign.

I fictionalized games and leagues among the great players – Black, White, and Brown and from outside the U.S. if I found information on them. Even though barely

conscious of what I was feeling, I think I felt a fragile inkling of justice that I hope is embedded in the human psyche. In any case, I see this early uneasiness as a harbinger of my decades of multi-racial and multi-cultural work and life in U.S. cities – first as a political intern in Washington, DC in the 1960s, and especially in Chicago as an educator from the 1970s to my retirement in 2011.

I worked with many schools in Chicago where basketball was as dominant a force in student life as it was in rural Indiana. I taught an off-campus course for teachers who wanted to become certified as supervisors, department chairs, principals, or central office administrators. The courses took place over a multi-year period at Whitney Young High School and involved educators from many different schools in Chicago. In courses for this program, as in much of my teaching and consulting, I let my childhood pretending well-up just as it had when I was an elementary school teacher. I adopted the personae of schools of curriculum thought (an Experientialist, a Social Behaviorist, an Intellectual Traditionalist, a Critical Reconstructionist) that had emerged from my historical writings; these characters appeared in written form (Schubert, 1986, 1996, 1997) as well as in my teaching and on the lecture circuit. My Experientialist or progressive personae focused on principles of involving students and teachers in democratic deliberation as part of their educational experience (Dewey, 1916, 1933, 1938; Schubert, 1986; McClain & Schubert, 1997). I fondly recall that Whitney Young coach George Stanton attributed some of the success of his state championship team to a change involving coaching in Experientialist fashion in which he engaged his players in deliberation about game strategy.

My point is not to cast basketball into bold relief; rather, it is to illustrate a major concern that has permeated the theoretical basis of my research, teaching, and service, i.e., to enable education to become less autocratic. The autocratic, even plutocratic practices of too many schools and universities belie their mission and vision statements that purport them to be oriented towards preparation for democracy. Sadly, this state of affairs in the U.S. is exacerbated in schools where populations are from racial and ethnic minorities and from the lower and working socio-economic classes.

The complex nature of curriculum work and social justice can be illustrated through more of my experience with Indiana basketball. I distinctly remember watching the Indiana High School State Basketball tournament on our first television set with my parents. Dad, a connoisseur of basketball, helped me appreciate the fabulous 1954 state tournament in which tiny Milan surprised most of the state by defeating Muncie Central, the state's largest school. In those days, Indiana had no same-size school classifications grouped together, as most states had developed. Thus, there was always the hope that a small team could win the whole *shebang*, and Milan solidified that hope. We (along with much of the state population) watched Bobby Plump, star of the Milan team, hold the ball for an interminably dramatic pause before there were rules about how long the ball could be held. Not a player or fan moved. Muncie Central stood poised because the game was tied, and they hoped to regain the ball and win or at least tie and go into overtime. As the seconds ticked

down, Plump faked, drove in mid-way, took his patented jump shot, and scored. Milan had won for all small schools – past, present, and future. Most of Milan's players received college scholarships, and to this day Bobby Plump has a famous bar and restaurant in Indianapolis called "Bobby Plump's Last Shot." The award winning movie *Hoosiers* is a tribute to the Milan victory.

In 1955, what I would consider another, perhaps more significant, event occurred in Indiana High School basketball. Crispus Attucks High School in Indianapolis, named after a slave who was the first person killed in the Boston Massacre in 1770 (which occurred prior to and precipitated the American Revolutionary War), had lost a close game the year before to Milan early in the state tournament, but in 1955 Attucks moved through the tournament with great power. Attucks' champion player was Oscar Robertson, just a junior who would arguably become the greatest all-around player in the history of basketball. Attucks became the first team from the state capitol, Indianapolis, to win the state tournament, and still more remarkably the first all-Black high school to win it. Attucks was one of only three African American schools in Indiana. It was created in 1927, essentially to rid other Indianapolis high schools of African American students. Moreover, the faculty of Attucks High School also was restricted to African Americans. Blacks with Master's Degrees and PhDs were not allowed to teach in many colleges, so the Attucks' faculty was better educated than faculties of most high schools. To prevent acknowledgment of their accomplishment in basketball, policy makers prohibited the three Black high schools from playing other public schools and Attucks' gymnasium was built smaller than regulation, so they could have no home games. They were only allowed to play parochial schools and out-of-state schools. Being in the middle of Indiana hampered travel to other states. Racist values were palpable. Still, Attucks's students excelled in academics and athletics despite the economic impoverishment and political inequality of the area around the school.

Although I did not understand most of this history at the time, I now see my childhood somatic discomfort as an oppositional response that embodied hope for greater social and racial justice. When Oscar Robertson led Attucks to victory in the 1955 Indiana State Championship, I watched on television with Dad, and he commented that Robertson was a new quality of basketball player that he had never seen before. Robertson was not only a superb athlete – he was a highly intelligent force who understood what was happening all over the court at once. Ironically, Attucks' opponent in the final game was none other than Gary Roosevelt, one of the other two all-Black schools in the state. Several of the players from that state championship game later became college and professional stars. When Robertson led Attucks to a second consecutive ISHAA championship in 1956, his team was the first in Indiana High School history to complete an entire season and the state tournament, undefeated.

Although *Hoosiers*, the movie based on Milan's victory, was rightly highly acclaimed, Oscar Robertson (2003, pp. 40–41) criticized the usual "David and Goliath" interpretation, by pointing out that inner city African American youths are

more David than Goliath. The idea that small rural schools are *Davids* or underdogs compared with large suburban and city schools does make sense; however, the economic poverty and racial injustice of segregated urban schools means that their victory was over several *Goliaths*, while their inner city players were clearly *Davids*. I feel certain that emphases I place on the need for critical perspectives relative to poverty, race, and other sources of discrimination in curriculum discourse (Schubert, 1986; Schubert, 2004; 2006a, 2009a, & 2010b) hearken back to these early experiences with the political and economic play of basketball.

In fact, as a child who only had inklings of this history, my play often took on social justice dimensions, such as being an inner city youth playing baseball, bouncing the ball as hard as I could throw it off the milk house wall and catching it with no glove because I was trying to save money to help a sister who had health problems. In this scenario Major League scouts marveled at what I might be able to do with a glove, gave me one, and of course signed me with a Major League baseball team. Then I could support relatives and friends in need. I surmise that my commitment to social justice as a central purpose of education emerged in this milieu. Clearly, I see social justice as implicit in the basic historical curriculum question (see Schubert, 1986, Marshall, Sears, Allen, Roberts, & Schubert, 2007; and Willis, Schubert, Bullough, Kridel, & Holton, 1993): What is worth knowing? I see it, too, in more elaborate questioning: What is worth needing, experiencing, doing, being, and becoming? Finally, and directly to the point of social justice as made explicit in the U. S. Civil Rights Movement: What is worth overcoming? This question invokes questions raised by Michael Apple (1979, 1982) and many critical theorists: Whose knowledge? Who benefits? Who is harmed, and what can be done about it? These are questions that Carter G. Woodson (1933) asked in *The Mis-Education of the Negro*, and we should worry about why he was not heeded more by the dominant White communities, schools, and scholars.

All of these early experiences shaped who I have become as a person, the seedbed of who I am as an educational researcher and curriculum theorist. Thus, I conclude this rendition of my childhood and teenage years by mentioning conversations with my good high school friend, Nathan Houser. Throughout high school we often talked about what we should know and experience, what we wanted to be and do – who we were becoming, who we hoped to become, and what we wanted to overcome and contribute. The talks were serious, derived from our childhood and youthful forms of play, and from the imaginative spirit we shared. They were the serious play with ideas and possibilities that many teens embrace as they move toward adulthood.

I recall how we sat in my parents second car, a little red Comet, at the drive-in restaurant frequented by teens, drinking orange slushes and conversing the day before we left Butler for two small liberal arts colleges – Taylor (for Nathan) and Manchester (for me). We pondered that our lives would never be the same. They were not, and two summers later we worked in Washington, DC for Indiana Senators Vance Hartke and Birch Bayh. It was 1964, the summer of powerful civil rights legislation. Reflecting on our lives in the political crucible of DC, we compared notes from two

years of college experience with new people, new places, and an intellectual world of playing with ideas. The spark of imaginative play was still there with us and would continue to grow – recreating ideas that would guide our lives through journeys yet to be – voyages on a sea of ideas through careers in philosophy and education.

FAVORITE WORKS

Books

Schubert, W. H. (2009). *Love, justice, and education: John Dewey and the utopians*. Charlotte, NC: Information Age Publishing (IAP).

Schubert, W. H., Lopez Schubert, A. L., Thomas, T. P., and Carroll, W. M. (2002). *Curriculum books: The first hundred years*. New York: Peter Lang.

Schubert, W. H. (1997). *Curriculum: Perspective, paradigm, and possibility*, Second Edition. Columbus, OH: Prentice Hall. [First edition in 1986 by Macmillan: NY].

Schubert, W. H. & Ayers, W. (Eds.). (1992). *Teacher lore: Learning from our own experience*. White Plains, NY: Longman. [Reprinted in 1999 by Educator's International Press (*Classics in Education Series*), Troy, NY.]

Willis, G. H. & Schubert, W. H. (Eds.). (1991). *Reflections from the heart of educational inquiry: Understanding curriculum and teaching through the arts*. Albany, NY: State University of New York Press. [Reprinted in 2000 by Educator's International Press (*Classics in Education Series*), Troy, NY.]

Selected Articles and Chapters

Schubert, W. H. (2013). Multiple curricula in higher education. In J. DeVitis (Ed.), *Contemporary colleges and universities: A reader* (pp. 185–202), New York: Peter Lang.

Schubert, W. H. (2010). Journeys of expansion and synopsis: Tensions in books that shaped curriculum inquiry, 1968-present. *Curriculum Inquiry, 40*(1), 17–94.

Schubert, W. H. (2010). Outside curriculum and public pedagogy. In J. A. Sandlin, B. D. Schultz, & J. Burdick (Eds.), *Handbook of public pedagogy: Education and learning beyond schooling* (pp. 10–19). New York: Routledge.

Schubert, W. H. (2009–2010). Language, legacy, and love in curriculum. *Curriculum and Teaching Dialogue, 12*(1&2), 1–23.

Schubert, W. H. (2009). What's worthwhile? Playing with ideas in loving company. In Waks, L. & Short, E. C. *Leaders in curriculum studies: Intellectual self-portraits* (pp. 165–177) Rotterdam, Boston, Taipei: Sense.

Schubert, W. H. (2003). The curriculum-curriculum: Experiences in teaching curriculum. *Curriculum and Teaching Dialogue, 5*(1), 9–22.

Schubert, W.H. (1996). The longevity of a good mentor: J. Harlan Shores. In C. Kridel, R. V. Bullough, Jr., & P. Shaker (Eds.), *Teachers and mentors* (pp. 185–194). Hamden, CT: Garland.

Schubert, W. H. (1995). Toward lives worth living and sharing: Historical perspective on curriculum coherence. In J. A. Beane (Ed.), *Toward a coherent curriculum*. ASCD Yearbook (pp. 146–157). Alexandria, VA: Association for Supervision and Curriculum Development.

Schubert, W. H. (1994). Toward lives worth sharing: A basis for integrating curriculum. *Educational Horizons, 73*(1), 25–30.

Schubert, W. H. & Schubert, A. L. (1989). Curriculum inquiry: Alternative paradigms. In T. Husen & N. Postlethwaite (Eds.), *The international encyclopedia of education* (pp. 222–227), Supplementary volume one, Oxford: Pergamon.

Tyler, R. W., Schubert, W .H., & Schubert, A. L. (1986). A dialogue with Ralph W. Tyler. *Journal of Thought, 21*(1), 91–118.

Schubert, W. H. (1980). Recalibrating educational research: Toward a focus on practice. *Educational Researcher, 9*(1), 17–24, 31.

REFERENCES

Apple, M. W. (1979/2004). *Ideology and curriculum.* New York, NY: Routledge.

Apple, M. W. (1982/1995). *Education and power*. New York, NY: Routledge.

Caswell, H. L., & Campbell, D. S. (1935). *Curriculum development*. New York, NY: American Book Company.

Dewey, J. (1916). *Democracy and education*. New York, NY: Macmillan.

Dewey, J. (1929). *The sources of a science of education*. New York, NY: Liveright.

Dewey, J. (1933, April). Dewey outlines utopian schools. *New York Times*, p 7. In J. A. Boydston (Ed.), *The later works (1925–1953) of John Dewey (*Vol. 9, pp. 136–140). Carbondale, IL: Southern Illinois University Press, 1989.

Dewey, J. (1934). *A common faith*. New Haven, CT: Yale University Press.

Dewey, J. (1938). *Experience and education*. New York, NY: Macmillan.

Freire, P. (1970). *Pedagogy of the oppressed*. New York, NY: Continuum.

He, M. F. (2003). *A river forever flowing: Cross-cultural lives and identities in the multicultural landscape*. Greenwich, CT: Information Age Publishers.

He, M. F. (2010a). Exile pedagogy: Teaching in-between. In J. A. Sandlin, B. D. Schultz, & J. Burdick (Eds.), *Handbook of public pedagogy: Education and learning beyond schooling* (pp. 469–482). New York, NY: Routledge.

Ikeda, D. (2010). *A new humanism.* London and New York, NY: L. B. Tauris.

Marshall, J. D., Sears, J. T., Allen, L., Roberts, P., & Schubert, W. H. (2007). *Turning points in curriculum: A contemporary curriculum memoir* (2nd ed). Columbus, OH: Prentice Hall.

McClain, M., & Schubert, W. H. (1997). Rekindling a sense of purpose: The curriculum improvement program. *Educational Forum, 61*(2), 162–171.

National Commission on Excellence in Education. (1983). *A nation at risk.* Washington, DC: Government Printing Office.

Roberts, R. (1999). *But they can't beat us: Oscar Robertson and the Chrispus Attucks Tigers*. Champaign, IL: Sports Publishing, Inc. with the Indiana Historical Society.

Robertson, O. (2003). *The Big O: My life, my times, my game*. New York, NY: Rodale and St. Martin's Press.

Schubert, W. H. (1981). Knowledge about out-of-school curriculum. *Educational Forum*, *45(2*), 185–199.

Schubert, W. H. (1986). *Curriculum: Perspective, paradigm, and possibility*, New York, NY: Macmillan.

Schubert, W. H. (1992). Practitioners influence curriculum theory: Autobiographical reflections. *Theory into Practice, 31*(3), 236–244.

Schubert, W. H. (1993). Teacher and student lore: Their ways of looking at it. *Contemporary Education, 65*(1), 42–46.

Schubert, W. H. (2006a). Focus on the BIG CURRICULUM. *Journal of Curriculum and Pedagogy, 3*(1), 100–103.

Schubert, W. H. (2008). Curriculum inquiry. In F. M. Connelly, M. F. He, & J. Phillion, (Eds.), *Handbook of curriculum and instruction* (pp. 399–419). Thousand Oaks, CA: Sage.

Schubert, W. H. (2009a). *Love, justice, and education: John Dewey and the Utopians*. Charlotte, NC: Information Age Publishing.

Schubert, W. H. (2009b). What's worthwhile: From knowing and experiencing to being and becoming. *Journal of Curriculum and Pedagogy, 6*(2), 21–39.

Schubert, W. H. (2009c). What's worthwhile: Playing with ideas in loving company. In L. Waks & E. C. Short (Eds.), *Leaders in curriculum studies: Intellectual self-portraits* (pp. 165–177). Rotterdam, Boston, Taipei: Sense Publications.

Schubert, W. H. (2010a). Journeys of expansion and synopsis: Tensions in books that shaped curriculum inquiry, 1968-present. *Curriculum Inquiry, 40*(1), 17–94.

Schubert, W. H. (2010b). Language, legacy, and love in curriculum. *Curriculum and Teaching Dialogue, 12*(1, 2), 1–23.

Schubert, W. H. (2010c). Outside curricular and public pedagogy. In J. A. Sandlin, B. D. Schultz, & J. Burdick. (Eds.), *Handbook of public pedagogy: Education and learning beyond schooling* (pp. 10–19). New York, NY: Routledge.

Schubert, W. H., & Ayers, W. C. (1992). *Teacher lore: Learning from our own experience*. White Plains, NY: Longman.

Schubert, W. H. & Lopez Schubert, A. L. (1980). *Curriculum books: The first eighty years*. Lanham, MD: University Press of America.

Schubert, W. H., & Lopez Schubert, A. L. (1981). Toward curricular that are of, by, and therefore for students. *Journal of Curriculum Theorizing, 3*(1), 239–251.

Schubert, W. H., & Lopez, A. L. (1993). Teacher lore as a basis for in-service education of teachers. *Teaching and Teachers' Work, 1*(4), 1–8.

Schubert, W. H., Lopez-Schubert, A. L., Herzog, L. A., Posner, G. J., & Kridel, C. (1988). A genealogy of curriculum researchers. *The Journal of Curriculum Theorizing, 8*(1), 137–183.

Schubert, W. H., Lopez Schubert, A. L., Thomas, T. P., & Carroll, W. M. (2002). *Curriculum books: The first hundred years*. New York, NY: Peter Lang.

Schubert, W. H., & Posner, G. J. (1980). Origins of the curriculum field based on a study of mentor-student relationships. *The Journal of Curriculum Theorizing, 2*(2), 37–67.

Schwab, J. J. (1970). *The practical: A language for curriculum*. Washington, DC: National Education Association.

Smith, B. O., Stanley, W. O., & Shores, J. H. (1950). *Fundamentals of curriculum development.* Yonkers-on-the-Hudson, NY: World Book.

Whitehead, A. N. (1929). *The aims of education and other essays.* New York, NY: Macmillan.

Whitehead, A. N. (1938). *Modes of thought*. New York, NY: The Free Press.

Willis, G. H., & Schubert, W. H. (Eds.). (1991). *Reflections from the heart of educational inquiry: Understanding curriculum and teaching through the arts*. Albany, NY: State University of New York Press.

Willis, G. H., Schubert, W. H., Bullough, Jr., R., Kridel, C., & Holton, J. (Eds.). (1993). *The American curriculum: A documentary history*. Westport, CT: Greenwood Press.

Woodson, C. G. (1933). *The mis-education of the Negro.* Washington, DC: Associated Publishers.

CRAIN SOUDIEN

FINDING THE WORDS – AN ANTHROPOLOGY OF EDUCATIONAL BECOMING

INTRODUCTION

In the early months of 2013 a colleague who manages a leadership development program for professionals asked if I would talk to her clients. She was nearing the end, and felt that important objectives she had defined needed to be reinforced in a capstone session. "Tell them about who you are as a thinking person", she said. "Tell them what goes on in your head and how you've come to be the kind of person you are." I hesitated. It was not that I had nothing to say. It was about how I would say it. Having listened to many "inspirational speakers", I did not have either a damascene event or a particularly dramatic personal life-story to share. Much more disconcertingly, she was asking that I explain how my sense-making apparatus functioned. Of concern to me was how one could begin to talk about the things that matter to oneself in a *relatively* selfless way, without overwhelming the talk with the unavoidable immodesty of one's ego – *I do this, I did that*. In the end, I gave the talk. I tried to make it as educational as I could, but in the doing of it felt deeply unsettled because even as I worked through for the group the many questions and issues where I have struggled and continue to struggle in my life, and spoke about how often I erred, I worried still about how self-centered the whole experience could come across.

And so, writing this autobiography for the International Academy's project, similar questions arise – how to write a story of my education which is *actually* educational. I use this as the framing problematique for undertaking this task, but that is more easily said than done. How to make the telling an educational one? What makes it educational? Does one share with one's readers what has worked in one's educational life? Does one tell the story of an incredible moment of revelation when a puzzle became clear? Or does one talk about the relationship of education to one's life-chances?

The approach I take here, that with which I am most comfortable, is that of working with a notion of *educatedness*. What do I mean by "educatedness"? It is that which is left behind *after* an experience. That experience may be cognitive or it may be physical. It is about how one has gathered it together, constituted it schematically in one's head to say to oneself that this element of it belongs here, that over there, and to begin to recognize for oneself that the whole experience

M. de Ibarrola & D. C. Phillips (Eds.), Leaders in Educational Research, 177–196.

comes together to mean this or that, and so to have a sense of how much and in what way it matters to one.

The left-behindedness is about the enhancement of the capacity to make distinctions, to understand how they can be refined, how, always, they connect, and then how one moves on from that point. Working with this approach, important for myself is the question of how that which one knows bears on how one lives one's life. If knowing matters, if it is about working with that which is left behind, should a concern for the educational be about how this knowing plays itself out in one's life? The Canadian philosopher John Raulston Saul makes the extraordinary comment that while the world has reached unprecedented levels of formal education its capacity to think critically is in serious question. He says "(w)e live in the most sophisticated civilization that has ever existed, and yet every time we have to make a decision about something serious, we revert to this profoundly unsophisticated mindset. This should tell us that something is wrong with our approach to reason" (John Raulston Saul (2013) A Wondrous Uncertainty, http://www.johnraulstonsaul.com/eng/articles_detail.php?id=10&lang=eng).

I emphasize that I recognize how differently the issues come together in all our lives, of how I manage the fundamental issue of knowing and being, and how differently someone else might do so. But what entailments there are to what I know and what implications these questions hold for me as a teacher and a researcher, have been determinative in what I have done in education. This approach to the experience of education, I think I now understand about myself, is a direct product of the context in which I have come to maturity.

My entire educational evolution, as a result of the framing I describe above, has been leading towards the puzzle of understanding how we participate in – and nurture as educationists – the kind of learning in which we come to know ourselves, have a sense of ourselves in relation to others, and have a sense of what the significance of this knowing is for the relationships we develop with people and places.

I am formally a sociologist and particularly a sociologist of education, but I have increasingly moved towards becoming what one could describe as a sociologist of knowing. Some of this is about the sociology of knowledge, about the significance of attainment and student performance; but a lot of it is also about the make-up and purpose of what we know, our ideas However, it is the social, economic and cultural context in which this knowing takes place that particularly interests me – how learning is managed, valued and critically worked with. Flowing from this, my major preoccupation as a sociologist is how people come to learn in the environments in which they find themselves and how this learning puts them in a position to engage critically with their worlds Thus I also have come to be interested in social structures, how social structures work in people's lives, and the factors that are present and active in how people make choices. This is about the question of the individual in society and how the individual in his or her life learns his or her way ecologically through the time and space of his or her life. I try then, in this short piece, to speak about how I came to this way of thinking about education.

THE ACCIDENT OF BIRTH

An obvious element in the telling of this story of my educational life is the accident of my birth – the quite ordinary set of circumstances that led me to be born and to grow up in what I now describe to many people as one of the most challenging parts of the globe – South Africa, the South Africa of apartheid and now the South Africa of post-apartheid.

It is important to address, briefly, what South Africa represents: I have described it elsewhere as an ontological hotspot. What makes it so? It had been, through the period of the international boycott against the country, cut off from the rest of the world. In the period from about 1970 to 1990, the world had come to see apartheid, that ideology of racial marking, ordering and privileging and dis-privileging, as a practice which it should actively oppose. And so to bring pressure to bear on the apartheid regime, it imposed an international boycott on the country. This boycott was lifted when the political parties of the liberation movement were unbanned and people like Nelson Mandela were released from prison. After that, when South Africa became a democracy in 1994, from little contact in key areas of everyday life, it was thrust with incredible speed and intensity into the full complexity of global life. The country and its people had to adjust at every level of their lives. This adjustment inaugurated a process of rapid remaking through which the country is still going. Significant about this remaking, this long transition, is its ontological character. There is a feverish intensity about just *being* in South Africa. This intensity is evident in the often inarticulate declarations of a kind of primordial racial belonging in the pronouncements of many South Africans about themselves – *I am an African* – to the many over-the-top declarations of a cosmopolitanness – *I am a citizen of the world*. In these one is seeing South Africans grappling with locating themselves.

There are many factors in this grappling, old and new, which demand some form of acknowledgement. Amongst these, on the one hand, are elements of the past, old nostalgias and beckonings – the beckonings of ancient narratives, traditions and cultural practices. These take a multiplicity of forms and include a beholdenness to ancestors, fore*fathers*, blood and land. In the ways in which these forms are generally narrated, Africa, Europe, the East exist in people's lives as incontrovertible genetic facts. There are also, on the other hand, elements of the present and the future – the bewildering enticements of hyper-modernity which take expression in new modes of consumption inflected in new performative gendered, classed, cultured and classed stylizations. All these – the past, the present and the future, together – make growing up in South Africa, becoming an adult and exercising responsibility around how one manages oneself, one's desires and ambitions, one's relationships, one's masculinity and femininity, one's sexuality, one's sense of citizenship and emplacement on the globe, an extraordinary challenge of being.

Urgent new questions have been posed as a result of these developments. They are fundamentally about developing an ordering narrative for oneself: We, us, you, I, me. Illustrative of these questions are the examples of how a new young accountant

employed by a global firm such as Deloitte and Touche, recently posted to London, comports his identity when so much continues to pull him back to a rural communality defined by a spiritual order dominated by the ancestors. Is it he – the professional, or they – the ancestors, who will decide how he will lead his life? Then there are the stories of how young people are struggling to live out new transgressive gendered identities – of thinking of themselves as being both gay and Zulu – and of fulfilling traditional roles of responsibility to families in contexts and circumstances where the logics of blood and tradition have been broken down by new market forces. As South Africa has opened up, old fractures have either hardened or taken on completely new dimensions. Compounding all of this, more to the point, in the *midst* of all of this, South Africa has become the world's most unequal society (Benjamin, 2013:5). Infant and maternal mortality remain high at respectively 47 per 1000 births for children and 300 per 100,000 deaths for mothers (Smallhorne, 2013:35). The Health eNews Service (2013: 13) reports that South Africa is now one of the most violent countries in the world with South Africans being 30% more likely to die violently than those in other African countries. The ontological challenge that all this constitutes is that of how South Africans recognise other South Africans as fellow human beings and extend to them unconditional respect. What is the place of learning in all of this?

I was born sixty years' ago into this ontological hotspot – in what is called the *city of gold*, Johannesburg. I grew up in a very modest city home. My parents had to work extremely hard to maintain our family. I was lucky, though, much luckier than virtually all of the children with whom I grew up, some who would have been materially better off than I was. There wasn't a day in my life growing up that I felt psychologically oppressed, deprived, or wanting of anything that mattered. I grew up in a world defined by racial classification and racial hierarchy but never felt the psychological damage that is so much part of our landscape. I never, ever, felt a sense of inferiority to anybody. Of course I grew up aware of how people were categorized and how this categorization led to social superiority and inferiority. I was deeply aware that I was, as were others, disenfranchised and I understood early on in my life what it meant to be oppressed. But I would like to thank my parents for making it clear that I should never feel sorry for myself. Racial classification is an elemental part of people's consciousness in South Africa. It was formally introduced into the statute books in South Africa in 1953 with the Population Registration Act which created statutory classifications for everybody. Important for the purposes of this story is not how I was classified but that I *was* classified. The effects of this classification process, and the social dynamics that come to give these legislative enactments life, is that they shaped up to play a large role in life-chances, what opportunities were formally available to one, what kinds of social habits and routines came to be a part of one's life, and, critically, how social difference – who and what they were supposedly about – come to be presented to one. The experience is directly akin to how social class works in a country like England where one's social status is encoded spatially, symbolically, bodily, in a kind of totalizing ontology. This is what classificatory framing seeks to do – to order one's life.

It bears emphasizing that in a country like South Africa, and in most parts of the world where these ideological processes are pre-eminent, this kind of social engineering works – if one allows it to. The extraordinary interest about a country like South Africa is that there are people who choose *not* to be determined by the enclosing and enfolding intentions of the apartheid system or the continuing mechanisms of social-distinguishing taken on by the current post-apartheid order. One has the situation where most South Africans have been assimilated and absorbed into apartheid's ordering with all of its intentions being realized in the sense of superiority some feel about themselves, about their social identities, their rights and entitlements, and the sense of inferiority most have about who they are and the *naturalness* of their subordinate status and of what they could be expecting for themselves. But a significant number of people who have had the accident of fate to be born here have refused, in many different ways, to have their lives determined on this basis and so have created a different ecology for themselves and for how they lived their lives.

A DIFFERENT ECOLOGY?

One of the most important things about my own life, growing up in an ecology which, I emphasize, was different to that of the mainstream, was that I grew up knowing that I could, one day, make something of my life. I don't mean something in a "look-at-me-I'm-coming" way. I simply mean that I had a sense, inculcated in me by my parents, of self-possibility. It is important to explain that my parents did not have a clearly formed philosophy of what it meant to be fully human, but they lived according to that dictum. Modest as my parents' home was, I was given a sense of self-belief. It was what my parents put in front of us – the kinds of things my father would quietly bring home, the kinds of presents my sister and I would receive on special occasions. By the time I went to high school, the cramped enclosure of the bedroom my sister and I shared as children had its own very eclectic collection of books. Building on this and thinking back on the formation of my sense of self, it never crossed my mind, for example, that I would not go to university one day. It was not a question. It was just how my parents helped to create a different ecology for my sister and me.

My parents were very conscious of what was right and wrong. My mother, right from the time I could first remember these things, always wanted better for us. The places where we lived, the schools to which we went, the kinds of friends and associates, all were carefully choreographed by her to maximize the opportunity for us to build our sense of self-worth. Ours wasn't an outright political family. I knew of such families, but there was enough politics in our household to make us, my sister and me, deeply aware of political injustice. My mother had a terrible temper and so never took nonsense from anybody. She was fearless. My father was much quieter. He just did things. Both of them were leaders in their own small ways, my mother in the garment workers' union in Johannesburg, my father in the sports'

clubs, recreational associations, and religious organizations in which he found himself. They taught us how to *be*. I learnt how to be with other people in open ways. My parents made sure that their friends and associates were themselves open. They held an open house in which people of all kinds came and went. I have difficulty in remembering the endless number of people who landed up in our house and were given refuge. I remember having to reorganize our sleeping arrangements repeatedly so that so-and-so could spend the night, or, as it sometimes turned out, stayed for weeks on end. All kinds of people.

Importantly, our parents were constantly thinking of the place my sister and I would occupy in the world into which they were leading us. Our education was the most important thing for them. I remember regularly talking with my father about what would happen next in our educational futures. He was always enquiring about good schools. So going to school outside of the country formed important parts of our family discussions. My family, for example reached a critical juncture in their lives when they had to decide whether I should leave the country to go to school in neighboring Swaziland where a new progressive Anglican school had been established to create the opportunity of a good education for children from South Africa.

PRIMARY SCHOOLING – FORMAL BEGINNINGS

When I started primary school there were not many options as far as my parents were concerned. They would never have tolerated the idea of their children attending the schools in the area in which we lived. It was a straight-forward fact that these were not good enough. Our family life, as a result, was complicated by the travel arrangements that had to be made to get us to school. I went to a primary school in the center of the city of Johannesburg, which meant travelling into the city each morning with my parents on their way to work. It was a segregated school, but it was led by men and women – including my uncle who became the deputy principal while I was there, and many other teachers whom I knew – who managed the ambiguity of apartheid with a conscious commitment to never allow the school to become a second-rate institution. The school, given its time and place, had to confront the emerging force of what the apartheid order sought to achieve. People of color were being forcefully removed from the city in order to make it white as a result of the apartheid Group Areas Act which demarcated social space racially. The school itself was later forced to close down because it found itself in the wrong racial group area.

For as long as it could, however, the school fiercely resisted the strictures of this segregation. It took in children without worrying about their racial classification. More notably, it deliberately created an educational environment of high achievement. Learning was celebrated. The teachers generally worked hard, and, of course, predictably, regularly failed to impact the lives of the young people going through their classes. But they were able to produce for many of us an environment of possibility, in our learning and in our extra-mural lives. We came to know as

children, without fully understanding what we were listening to, the music of Verdi and Mozart, the poetry of the great romanticists Keats, Byron, Wordsworth, the even-then enigmatic Blake and the important modernists, Yeats and TS Eliot. Looking back critically, our teachers didn't tell us about the African continent and its own vibrant cultural legacy, but the way in which our teachers mediated the so-called European canon provoked a *frisson* of intense creativity on the ugly segregated landscape of our youth. I remember the *eisteddfods* in which our school participated. There we were, in the heat of a South African Highveld summer, in that part of the country perched on the upper reaches of the plateau of the subcontinent, hundreds of us children and our teachers crammed into a Victorian-style school hall in the middle of the city, wildly applauding after the most unlikely James Naidoo[1] performed a popular Chopin nocturne, followed by our motley school-choir singing the Chorus of the Hebrew Slaves with great passion. I would only later come to know about *Nabucco* but the memory of the music remains intense. Before I was thirteen, I had read Austen and Dickens. Later, going to high school, I continued a correspondence with some of my primary school friends who had gone on to other schools, about the things we had read, listened to and appreciated. The letters were pretentious, full of silly and conceited puffery, malapropisms and infelicities. But how could thirteen year-olds not be like this?

HIGH SCHOOL: BUILDING A SELF

High school was different but equally important. I went to a small newly-established private Anglican boarding school for boys in Johannesburg. Throughout this period I was never in a class of more than fifteen people. The school had been established as a direct response to the apartheid system. As a private school, not governed by the oversight laws of the government, it was able to manage its own affairs, decide who would teach and, most important of all, who would attend as students. At the beginning, when I was there, there were no children who would have been thought of as "white". They did come a few years later after I had left. Girls were also later admitted. But, like my primary school, the school had young people from a wide spectrum of the country's diverse history. We learnt a great deal from each other, and together with teachers who brought with them a conscious political sense of commitment to the school's ideals of inclusion, we created in our daily lives an inspiring alternative to the official South Africa.

This daily life was always full of contradiction. We could not keep the toxicity of the outside world completely out, and so we regularly found ourselves in all sorts of ethical and logical muddles about how to deal with personal and social challenges which kept coming our way. I only learnt many years' later how some of our friends felt that they had had to play down the fact that their home languages were African ones. That they had to do this speaks powerfully to the fact that even in this consciously progressive school environment we had blind-spots. That we were not aware of this discomfort, thinking back, is troubling in terms of what we *thought*

we knew and the sensitivity of our knowing. We thought that we were modelling an alternative to apartheid, but its insidousness was more complex than we understood. On balance, however, school was enormously stimulating. It left me in no doubt personally about my own possibilities. I came away from the school with a sense of ease about my own ability to manage myself, knowing that I could go anywhere and would have a sufficient base-level of self-consciousness to know that being in the presence of difference, of any kind, would require me not to take anything for granted. This preparation was vital when I later went to England to school on an exchange program and began to do the English A-level examinations.

UNIVERSITY: FORMAL FORMATION

When I returned from school in England I had to decide where I would go to university. This was the first really big decision in my life. I could have gone to Oxford on a refugee scholarship. This would have meant deliberately declaring myself as such – a refugee. I decided not to. I did not, also, wish to go to the new ethnic universities established in the country; and so I applied for admission to the University of Cape Town, a historically 'white' university, and in 1973 enrolled to do a BA in African Studies and economics. In some ways this was the most formative time in my life. I was attracted to the life of the mind before I came to Cape Town, but I was exposed to a climate which was unapologetically intellectual there. Before I came to Cape Town I had been associated with, and a member of, various progressive-minded organizations in Johannesburg. But Cape Town significantly ratcheted-up the whole temperature and tone of how I was to think about social difference. Fairness, the right thing by and for others and for oneself, was the emotional register in which I had grown up.

But I discovered in Cape Town a community of intellectuals of whom I had been unaware, who inducted me into how one might begin to unpack and historically locate the experience of justice and injustice. When I began as a student here in the 1970s I was probably a lot more worldly than many of my peers. I had had the experience of travelling, of an encounter with a classic education which was more intense than that of most, including that of young people who were socially much more privileged than I was. But I met young intellectuals who had grown up in environments that were much more politically-advanced than my own. In these environments a philosophy of self-worth was not only lived but made the object of intellectual scrutiny. Central to that philosophy was the idea of non-racialism. Aware as I had been before, my awareness was still encumbered by the language of apartheid, with the racial categories of apartheid. These people I encountered in Cape Town quickly challenged my blind-spots in how one might live completely freely. My experience here in the seven years I spent earning four qualifications, was what came to stay with me for the rest of my life and which came to define for me what would be my intellectual quest – how inequality was instantiated in our lives and how it could be undone. The experience was fundamentally about how one

always had to be more than one's history. It was putting into words in some ways what my parents were living but didn't quite have the concepts for. I learnt ideas here in Cape Town, ideas that have come to completely shape me.

I read African Studies and Economics for my first degree, and subsequently completed post-graduate degrees in African Studies. The work for my Honours and Masters' degrees essentially pivoted on the history of the labour movement in the country. While I thoroughly enjoyed what I was doing I had not decided upon a career. I had thought that I would carry on to do law, and registered for a post-graduate law degree by correspondence through the University of South Africa, but I couldn't work up the enthusiasm for the courses at all and abandoned this effort very quickly. To earn an income, while I was completing my masters' degree, I took a job at a high school in Johannesburg where I taught economics. I enjoyed what I was doing and decided in the course of that year of working as an unqualified teacher that I would return to university to train as a teacher.

I came back to the University of Cape Town, and supported by my wife (having married when I was 25) completed my teacher's diploma. I actually learnt very little in the formal parts of my training; the program at that point was focused on the practice of teaching but not in a markedly reflective way. I learnt a great deal more from my colleagues in the program with me. They were raising interesting questions about the sociology and curriculum of education. We read, debated and created for ourselves a stimulating extra-curricular environment. It was here that my several years' of study in African Studies began to be useful. Against the backdrop of African Studies' concern with justice and my exposure to the sociological and political literature on this and related issues, I was able to engage with the urgency of the struggle for equality and equity in education. And so I completed my post-graduate teacher's diploma in 1979 and entered the teaching profession in 1980.

BEGINNING TO TEACH

The school at which I taught from 1980 to 1987 was ideal in terms of my own continuing education. I encountered there the very intellectuals who were the tutors of the precocious young people to whom I had become close at university. These were extraordinary people. Mere teachers they may have been in title, but in their work and practice they demonstrated a sense of what it meant to be fully and unconditionally human. They were consummately confident, comfortable about their intellectualism. I saw in them what I had seen in some of my own primary and high school teachers. They were people who would concede nothing in terms of their identities, nothing to "race", class or religion. They had, moreover, a deep understanding of their disciplines and spoke to their students with authority. Amongst them, for example, were the most sophisticated literary theorists of the English canon, many of whom would under normal circumstances have become the country's foremost scholars. They were spurned, however, by the apartheid order. They consciously, as a result, turned their institutions, and particularly this school

at which I now found myself, into sites of educational excellence. Not only did they produce outstanding academic results, and so made the school one of the top five feeder schools to the University of Cape Town, but they located excellence within a much wider frame of understanding than simply attainment of high grades in examinations. They emphasized, in what they did, that the purpose of education was to produce rounded citizens. And because their students were denied the right to citizenship, they lost no opportunity to stimulate in them a sense of their self-worth. Their message was consistent and coherent: Politically subjugated as one might be, one should never allow the conditions of oppression to define the character of one's being. Using the beauty of mathematics or the subtlety of language, their point of departure was that all the riches of education were the entitlements of their students and that there was nothing about who one was or from where one came that should determine or condition these entitlements. Education was a human right, and it was an entitlement which students had an obligation to exploit and explore to the fullest of their abilities. They demanded, as a result, the best from their students and didn't brook excuses of background for their failure to succeed. They did this, moreover, with a sternness and a discipline which came to imprint on their students, for the rest of their lives, the message of their rights and entitlements and their obligations.

Illustrating this commitment to principle was what must be the almost unprecedented decision the school took in 1986, to hold the entire school back a year and to have all the students repeat the curriculum. This was the period of the South African school boycotts when high school students led the country against the apartheid order and decided that they would not go to classes. At our school, despite our attempts to persuade our students to understand the importance of education and so not to jeopardise their futures, our student leaders (it became clear with hindsight) helped us, their *learned* teachers, understand that education was more than the routine of what we were accustomed to. No academic teaching took place for more than half of the school year. Unlike many schools we did, however, manage to have students come to school every day and to institute an alternative education program. This alternative education consisted of a mixture of cultural activities – students and staff mounting a daily diet of plays, poetry and musical performances – and education awareness classes with an emphasis on the politics and sociology of inequality. Everybody learnt.

It was, however, not without cost. When it came to the end of the academic year, the apartheid authorities sought to preserve the pretence that everything in the schooling system was normal and so despite the fact that schools had barely functioned insisted that examinations should proceed. Our school in an extraordinary show of unity between parents, students and teachers, decided that our children would not write examinations. They had not been properly prepared. To sit the examinations would legitimate the educational fraudulence against which we were fighting. And so the school defied the government by not setting and implementing examinations. The entire senior management, including myself, was, as a result, suspended. Our salaries were summarily withdrawn. The rest of the staff, with great solidarity, pooled their

salaries and redistributed the money that was there amongst everybody. The next year, the suspension was lifted and all the students returned to the grade they had been in the previous year. A whole school year was lost. But a point had been made. Nothing less than the whole educational deal was our children's entitlement.

This was a time in the country when many of us literally lived on the edge. We were in constant danger of being arrested. I was intensely involved in what we came to call "the struggle," and was instrumental in initiating and establishing a number of organisations and campaigns to resist the oppression through which the country was going. One of the most important organisations I helped to establish was a civic association for the neighbourhood in which we lived. Out of this association were to come several organizations which continue to play a central role in the life and future of the city of Cape Town. The most productive and influential of these is the District Six Museum which embodies the ethos of the educational institutions which had come to be so important in my own life. In its work the Museum exemplifies the importance of promoting new ways of learning to be a South African. Out of the school and the organizations in which I worked were to come several generations of absolutely outstanding young men and women. When democracy came in 1994, when the country opened up and required people who had been denied opportunity for development, many of them were able to step into positions of authority and influence.

THE BEGINNING OF THE CHANGE

It is important to emphasize the nature of the context in which we South Africans found ourselves during this time of the early 1990s. 1994 is often invoked as South Africa's turning point. But it is more accurate to say that experiences such as the one I described above, when our school defied the government, were responsible as early as the mid-1980s for forcing changes which made South Africa a vastly different social space to that which it had been even five years earlier. The most egregious of the country's fascistic and discriminatory laws were changed. The Group Areas Act which defined space, almost all of it, in racial terms was abolished. Where people could live was no longer managed on a racial basis. The Mixed Marriages Act which outlawed marriage across the colour line was abolished. Critically, Apartheid's racial schools were opened up. The Universities opened up. The whole atmosphere in the country shifted. When 1994 came, it actually brought to a formal point processes that had already begun ten years' earlier.

Critical about the changes, however, was how much they reconfigured for people such as myself the basic conditions and terms of our relationship with authority and with our own self-trajectories in relation to this authority. During the apartheid era this small self-conscious oppositional elite of which I was a member built self-projects and communities of solidarity in opposition to this authority. Our identities fed off it. We deliberately constructed the spaces over which we had control as the opposites, the *antithesis* of what the apartheid sought to ordain for us. We were, as

teachers, in a kind of pedagogical nirvana. We were always within reach of intense pedagogical opportunity. What more could a teacher ask for? Do you see this? Do you understand what is at play here? We used the experience of the everyday, and the educational strategies and motifs of this *everyday,* to demonstrate another authority. We, our children and ourselves, revelled in the challenge of revealing and exposing the hypocrisy of the education mediated through apartheid.

When the new conditions became the order of the day from the late 1980s and the early 1990s, we found ourselves in a completely different set of circumstances. One striking feature about apartheid, despite its intensity, was that it presented the world in relatively straightforward terms. Most things, although not all, could quite easily be categorized, good and evil, inclusion and exclusion, self and other, acting or not acting. The new conditions, coming out of a situation with new and emerging freedoms, were anything but straightforward. It was no longer so absolutely clear on which side of the inclusion/exclusion divide one found oneself in terms of where one lived, where one learned, the communities in which one found oneself and that one elected to build. The most critical thing was that from having been defined socially and culturally, people such as myself found ourselves having to *define ourselves*; we now had to find new ways through which to constitute the standards of civility, of engagement with others and of ourselves. What now would be our points of reference? Did we want, for example, to take our cue of what it meant to be excellent in our education from the attainment levels that were clearly evident in former white schools, or did we have an obligation to redefine for ourselves what these should be? How were we to manage the task of learning, of cultivating a sense of educatedness in this new situation? We had to step up and lead in remaking the order we wished to emerge in the country.

RECOGNISING THE ONTOLOGICAL HOTSPOT

Thus, like many others, I found myself in the middle of the ontological hot-spot that is South Africa. I was living the experience of what it meant to *make* a life. I was experiencing the privilege in which very few people have an opportunity to participate, particularly as an intellectual interested in how people learn, in the making of a new world and a new social order. It is important for me to emphasize, as I make these points about the new order, that I am not romantic at all about the extent to which this new order has equalised opportunity for South Africans. As I have tried to explain above, the country is one of the most unequal in the world and the truth of the matter is that the new post-apartheid conditions have facilitated in some ways the deepening of this inequality. But, and this is the ontological issue which I am seeking to foreground here, it fundamentally disrupted the clarity with which apartheid produced social identity, belonging and responsibility. It made it possible for old excluded groups and individuals to find themselves in new social positions with new social questions about their rights and responsibilities. Significant about this for somebody such as myself, who sought to understand and teach how social

difference worked and operated in one's life, is that it meant that I could no longer invoke apartheid by itself as the determinative framework against which to think, speak and act. The basic conditions of pedagogical engagement had changed.

It was in the midst of these developments that, in 1988, I was appointed into a lectureship in the theory of education at the University of Cape Town. I entered a School of Education which had, in the eight years that I was away from it, changed significantly. Most of the staff-members who had taught me had left; coming in were colleagues of my own generation who brought a much more critical eye to their work and were much more inclined to see education as a space of enquiry. Together we set about reinventing what we did and what our students were taught.

I entered the School of Education with an interest in the role of the school in the production, reproduction and unmaking of inequality. My major colleagues were scholars who had already been working on these issues for several years, central among them historians and sociologists of education. They came to play a key role in giving me the space and encouragement to pursue my own interests. Their contribution to my development was not so much in the theoretical paradigms they brought to their scholarship, but the encouragement they provided and the environment of freedom they nurtured.

One of the most important benefits of this freedom was the opportunity to read. This was still the age of the *text,* of *hard-print*, when the idea of electronic journals and j-store were not within our imaginations. Coming back into the university after having been away from it for eight years, despite remaining an avid collector of books, I found that I had to reorient to the explosion of debates and writing that was taking place across the world in the social sciences. I re-encountered writers who had moved on intellectually since I had last known them. They were asking immensely interesting questions about humanism. The world itself had changed. At the centre of this, of course, was the deeply significant experience of the dismantling of and the reconfiguring of the architecture of global politics. The collapse of the Soviet Union and the Berlin Wall signalled the end of the struggle over the future of the world as it was articulated in the competing narratives of East versus West, socialism versus capitalism. Francis Fukuyama's *The End of History* was emblematic of where this struggle had come to.

FINDING A FOCUS

In response to these developments, and to make sense of the place of South Africa in it, I began to concentrate my own work around the question of racial inequality, its historical genesis and contemporary dynamics. I began by working on two related fronts. On the historical front I looked at processes involved in the creation of the apartheid school. On the contemporary front I initiated a process of trying to understand how schools actually worked as sites for the making of racial identity and its ancillary by-products of inequality. I began this work as a doctoral student at the State University of New York in Buffalo. I received a Fulbright Scholarship

to study in the United States for a year in 1991–1992. In the time that I was away I completed a masters degree in Educational Theory and also fulfilled the coursework requirements for the PhD. I managed this on the basis of transferring credits from my first masters degree. For my doctoral dissertation at Buffalo I decided that I would look at how young post-1994 South Africans were experiencing "race" in their schools. Particularly helpful for this study was the American Studies major I did alongside of my sociology of education major which provided me with a deep introduction into American cultural history.

Given this, the primary focus of my research over the last twenty-five years has come to fall on the question of "race", identity, and schooling. This focus has, naturally, evolved and expanded. It began largely as socio-cultural description, analysis and explanation of the experience of "race" in the South African school, and it included the issue of how the curriculum was constructed and how it worked. I sought to understand how this curriculum and the knowledge within it were mediated. This took me into three schools in the Cape Town area which I began to study intensively. I approached this work ethnographically, and working with schools' policy documents, their curriculum documents, doing observations in schools, and conducting surveys and doing interviews in the schools, I sought to come to an understanding of what the schools' intentions were formally and officially, on the one hand, and what their actual behaviour, the informal, was on the other. In the course of this work I collected a great deal of triangulated data amounting to hundreds of survey forms, and multiple tens of interviews and many observations. Critical about this was using the theoretical point of departure that "race" was an ideological phenomenon. How this ideology was produced, reproduced and contested and so remade in the context of the school was the focus of this work. This research took off from a fieldwork practice which over a period of almost fifteen years has generated a corpus of in-depth interviews with approximately five hundred young people. Proceeding from the basic proposition – derived from the work of the Birmingham Cultural theorists, Stuart Hall and Paul Willis in the main – that ideology was learnt, I set about developing a research instrument to understand how the setting of the school facilitated the shaping of identity. This initial phase of work yielded a rich vein of writing. On the basis of this I produced a dissertation which I entitled *Apartheid's Children: Student Narratives of the Relationship Between Experiences in Schools and Perceptions of Racial Identity in South Africa.* I was disappointed not to have the dissertation published. But fortunately I was able to publish approximately ten articles and book chapters which drew on this initial research. On the back of this work I began a relationship with other scholars working on youth identity. For this work I developed a theory of the inter-relationship between what I described as the discourses of the official, the formal, and the informal, to explain the decision taken by young people about their identities.

Since the middle of the first decade of the 2000s this work has expanded significantly in scope and depth. With respect to its expansion it has come to now include the coeval and often inseparable issues of class, gender and sexuality. In

terms of this I see myself now as a scholar of social difference with a focus on "race". I have shifted theoretically in significant ways. From essentially being a sociologist shaped by the Giddensian idea of structuration in which structure and agency exist in an ecology and can be explained through understanding their mutualities, dependencies and contradictions, I have moved towards a more psycho-social orientation where I continue to invoke the ecological dynamic of self and structure but now seek to understand more specifically how subjects come to acquire and learn what they know – their consciousness. In this, context remains critical, but how individuals work with the material in and of their lives, including their own capacities, has become of central importance in my work. In relation to context, I continue to work with the basic sociological approach generated by structural analysis which locates behaviour in the larger social and physical settings in which people find themselves, but seek to understand now why individuals are more than simply mirror reflections of the dominant histories which are used to narrate them.

An important turning point in this research took place with the work I began to do for my first single authored book, *Youth Identity in Contemporary South Africa* and my participation in the South Africa-India comparative study I carried out with colleagues from Sussex University. Between the completion of my PhD and the beginning of the new millennium, I had come to the realisation that the fields of sociology of education and sociology itself struggled to account for and explain social consciousness. Much of this theory was tendentious and tended to read and explain behaviour in ways that depended too significantly on aggregated subject categories and social classifications. Qualities were attributed to these predetermined aggregated identities and classifications in an entirely circular way. I could not accept this, and so began a phase of work in which I continue to find myself. This phase of work is concerned with learning and cognition. Influenced first by the psycho-social theories of Erik Erikson, I have tried in my work since the early 2000s to emphasize how much young people grapple with the process of determining an identity for themselves. I tried to show, particularly in *Youth Identity in Contemporary South Africa,* how important in understanding what Erikson called identity confusion the relationship between context and the self was, and how the outcomes of this relationship were not predictable. The context of South Africa emerging from isolation and finding itself exposed to a multiplicity of new factors and forces, particularly the hypermodernity of globalisation, I sought to show, were crucial in understanding how young people were presenting themselves and engaging with school. Out of this approach came another productive spurt of writing, yielding a substantial number of pieces that have been used widely. An important piece I wrote with Yusuf Sayed, was "The Racial State", published in *Perspectives in Education* and reprinted by Nitha Muthukrishna in her *Educating for Social Justice and Inclusion in an African Context: Pathways and Transitions*. As a result of this work I was able to build a strong and productive relationship with some of the best post-colonial Indian scholars writing on the school such as Sarada Balagopalan, Geetha Nambissan and Ramya Subrahmanian. An important outcome

of this work was the confirmation through my fieldwork of how powerfully identity was a learnt quality.

But how this learning happens was still, I argued, inadequately explained. It is this dissatisfaction that has caused me to pursue the process of *how* individuals learn that which matters to them, especially their racial and gendered identities. This has led me to engage with concepts such as desire and intentionality. I have in my theoretical work turned towards theorists who use these concepts, in order to develop research instruments to make sense of the testimonies my research assistants and I are working with. This has meant taking a philosophical path through the work of Judith Butler and Slavov Zizek, and developing my own approach which continues to be rooted in an acknowledgement of context but which now is alert to the multiple and often ineffable factors that percolate and circulate in and out of people's lives. The point at which I have arrived is to focus much more on the individual and to find ways in which the micro-phenomena can be aggregated in less teleological ways. The beginnings of this approach are evident in my 2011 book *Realising the Dream: Unlearning the Logic of Race in the South African School.* I draw on the critical realist theorist Roy Bhaskar in this work to make the point that history, and the making of identity within it, is much more open-ended than most of our social analyses seem to suggest. The empirical work I carried out for this phase of work bore out the extent to which young South Africans in the new millennium were exploring, often in intensely confused ways, the factors playing out in their lives. In the closing sections of *Realising the Dream* I begin to work with the complexity of the psycho-social and make a statement about the urgency for developing new approaches for working with it.

Two pieces I have written recently take this further and constitute important breakthroughs. The first arises out of work my student Hannah Botsis and I have done on "race" and gender in which we show how the ideology of "race" is mediated through the constructions of particular forms of desire; and the second out of the long-range work I have done with a male subject with whom I have developed an intense research relationship. I have now more than seventy hours of interview material with this young man. The process of interviewing continues. In an example of this latter work, in a piece entitled "Coming to Self-Awareness and Overcoming Violence" (to appear in *Pedagogy, Culture and Society*), I work with the concept of intentionality and move much closer than I have hitherto to understanding *how* subjects account for themselves and their identity choices. I explore in finer detail than I have up to now how they make decisions at crucial moments of their lives. Historicising the moment of choice-making is the essential theoretical contribution that this approach constitutes.

It is important to emphasize that alongside this empirical work I have continued to explore the historical and philosophical dimensions of the production of the ideology of social difference and particularly that of "race". *Realising the Dream* sought to bring all the separate but articulated parts of my interests together. The

distinct historical inflection of this I carry out on two fronts. The first of these is in my work on the history of education in South Africa, and the second is in the history of the racial city. The former is more important. I have been leading a project for the past seven years to produce a new history of education for the country. Historiographically, consonant with the theoretical tools I am using in my work on the experience of "race", I am seeking to show that much of our history is tendentious in its projection of the story of South Africa in a continuous racial register. Instead, I argue that the idea of "race" is repeatedly made, undone, remade and reconstituted. I show how significant the school is in the 19th century as a site for its social institutionalization. The country, especially the Cape, could have gone in a different direction. Elements of this work have appeared in a number of journal articles, the most notable of which is a piece I wrote recently entitled "The Making of White Schooling in the Cape Colony in the Late Nineteenth Century".

The second historical front on which I am working is a long-term biographical project on the social theorist Neville Alexander. The major objective of this work is to explain the intellectual history of the idea of non-racialism in South Africa. I have published a number of pieces relating to this, several of which have focused on debates which Alexander had with figures such as Nelson Mandela. "A Politics of Intellectual Engagement: Six Key Debates" in *Education as Change* is my most recent contribution to this line of work. With respect to coming to understand "race" and social difference in theoretical and philosophical terms, I had begun – in a contribution I made to a special issue in the journal *Transformations* – to show how the idea of "race" is naturalised discursively in the social sciences. This discussion was taken further in *Realising the Dream* and continued in a new piece I contributed in the journal *Theoria,* entitled "Race and Its Contemporary Confusions: Towards a Restatement". This contribution, drawing on the full range of biological, sociological and philosophical debates underway around the world, explicitly engages what I describe as the movement to turn "race" into a positive phenomenon and shows what the conceptual problems with this approach are.

My work on "race" and education has been extensively used. I was asked to join a small panel of keynote speakers of leading global scholars participating in a landmark conference in Adelaide, Australia, on race and education. I was also asked recently to join a group of leading international "race" theorists to contribute to a special issue of the journal *Theoria* on the subject. This special issue has just appeared and will make an important contribution to opening up the discussion of "race". My contribution "Race and its Contemporary Confusions" is, I feel, an important statement of where current thinking in the social sciences is. A key innovation, which I will develop further in the future, is the factor of desire and its emotional attributes in the construction of racial identity.

On the strength of the whole corpus of this work I was asked by South Africa's Human Rights Commission to undertake an enquiry into a very public racial incident at an important Cape Town school in 2003. In 2008 the then Minister of Education in

South Africa, Naledi Pandor asked me to lead an investigation into the phenomenon of racism in higher education. This enquiry proved to be almost as controversial as the incident which gave rise to it and continued to have, long after the publication of the findings, a resonance in public debates about transformation in higher education. I have been consulted by many of the universities and knowledge-producing agencies in the country, and outside of it, to help them in understanding issues of "race" and racism on their campuses. I was invited to give a presidential talk and lead a panel at the American Educational Research Association on the subject of "race" and racism in Education in 2011.

CONCLUSION

What one's work amounts to and how it contributes to increasing understanding and actually resolving problems one cannot really know. One can see one's work being absorbed into the policy arena quite easily. In this sense my work in the South African setting has helped in how key players in the settings of the school and the university understand and act in relation to issues of social difference. But its educational value for the members of the wider community who could be reading this work is what I cannot speak about with any certainty. The value to me, however – the value of doing this writing exercise – has been immense. It has helped me come to understand more clearly – the left-behind residue – the issues involved in my own work. It has created the opportunity for my own critical reading family to see what I have written, and to have been able to talk with them about it. Out of the exercise of talking with them, of repeatedly pausing over these last few paragraphs, has come home to me forcefully, something I knew before: How difficult the job is of working with one's own history, and how powerful the process and exercise of seeking clarity about big, small, all kinds of issues can be. I have come to a better meta-awareness of how the self can easily be written, scripted, and so how critical the task is of constantly bringing to the forefront of one's imagination, and learning that one should be always doing this, the possibilities that are there in the alternatives that are available to one, that may be obtained, or that may not be but which must still be reckoned with. I have learnt more emphatically how extraordinary and wonderful the challenge is of accounting for who one is and how central learning and knowing are in this. The critical feature of this learning which intrigues me is that of transferability, my capacity to deploy it to the always new and different. And I think it is now fairly strongly wired – wiring that I have constructed via my learning – into my own way of working and living in new and changing circumstances.

NOTE

[1] The name James Naidoo is fictitious. I do not have the permission of the person to use his name and so am giving him a pseudonym here.

FAVORITE WORKS

The Struggle for District Six: Past and Present. With Jeppie.
"Constituting the Class": An Analysis of the Process of 'Integration' in South African Schools (2004).
Creating the Rainbow Nation? Citixenship and Education in South Africa. (2007). With Ahmed and Sayed.
Globalisation and its Malcontents: The Promise of Education (2005).
Youth Identity in Contemporary South Africa (2007).
Renaissances, African and Modern: Gandhi as a resource? (2009).
Multicultural education in South Africa (2009).
Southern Theory and its Relevance for Comparative Education (2010).
Interrogating the nature of the 'universal' in South Africa's new educational order (2011).
The ethics of self-rule: Violence and masculinity in contemporary South Africa (2011).
Building quality in education: Are international standards helpful? (2011).
"Quality's 'others' ?" The politics of bordering and re-bordering our educational standards (2011).
Accent on desire: Desire and race in the production of ideological subjectivities in post-apartheid South Africa (2011).
The Contribution of Radical Western Cape Intellectuals to an Indigenous Knowledge Project in South Africa (2011).
Realising the Dream: Unlearning the Logic of Race in the South African School (2012).
The Challenge of Thinking: The Unarticulated Transformational Imperative? (2012).
The aesthetics of violence: Possibilities for new masculinities in South Africa (2012).
The periphery's progeny. The South African School and its relationship to youth identity in contemporary South Africa (2012).
"Quality's" Horizons (2012).
The promise of the university: What it's become and where it could go (2012).
'Race' and its contemporary confusions: Towards a re-statement (2013).

REFERENCES

Ahmed, R., Sayed, Y., & Soudien, C. (2007). Creating the rainbow nation? Citizenship and education in South Africa. In K. Roth & N. Burbules (Eds.), *Changing notions of citizenship education in contemporary nation-states*. Rotterdam: Sense Publications.

Benjamin, C. (2013, March–April). With influence growing on world stage, brits flex their muscles. *Mail and Guardian, Business,* 5.

Health eNews Service. (2013, April). Violence, alcohol and mental disorders: In need of an integrated approach. *The Star,* 3 April 2013, p. 13.

Jeppie, S., & Soudien, C. (1990). *The struggle for district six: Past and present.* Cape Town: Buchu Books.

Smallhorne, M. (2013, March–April). A collective responsibility. *Mail and Guardian,* 35.

Soudien, C. (2004). Constituting the class: An analysis of the process of 'integration' in South African schools (pp. 89–114). *Education and social change in South Africa.* Edited by L. Chisholm. Cape Town, Human sciences research council. (Reprinted, pp. 255–282 in *separate and unequal: Combating discrimination against Roma in education.* Edited by E. Rekosh & M. Sleeper. Budapest and New York, Public Interest Law Initiative/Columbia University Budapest Law Center).

Soudien, C. (2005) Globalisation and its malcontents: The promise of education. *Asian Pacific Journal of Education*, *25*(2), 145–158. (Reprinted in Joseph Zajda, ACU, Val Rust (Eds.) (Forthcoming), *Globalisation, policy and comparative research: Discourses of globalisation* (Vol. 2). Sydney: James Nicholson).

Soudien, C. (2007). *Youth identity in contemporary South Africa* (p. 135). Cape Town: New Africa Books.

Soudien, C. (2009). Renaissances, African and modern: Gandhi as a resource? *Journal of the Historical Association of South Africa*, *54*(1), 92–111. Retrieved from http://journals.sabinet.co.za/hist/

Soudien, C. (2009). Multicultural education in South Africa. In A. B. James (Ed.). *The Routledge international companion to multicultural education* (pp. 146–158). Routledge.

Soudien, C. (2010). Southern theory and its relevance for comparative education. *Southern African Review of Education, 16*, 7–14.

Soudien, C. (2011, September–November). Interrogating the nature of the 'universal' in South Africa's new educational order. *Globalisation, societies and education*, *9*(3–4), 323–336.

Soudien, C. (2011). The ethics of self-rule: Violence and masculinity in contemporary South Africa. *Public Culture*, *23*(2), 275–284.

Soudien, C. (2011). Building quality in education: Are international standards helpful? *Contemporary education dialoque*, *8*(2), 183–201.

Soudien, C. (2011). Quality's 'others'? The politics of bordering and re-bordering our educational standards. *International Review of Education*, *57*, 89–109.

Soudien, C. (2011). Accent on desire: Desire and race in the production of ideological subjectivities in post-apartheid South Africa. *Feminist Formations*, *23*(3), 89–109.

Soudien, C. (2011). The contribution of radical Western Cape intellectuals to an indigenous knowledge project in South Africa. *Transformation, 76*, 44–66.

Soudien, C. (2012). *Realising the dream: Unlearning the logic of race in the South African school.* Cape Town: HSRC Press.

Soudien, C. (2012). The challenge of thinking: The unarticulated transformational imperative? In R. Venter & F. Tolmie (Eds.), *Transforming theological knowledge: Essays on the theology and the university after apartheid* (pp. 21–30). Bloemfontein: SunPress.

Soudien, C. (2012). The aesthetics of violence: Possibilities for new masculinities in South Africa. In J. van der Schijff (Ed.), *Community punching bags* (pp. 6–11). Cape Town: *Paperback.*

Soudien, C. (2012). The periphery's progeny. The South African school and its relationship to youth identity in contemporary South Africa. In C. Sleeter, S. B. Upadhyay, A. K. Mishra, & S. Kumar (Eds.), *School education, pluralism and marginality: Comparative perspectives* (pp. 249–264). New Delhi, India: Orient Blackswan Private Limite.

Soudien, C. (2012). Quality's horizons. In S. J. Klees, J. Samoff, & N. P. Stromquist (Eds.), *The world bank and education: Critiques and alternatives* (pp. 95–107). Rotterdam: Sense Publishers.

Soudien, C. (2012). The promise of the university: What it's become and where it could go. In B. Leibowitz (Ed.), *Higher education for the public good: Views from the South* (pp. 31–43). Stoke on Trent, USA: Trentham Books.

Soudien, C. (2013). 'Race' and its contemporary confusions: Towards a re-statement. *Theoria, 60(136)*, 15–37.

ULRICH TEICHLER

THE DEVELOPMENT OF A PROMOTER OF HIGHER EDUCATION RESEARCH

INTRODUCTION

Often we are asked to specify our academic identity: A discipline, a sub-discipline, a thematic area, or something else. I say without any hesitation that I am a higher education researcher. Higher education is a small, thematically based area of research drawing from various disciplines – including sociology, my disciplinary base. There are only two countries with more than 100 higher education researchers in professorial positions, but many do not have a single one. I was the first full professor in Germany with a denomination including "higher education research". In some countries, higher education is viewed as a sub-area of education, in others – like my own country – it has nothing to do with education and is not located in education departments.

Academics from all disciplines proclaim that progress depends on new insights being obtained through research – but when it comes to issues of higher education, most academics consider themselves to be experts, as if their daily experience and observations could easily substitute for research. Therefore, higher education research has remained a small field. But it fascinated me, when I got to know it as a student, because this small field aims at de-mystifying the beliefs of those who are professionally engaged as actors in higher education!

Research is often considered to address issues that are regarded as universal, global, international and cosmopolitan, but higher education systems are quite national, e.g. in the coordination of curricula and degrees, staff structures and employment conditions, governance and funding. Higher education researchers acquire knowledge on their home systems *en passant*, while spending enormous time and energy to understand the world map of higher education. I have been more active than anybody else in my field in comparative projects, and have written about half of my publications in a foreign language, and have had a permanent programme of intercultural experience through an international marriage – nevertheless, I have to explain my experiences and thoughts with reference to my home country, Germany.

EARLY YEARS

Accounts of our earliest years might be a mix of our own memories and stories told to us by elders; it is hard to tell. But in my own case, at the terrible time of World War

M. de Ibarrola & D. C. Phillips (Eds.), Leaders in Educational Research, 197–216.

II, vivid memories were implanted of my very earliest years. Just before the end (I was two and a half years old), my mother was allowed to join wounded soldiers on a boat floating down the river Elbe, because she had tuberculosis. Wounded soldiers on board shouted at me because I was noisy, and I was afraid of falling into the water. When the Russian soldiers began entering the boat, I smilingly ran to them and asked them to show me their guns; one of them presented me with an egg – a treasure at that time. I later heard that the soldiers were so happy with me that the women on the boat remained unharmed. Possibly this was a good start to my avoiding xenophobia.

I was a curious and hyper-active child. At the age of three, I often felt bored and I would ask my mother what to do. Following her advice and, for example counting up to one thousand, I asked her again what to do. When I was first sent to the kindergarten, I told my parents that it was too boring, and they allowed me to give it up. The first day I was in school, the teacher took me to the 4th grade to show the pupils that I was already better than them in arithmetic – this was the first dramatic pedagogic mistake that I witnessed!

After four years in the village school, a first major choice had to be made. Obviously, a son of a Lutheran minister and of a mother who had been enrolled at a university before she got married, had to be among the 5% or so who attended the *Gymnasium*. My mother advised me not to go to the *"Humanistische Gymnasium"* – the most prestigious type with many courses on Latin and Greek and fewer on English, French, mathematics and the sciences – because I was a more practical-minded person than my intellectual elder brother. I do not know whether she meant it, or whether it was a trick, but sibling rivalry moved me to learn Latin and ancient Greek!

I hated my school and its dominant philosophy: "*per aspera ad astra" ("through hardship to the stars"),* because most teachers did their best to let us feel the *aspera*. My mother helped me to survive by writing excuses if I did not want to go to school, and by coaching me many mornings from 5 a.m. onwards. Of my fellow pupils, only one-tenth survived straight through the nine years; some succeeded after repeating one or more grades, some went to other academic secondary schools and many went to lower tracks. At the *Abitur*, one third of my classmates had better grades; I was very good in math and science and just on a pass level in Latin and ancient Greek.

Retrospectively I have asked myself what the religious home environment contributed to my development. Certainly an *adhortativus*: Whatever you do, strive for something meaningful. Certainly two moral attitudes: Don't cultivate your anger, but rather "forgive" soon; and do not be afraid of those in power. And one in protest: Don't trust any single religion, philosophy and ideology.

Overall, I have come to view myself as being unconsciously shaped by the traditional cultural divide in Germany between the professions related to public responsibility (the medical and legal professions and the clergy) and those in the private-commercial world. I recall that my parents took me to one of the most powerful industrial tycoons in Germany about three years before my *Abitur*; and I was offered a career in one of the best known large-scale enterprises in Germany,

including support covering my university years. I did not seriously consider accepting this handsome offer.

EARLY CRUCIAL DECISIONS

I had hoped that the move from school to university would be one from prison to freedom – and in fact I never had reason to be disappointed about my university years. My life began to depend primarily on my own efforts and decisions, and marginally on programmes and other constraints. Actually, there was a cascade of crucial decisions in the period from the final year in school to the final year of study.

First, in the final year at school I applied for official recognition as a conscientious objector (*Kriegsdienstverweigerer*, i.e. war service objector). Such a radical step, in the year when the Berlin Wall was built, was taken by less than half a percent in contrast to more than thirty percent a decade later. I argued that refusing to play the game of military confrontation could help avoid war; this argument was not an acceptable one, but nevertheless I was granted recognition.

Students in Berlin in the 1960s could hardly avoid having a political life. I advised other persons seeking recognition as conscientious objectors, and I became the head of the Berlin branch of the Campaign for Disarmament. Radical student groups invited me to join their meetings, because by then I was an experienced organizer of demonstrations and negotiator with the police. I was one of those who believed that substantial changes in society were needed, and was also one of those shocked about the deaths of John Kennedy and Benno Ohnesorge (a student killed in 1967 by the police in Berlin). I continued to consider Marx as one of the important first-generation sociologists, and I admired Lenin's decision to recognize conscientious objectors that early in history, but I did not believe that Marxism or Leninism would help improve the world. I once went to a large political meeting in East Germany and took the risk of being jailed by calling publicly for a system of recognizing conscientious objectors in the East. From my point of view, many fellow students suddenly leaped from sleepy traditionalism to emotional activism.

Second, I told my parents that when school was completed I would earn my own living. I had already worked in high school holidays as a mailman, and I decided to continue doing this full-time for five months annually. I did this long enough to become a certified German skilled worker – a mailman. I never was afraid of dropping out in university, because I had this solid and pleasant backup.

Third, I had to select a field of study for the university. Not knowing what to do, I asked the public employment office for advice. They grilled me and predicted I would have an impressive career if I became a mathematician. However, I wanted to find a subject that (a) has nothing to do with subjects taught in school and (b) would not lead directly to a prescribed professional area. Hardly anybody could make a suggestion, apart from "philosophy". My elder brother eventually presented me with an introductory book on sociology, and told me that this discipline was a good combination of my social interests and mathematical strength. I enrolled when only

about one in a hundred young people in Germany opted annually for that subject – shortly before the sociology boom emerged.

The first year of study was free of major choices. I enjoyed exploring the various lecture courses and seminars. I bought a dozen books by the sociologist Theodor Adorno and a similar number by the writer Samuel Becket – and I found that left-wing pessimistic critique and "Waiting for Godot" had much in common. The traditional style of German university seminars still prevailed in sociology: The professors embarked on discussions with participants ranging from first-year students just being astonished to hear what was going on to those in the process of completing their dissertation and being able to communicate on highly sophisticated matters. The university operated not as schooling organized according to levels of knowledge, but rather it was from the outset a medium of confrontation with the highest levels, the aim being to promote the long process of maturation in the students.

In the second year of study, the assistant to a professor of political sociology told me that the professor was impressed by a paper I had written, and suggested that I should extend it into a thesis and graduate immediately – after two years instead of the four years official minimum. I declined because I wanted to continue enjoying the intellectual experience of university study. Almost concurrently, a professor of sociology of religion and of sociology of education invited me to join a research project; and I embarked on interviewing, data processing, analysis and report-writing. (Actually, I began with interviewing a type of university graduate I could easily understand, namely protestant church ministers.) In accepting this offer, I began to make my living in higher education research in my fourth semester of study, and I continued to do it for the next 50 years.

I remained enrolled, but *de facto* transferred to the status of a research apprentice: My training continued, through eight-hour meetings every 3–4 weeks with the professor, two assistants and possibly one or more additional students – meetings where theories, processes and results of the research project were discussed in the spirit of the Humboldtian "community of teachers and learners"; and I learned as well by "hands-on doing" for 20–30 hours weekly. I went to only a few lectures and seminars. The study program was so flexible in the German university tradition then current that I could graduate though taking only a quarter of the number of courses nowadays considered to be a normal study programme. Furthermore, I did not take any course in education, sociology of education, or the like.

My fourth and final decision of high significance started to take shape in my fifth semester: I met a Japanese student in Berlin for a few days, and I could not forget her. I worked more hours in order to pay for a trip to Japan in the subsequent year to explore the possibility of a life together. We married one year later, when I was still officially a student. Since then, I have had a 24-hour, 7-days a week, program of intercultural experience and of questioning conventional wisdoms, by way of my life with Yoko – a sociologist, a simultaneous interpreter, a specialist in intercultural

understanding, a mother, a self-made multi-tasking expert, and a constructive critic of my work and life.

FIRST STEPS OF AN ACADEMIC CAREER

After my fifth semester, I was invited by the professor for whom I had already been working, to become a "free research associate" (*freier wissenschaftlicher Mitarbeiter*) at the Max Planck Institute for Educational Research in Berlin. My status was similar to a regularly qualified researcher. My contract guaranteed a monthly honorarium equivalent to a doctoral fellowship without time-limit – today this would be considered a legal curiosity. My task – requiring about half-time work – was advising and supporting other researchers, notably sociologists, in matters pertaining to survey research.

Thus I joined, for example, meetings of a group of scholars discussing major problems of contemporary student-life and learning, and after a while I submitted a questionnaire to the group aimed at reflecting their concepts and methodology. Subsequently, I managed the survey process; and I conducted an independent study on teachers at an international school. I explored the current state of quantitative methods of text analysis; I helped improve drafts of doctoral dissertations; I visited the first two computers in Berlin – one in a nuclear research institute and the other in a factory for electric household machines – to explore use of computers in social research; I took an internship at a polling institute; I attended intensive seminars with theoretical heroes such as Jürgen Habermas and Pierre Bourdieu; and I wrote a report on the state of higher education research.

My employers increased my honorarium substantially when I got married (and they invited my wife and me to their homes). But when it became clear that we would become parents, I had to complete my degree. I spent about half a year full-time writing the *Diplom* thesis (equivalent to a master's thesis in Anglo-Saxon terms), whereby I extended the highly appreciated paper of the third semester to 250 pages, and eventually got the degree with almost the best possible grade. Immediately (in spring 1968), I was given a permanent contract as research associate (*Wissenschaftlicher Mitarbeiter*).

My final major decision before I graduated was to opt for a career in research on higher education. Dietrich Goldschmidt – the professor who had picked me from the crowd about a year earlier – encouraged me to do so. One year before he died he wrote a letter to me and congratulated me for having achieved what he would have liked to do (the political circumstances of the Nazi regime did not give him the chance to pursue his life-course in a similarly strategic way).

Subsequently, I explored various thematic areas. I also served as full-time secretary of the Institute's newly established internal evaluation system. In this context, I studied the worldwide state of knowledge of evaluation research at that time, and I learned how the various disciplines "tick" in approaching common matters and about the potentials and problems of interdisciplinary academic work.

The director of the largest educational research institute in Japan, Masunori Hiratsuka, convinced me that I would not survive my intra-familiar intercultural learning if I did not conduct research on Japan. So I accepted his invitation and went to Japan for 20 months to analyse higher education and Japanese society. This was made possible by a fellowship from Japan together with generous support from the Max Planck Society. Thereafter, I spent two additional years on that theme and wrote three books on higher education, and its links to employment and mechanisms of educational meritocracy in Japan. I submitted one of these books as my doctoral dissertation (Teichler 1976). In the oral defence, my professor, whom I had hardly asked for advice over the years, rated my dissertation as not complex enough – among other things, I had not discussed Max Weber's remarks on the links between religion and economic development in Japan! The other examiners argued, in contrast, that my dissertation was on the level of a *Habilitation*, and eventually I was awarded the title of *Dr. phil.* with the highest possible grade (*summa cum laude*).

I often forget to name the university that awarded the *Dr. Phil.* title to me. After I had completed the doctoral dissertation, I discussed with my friends in a beer-drinking session various universities where I might submit it, and I eventually choose the University of Bremen – viewed as the university most strongly influenced intellectually by the student protest movement of the 1960s. I talked with some professors there, registered administratively and submitted my thesis a week later. One should know, though, that the prestige hierarchy among universities traditionally is flat in Germany.

The professor who had picked me from the crowd had a strong influence on my way of reasoning, and in my selection of an academic life path. He encouraged me not to settle with neat conceptual "models", but rather to try to understand the more or less endless complexity of social phenomena. He paved the way for my entry into academia. He acquainted me with higher education research. He was not a typical *"Doktor-Vater"*. He was an influential facilitator, here and there an advisor, but not a "supervisor" of my academic work after graduation.

TOWARDS AN ACADEMIC PROFILE

As a rule, the *master's-level thesis* is not recognized as the pinnacle of academic work. This does not mean, however, that such a thesis cannot be a milestone in the development of one's academic reasoning. I analysed the "Free German Youth", the official youth organisation in East Germany that individuals needed to join in order to have a chance of making a career in almost any sector of society. I noted that the traditional view was that membership in the Free German Youth was bound to be extremely stable because it was the entry gate to subsequent life chances. My research credo, however, was to challenge conventional wisdom and to find potential surprises – and indeed, I discovered, by examining thousands of documents, that membership in the East German youth organisation went up and down in a ratio of about 1:2. When political campaigning prevailed, it caused a substantial loss of

membership (and an even more dramatic loss in active participation); thereafter, however, there were many leisure activities that led to a growth of membership, and so on. My conclusion: Authoritarian regimes might be less powerful than they believe themselves to be. A publisher was immediately interested, but when the West German government reduced subsidies for information about the East, the thesis only ended up as a single copy in a library.

Before I had the chance to embark on ambitious academic endeavours, I was deeply interested in theoretical and conceptual issues, but I did not want to be a disciple of a single "school" of thought. I disliked the fuzziness displayed by many disciples of fascinating conceptual frameworks who – according to my observation – tended to avoid clearly defining what kind of empirical evidence would confirm or challenge their conceptual apparatus. I wanted to formulate theory-testing empirical research questions – neither theoretical *l'art pour l'art* nor empirical pragmatism, but rather productive confrontation between concept-inspired beliefs and empirically-identified reality. Thereby, I had no *a priori* preference for certain methods, e.g. "quantitative" surveys, "qualitative" inquiries, analyses of documents, analysis of public discourses, and so forth.

As a junior academic at the Max Planck Institute for Educational Research I had the freedom to find myself an interesting thematic area in cooperation with other researchers. I became intrigued by the paradoxical discourse of that time on educational expansion. On the one hand, the view spread in the 1960s that educational expansion was desirable and irreversible as it supported economic growth and societal well-being; on the other hand, a conviction was widely shared that the growing enrolment and graduation rates from higher education were bound to lead to a catastrophic oversupply in the labour market. I concluded that this contradiction of two completely opposite, theoretically well-based and politically highly appreciated assumptions of high relevance, could be a good starting point for academic inquiry.

I assumed that it would be valuable to do an analysis of conditions for the absorption of graduates, and redefinitions of "demand", in countries where the graduation rate of the corresponding age group was already substantially higher than in Germany; the USA and Japan were two possible options. Japan, was an obvious choice, given our German-Japanese family life, but certainly it was the more difficult option.

The study of higher education and society in Japan turned out to be an exceptional opportunity to do a thorough study. It was an interesting historical moment. The "world", i.e. the dominant voices in economically advanced countries of the West, moved from considering Japan as a curious outsider to regarding it as an "alternative normality". When I left for Japan, people in the West talked about the exceptionality of Japan: "Examination hell" before the first highly selective moment of entry to higher education; then study as recovery thereafter; then followed transition to employment at the second highly selective moment; and finally, thereafter, regularity of life-time employment and steady growth in seniority.

When I returned to Germany, it was the time of reinterpretation of Japan in the West. My interpretation fitted: I perceived Japan not as an exception, but rather as

the most prototypical case in the world of an "educational meritocracy" – socially most open access to education, the highest competition for educational success, and the strongest determination of career success by education success. My political-practical interpretation was that educational meritocracy in its purest version leads to destructive competition, whereas in contrast a "moderate educational meritocracy" would be the most viable option.

As regards the issue that had sparked my original curiosity, I came to the conclusion that the process of absorbing a rapidly increasing rate of graduates by the employment system was surprisingly smooth in Japan. Employers in Japan at that time were not convinced that the growing supply of graduates was needed, but they accepted the expansion as the consequence of an open meritocratic society where ambitions for educational success spread and should be rewarded. They increased job openings for graduates by means of "vertical substitution", i.e. gradual opening up of positions to graduates that were not much less demanding than the typical graduate jobs. This was funded by a step-wise reduction of the income advantage of the university graduates as compared to those without a degree. This process worked, because most graduates expected a job rank commensurate to their rank of educational attainment but not a close link between the field of study and the area of job assignment, and because employers did not favour specialists. Absorption seemed to be easy, but from my perspective the Japanese solution undermined "curricular relevance" and "professional identity"; moreover, small distinctions of education status became increasingly relevant for one's career, thus transforming education into a rat race to obtain small educational advantages.

Concurrently, I analysed the political and academic discourse about the relationships between higher education and the world of work in comparative perspective. This endeavour, initiated by the International Labour Office, was a good opportunity to synthesize the state of knowledge and debate (Teichler, Hartung and Nuthmann 1980). I formulated a developmental theory (in critique of the human capital theory) according to which the relationships between higher education and employment are not primarily driven anymore by a demand for certain skills, when "mass higher education" was imminent, but increasingly by concerns about how growing numbers of highly educated persons could be made compatible with the existing inequities in the world of work. I argued that "a 'demand' for social inequality" becomes the rule of the game. This phrase was more often cited than anything I wrote in those early years, and I learned that I never should use quotation marks in headlines, because they – in this case 'demand' – often disappear!

FINDING AN ARENA FOR A BROADER RESEARCH AGENDA

After the completion of five books and various articles I wanted to continue academic work. But this was a risky option. Less than one tenth of those awarded a doctoral degree in Germany at that time became university professors, and few long-term positions were available below that level. There was not any single full-professor

position in my field of expertise in Germany. Thus, I explored various other thematic options and, more subconsciously than overtly, alternative professional options.

First, I became involved in activities of young researchers trying to transform Japanese studies in Germany, from being focussed on traditional themes of history, language and culture, towards a focus on social-science based area-studies. I became a reviewer of research proposals and head of advisory panels, even before being awarded the doctoral degree; and I was elected later as chair (for six years) of the newly founded Association for Social Science Oriented Japan Studies *(Vereinigung für sozialwissenschaftliche Japanforschung).* But eventually I decided that I did not want to become a modern Japanologist, i.e a single-country specialist.

Second, I embarked on activities to improve my knowledge in the key area of my dissertation, i.e. the relationships between higher education and the world of work. My theoretical endeavours in this area became known under the label of the "absorption approach" and the slogan "demand for social inequality". I had various opportunities to visit and to undertake analyses in the U.S. that broadened my comparative knowledge. But my hope did not materialize that my colleagues at the Max Planck Institute and myself would undertake a survey for which I would have liked the title: "Does upgrading matter?"

Third, I wanted to broaden my expertise in the direction of a thematic area related to my dissertation. The analysis of patterns of higher education systems was this most natural new theme; and these two themes could be linked through analysing the extent and the features of educational meritocracy.

Fourth, I wanted to throw my research findings into the public policy arena. The director of the Institute, Hellmut Becker (one of the founding members of the International Academy of Education) was a powerful broker of education policy discourse, and he made sure that I had opportunities to tell many VIPs why my insights from Japan would topple the respective German discourses. This kind of activity turned out to be quite successful. When I started to engage in policy discourse, most actors and experts in Germany believed that a high supply of university graduates results in an "academic proletariat", i.e. a deplorable situation for those who do not end up in typical graduate jobs. My prediction that, rather, they would end up in jobs slightly lower in status than graduate jobs (a phenomenon I called "vertical substitution"), was quickly accepted throughout Germany. The term "academic proletariat" vanished after a short period, and was replaced by a new term "displacement competition": According to this theory, the "superfluous" graduates of the highest level of education take the second-highest positions and thus displace persons trained for that level who had to go down to the third occupational level, and so on.

For a short period, I felt tempted to leave academia; the German Academic Exchange Service decided to establish a regional office in Tokyo and invited me to be the first director of this new endeavour. However Hellmut Becker, whom I asked for advice, encouraged me to stay in academia – saying that I certainly would become a university professor.

Altogether, the institute in Berlin provided me with an excellent opportunity to explore different areas of expertise. The permanent contract from the outset, and two promotions with salary increase within a few years, were helpful. I could pick areas of academic work in loose coordination with "my professor", and I was lucky to have an interesting intellectual discourse with a small group of colleagues interested in the same issues. I met many impressive scholars from all over the world, and one of these expressed interest in my academic work and paved my way whenever he could do so; this was the Swedish scholar Torsten Husén (for many years the most influential member of the IAE). Notwithstanding, I had the feeling that I might have to leave eventually, because internal promotion to a director position would be a rare exception, and because higher education research was not a priority area.

CONSOLIDATING A CAREER PLATFORM

One year after the award of the doctoral title I heard that the newly founded University of Kassel was the first one in Germany intending to establish a centre for higher education research. Intensive discussions between the Ministry of Education of the state of Hessen, the University, and invited experts, led to the conclusion that an interdisciplinary centre should be established outside the departmental structure, and that the thematic priority should be the relationships between higher education and the world of work. The centre would comprise a single full professor position (understood as a key professorial position with responsibilities beyond that of an individual professorship), various professors who would be attracted to join the centre part-time, and there would be a few positions at the junior academic level, plus library and secretarial staff.

The University of Kassel actually came to the conclusion, earlier than other universities, that the newly established universities were unlikely to get sufficient resources and therefore had to concentrate on attaining research excellence in only a few areas. The University decided – as the first one in Germany – to focus on ecology in the area of science and technology; in the humanities and social science domain, higher education was viewed as one of two or three priority areas, because it was a theme of rising popularity, possibly attractive as well for various professors to shift their research activities in that direction and possibly valuable to reflect the University's own institutional strategies.

The option to go to a hardly-known new university certainly could be taken by me more easily in Germany than in many other countries, because German universities traditionally were not conceived to be highly stratified, and academic reputation largely rested with individual professors. Yet, the University of Kassel was the prototype of a comprehensive university in German terms. i.e. it was a controversial experiment at that time to merge the "theoretical" university traditions with the "applied" traditions of former higher vocational schools which had been upgraded in most instances to *Fachhochschulen*. In fact, it was viewed by most academics and policy makers in Germany in the 1980s as the "black sheep" of the university family.

So, the setting was almost that of a *"mission impossible":* A centre should be built which was supposed to become famous worldwide and was expected to be the prototype of higher education research for other universities in Germany to follow. The centre should opt for a comparative approach and should have international links at a time when the view prevailed that higher education systems are clearly shaped nationally and most of their features are "non-comparable". The research activities should be both theoretically quite demanding and practically quite relevant, when scholars at that historical moment of time rolled back to more polarized views as regards theoretical and applied emphasis.

The professorial position was publicly announced early 1977, and I officially received the "call" exactly one year later – at the age of 35. The process was slower than expected – partly because it was not easy for the University to make a choice between the director of the major labour research institute in Germany wanting to move towards a more focussed position, and me – viewed as a young promising candidate who still had to build up the reputation needed for this ambitious endeavour. It also was due in part to the fact that this was a time of political unrest in Germany, and the political past and present of candidates for important public posts was screened thoroughly.

Before getting the "call" from Kassel, I received an invitation from the University of Chicago to apply for a full professorship in sociology of education with a comparative emphasis. About one quarter of all my writings had been in English, but one of the professors at Chicago read my publications in German as well. I was told later that I was viewed as the second best candidate in the early screening process, but I was the first to be invited, because I was travelling in the U.S. anyway. One of the professors of the University of Chicago – Benjamin Bloom (again another of the early members of the IAE) – said to me later: "You have walked like Jesus on the sea". I got the job offer immediately the following day.

After some consideration, I opted for Kassel. Among other things, I considered that being in the shadow of a famous institution should not count more in my life than my own efforts and achievements; moreover, I thought that the attitude toward ranking, according to which one's academic quality depends largely on one's local environment, is outmoded at a time of easy worldwide travel and virtual communication. I also considered the high expectations and more privileged resources for building up a "lighthouse" for a hitherto unknown university as a real challenge. Finally, I had the impression that my interest in comparative research would be more highly appreciated in Germany than in the U.S. – the comparative interests at the University of Chicago notwithstanding. In effect, this prestigious offer from Chicago helped me gain the necessary confidence for my strategic planning in Kassel and for getting support from others. So, I started my work there, and the Centre was established in June 1978.

In the eyes of the conservative academic and public establishment, my CV certainly was most suspicious. The Free University of Berlin, the University of Bremen and the Comprehensive University of Kassel were all viewed as being more

politically left than academically sound, and as being breeding places of students hated by employers (actually, the former two universities were highly honoured as high quality research universities in the German "Exzellenz-Initative" underway since 2005). Under these conditions, it was a relief for me to hear in later years – notably from politicians who provided research grants to us, and from influential academics – that they considered me to be an extraordinarily honest researcher.

STRATEGIC RESEARCH PLANNING BEYOND ONE'S OWN PERSONAL RESEARCH CAPACITY

In the process of negotiating with the University of Kassel about the envisaged research centre, I spent three months early in 1978 hammering out with prospective colleagues a *strategic plan* that that served as a guide for future work. It was refined over time, but never had to be substantially revamped. I suddenly realized that not only had I to take care of my own academic work, but I al\so had to design a research strategy for a sizeable number of academics for many years to come. The university president said that this centre should eventually become one of the most visible higher education research institutes worldwide, or otherwise the university would not mind if I left!

First, we felt the need to have a programmatic vision: A balance between theory and high-quality academic work on the one hand, and on the other practical relevance should be strived for; we wanted to demonstrate that higher education research can contribute to a more rational policy discourse at a time of highly politicised disputes. Some research projects should have an international comparative focus beside the hitherto dominating national focus. Projects as a rule should be based on more than a single discipline. Finally, we should choose a broad range of research themes – possibly the shape and size of higher education, development of knowledge and curricula, teaching and learning, staff and students, as well as issues of policy, management and funding. For all this, we wanted to have 12 staff positions (academic and non-academic) to be paid by the university, various professors being involved on a part-time basis as well as some funds for student assistants and material costs, and we hoped that staff could be doubled through the acquisition of research funds. This was a hybrid suggestion in 1978. The University was only willing to provide half of the staff positions asked for, but we reached these goals by and large within ten years.

One could argue critically that the daily life and the short-terms decisions in the Centre did not look to be strategically ordered. Coincidences of availability of funds, academic potentials and weaknesses of the academics active in the Centre, changing institutional contexts, sudden popularities of themes, initiatives by external partners, administrative constraints, heavy workloads to complete projects, etc. came into play again and again. But the strategic views turned out to be helpful in motivating us not to get drawn into pursuing coincidental opportunities.

I wanted to keep and foster a personal profile and identity. There was less time remaining for specific in-depth studies, but more room for general approaches: To

design projects in such a way that they have a chance of challenging conventional wisdom; to design projects in such a way that they are almost an *experimentum crucis* in the wake of the most heated political controversies; to identify problems already *in nuce* – to "see the grass growing already under the surface" and to have information already available when an issue gets discussed publicly; finally, to undertake evaluation research of a different kind, i.e. to look at results beyond the actors' intentions.

Paradoxically, a successful research career often leads to gradual reduction of time spent on research, but I did my best to keep time for it. On average I spent only about 10 percent of my working time on administration as such (even though I was responsible for the Centre), and the same amount on teaching, though most of the time I had the regular professorial teaching load. About 40 percent of my time was earmarked for research – including fund raising, project coordination, supervision of doctoral candidates, but mostly core research activities (reading, thinking, sorting of information, data analysis, writing etc.). I spent about 40 percent as well on dissemination, communication, and consultancies. This required close to 60 hours per week with few vacations.

Activities outside the research domain turned out to be a valuable component of my work. For example, I served for almost one year as the vice-president of the University when there was no president (this was a good internship for a higher education researcher). Serving on evaluation and advisory committees offered valuable opportunities to be a participant-observer. Advisory and training activities in developing countries made me concretely aware of how much the concepts and knowledge in my domain is focussed solely on economically-advanced countries. I learned that practice-relevant research has to be combined with a multitude of presentations at workshops, training courses, meetings with politicians etc. to transfer academic knowledge, to transform knowledge in this process of transfer and to generate new research ideas in such discourses.

IMMOBILITY BUT JOB ENRICHMENT

I remained at the same research centre in Kassel for more than 35 years (from the age of 35 to 71). My "base camp" for climbing did not change anymore. But life turned out to be varied.

One of the two most tempting offers to leave Kassel was the intention of Northwestern University in the U.S. in the mid-1980s to build up higher education as a focus area with me at the centre of the effort; I declined this offer, but accepted a six-year part-time appointment that helped me to understand the inner life of a university and the higher education system of a country viewed as a model in many other countries. Second, the Technical University of Berlin, in cooperation with the national and state governments, was willing in the early 1990s to establish a large research centre focussing on the development of higher education in the Eastern area

of Germany after the German unification. I remained in Kassel, and the external offers helped me to negotiate more favourable conditions.

Certainly, the institutional basis consolidated. The University of Kassel doubled the staff positions in the Centre within the first decade. Over the years, contract funds increased as well as the number of doctoral candidates and guest researchers. The university eventually provided more than 30 rooms (for offices, meeting and library), and we expanded to more than 50 PC working stations. The initial name "Centre for Research on Higher Education and Work" (*Wissenschaftliches Zentrum für Berufs- und Hochschulforschung*) was changed, in the process of broadening the research agenda, to "International Centre for Higher Education Research – INCHER Kassel" (*Internationales Zentrum für Hochschulforschung*) (see the overviews of major research results in Gorzka, Heipcke und Teichler 1988; Teichler, Daniel and Enders 1998; Schwarz and Teichler 2003; Kehm, Schomburg and Teichler 2012).

I was able to widen my own fields of research. Starting off with the relationships between higher education and the world of work (Teichler 2009), and with higher education systems in comparative perspective (Teichler 2007b), as my two major fields, I added two additional major ones: student mobility, and internationalisation of higher education (Teichler 2007a) and of the academic profession (Teichler, Arimoto and Cummings 2013).

Moreover, I could learn from other projects undertaken at our Centre. The daily encounter with other scholars helped to broaden my scope *en passant*. Over the years, more than 150 academics of various ranks, based in more than a dozen disciplines, spent some period of their life in the Centre, and I was curious to get to know what they did.

Some researchers pursued projects that focussed on their own universities, and many worked on higher education and society in Germany. The Centre, however, became unique in coordinating or playing some other major role in international comparative empirical projects on higher education – more than any other institution in the world according to our knowledge. Among others, we undertook more evaluation studies of temporary student mobility than others. We were the first to raise funds for comparative surveys of employment and work of university graduates. We played a significant role in the two major comparative surveys undertaken on the academic profession and in other collaborative projects. A gradual increase of doctoral candidates from other countries, as well as the establishment of a master programme on higher education taught in the English language, contributed to a stronger international flavour in the daily life in the Centre. Over the years, more than 20 international professional travels annually became part of my normal life, and I got to know altogether eighty countries in this framework.

In spite of the daily responsibilities in Kassel, I opted for a one-year sabbatical in the Netherlands and several extensive stays of altogether more than a year each in Japan and the U.S. I taught courses in almost 10 other countries, and I was involved in reviews of doctoral theses or oral exams in a number of countries. In some instances, these international activities were called part-time or visiting professorships (at the

Northwestern University, the College of Europe in Bruges, the Hiroshima University and the Open University in the UK), while arrangements were named differently in other countries. In sum, the immobility in terms of employment and major work place was counterbalanced by a wealth of international experience.

THE RELEVANCE OF NETWORKS

Over the years, the opportunities have increased for academics to be honoured in visible ways. Experience matters in academia, but gerontocracy comes into play as well. I myself was not yet old – actually I was only fifty – when I was coopted as member by the Academia Europaea and by the International Academy of Education; and subseqiuently I served various functions in both academies. The most visible honours were the Comenius Prize by UNESCO – at the age of fifty six – and the *doctor honoris causa* by the University of Turku – at the age of sixty three. In the latter cases, the laudatio was slightly longer as regards my contributions to fostering communication among academics or between academics and practitioners, than as regards my academic work.

In fact, I formed the impression early on in my career that too many academics hide themselves in academic corners and eventually become quite dogmatic. I also was convinced that such a small academic field as higher education research needs networking in order to assure an acceptable level of academic quality. Finally, I believe that higher education researchers need various modes of communication with practitioners in order to be both academically creative and practically relevant.

After the Centre was established in 1978, we spent quite some time arranging conferences and other platforms to strengthen the communication between researchers and various policy makers and practitioners in Germany. We also tried to form an association of higher education researchers in Germany, but this failed twice due to small numbers and heterogeneous identities. When eventually the initiative to found the Association of Higher Education Research for the German-speaking countries (*Gesellschaft für Hochschulforschung*) succeeded in 2006, some young members invited me to sponsor an "Ulrich Teichler Prize" for the best doctoral and master's theses.

On the international scene, we noted that countries with large numbers of higher education researchers, e.g. the U.S. and the UK, had national associations with an open door for participants from other countries, but did not take any initiative for establishing genuine international platforms of communication. Higher education researchers from various countries were likely to meet each other at conferences arranged by inter-governmental organisations or as small minorities within disciplinary associations. Supported by the Volkswagen Foundation we took the occasion of the 10th anniversary of the Centre in Kassel to invite many leading scholars to a conference on the state of higher education research, and our initiative to create an international association of scholars interested in theoretical and methodological enhancement as well as increasing comparative knowledge was well-received. So,

the Consortium of Higher Education Researchers (CHER) was founded in 1988 in Kassel: I served as the chair for eight years, and the secretariat was located in Kassel for more than half of the years since the foundation of CHER (see Kehm and Musselin 2013). Though formally being just another academic association, we certainly can say that a wealth of research projects, joint publications etc. emerged, because this communication platform made further steps easy.

Often I was invited to developing and middle-income countries, when the need was felt to establish higher education research. For example, there was a widespread conviction that the World Bank was easily able to dominate the principles of support for higher education in developing countries, because the Bank itself shaped all the systematic knowledge on higher education in these countries. If scholars from these countries succeeded in undertaking research based on an understanding of the specific cultural and social conditions, the ideas for future policies might be more targeted and appropriate. But altogether, advisory and training activities for establishing higher education research turned out to be quite disappointing for me: Obviously, this is an area of research that cannot easily be implanted into the structure of universities and is too vulnerable to specific policy demands if it is located outside university.

Being an active networker I had the opportunity of getting acquainted with most known scholars in higher education research and, of course, with even more newly emerging scholars. I learned at lot from those who were one or two decades older than myself, for example Burton Clark, Martin Trow and Maurice Kogan, and they were helpful to me on many occasions, but I did not consider them to be my "teachers": A mix of admiration and critique was a matter of procedure from the outset. Collaboration with many scholars from my generation or somewhat younger from many economically advanced countries was most natural (I could name Guy Neave, Frans van Vught, John Brennan, José-Gines Mora, V. Lynn Meek, William K. Cummings and Akira Arimoto as partners in many endeavours): The mix of consenting and dissenting views in frank academic discourse, combined with cooperative and friendly informal communication, led me to believe that it was worth having done a lot to stimulate networks. This also holds true in communication with many scholars who are at the forefront of the new generation (for example Jussi Välimaa, Jürgen Enders, Barbara Kehm, Christine Musselin, Pedro Teixeira and Jung Cheol Shin).

In Kassel, my work was always embedded in teamwork. I was not a cosy team-member, but was rather more a pushy boss and concurrent baseline worker. I published more than 1,000 texts (more than one third written with others). Almost half of my hundred or more books were written or edited with local colleagues (altogether 41 persons, among them most frequently Friedhelm Maiworm and Harald Schomburg), about one tenth with colleagues from Germany (15 persons) and almost one quarter with colleagues from other countries (altogether 29 persons from 17 countries).

RESEARCH – A NEVER ENDING LEARNING PROCESS

Although research is not free of elements of routine and repetition, I experienced my academic life as constantly involving new learning. For example, in research on the relationships between higher education and the world of work, the improvement of multivariate analyses allowed us to examine more complex sets of determinants of professional success. More emphasis was placed over the years on the acquisition and use of competences. Many aspects could be understood better when we succeeded in raising funds for comparative surveys. The contexts changed in the wake of expansion and led me to ask about the character of a "highly educated society". In the area of higher education systems, there was a need to examine the actors' theories of the varying political fashions, such as the recent European policies or the rankings and "world-class universities" paradigms (see Shin Toutkoushian and Teichler 2011).

Stimulated by colleagues from other countries, I enjoyed embarking on new studies of international mobility and cooperation in higher education. Detailed scrutiny was needed to shed light on the statistical disarray in this area. It helped to disentangle clearly the aims and logics of degree-mobility versus short-term mobility of students and of "vertical" versus "horizontal" mobility. The dialogue between practitioners and scholars was valuable for evaluation studies on short-term mobility, such as the ERASMUS programme (see Teichler and Maiworm 1997; Janson, Schomburg and Teichler 2009). It was possible to reinforce the belief in the high value of "learning from contrasts", but it was valuable as well to show limitations, such as the "declining exceptionality" of international experience.

I might name as a final example of new learning the involvement in the two largest comparative surveys on the academic profession. I could point to many interesting results, but I cannot overlook the fact that these studies turned out to be extremely time-consuming; we asked ourselves whether the enormous work involved and nerve-wrecking sub-optimal research conditions of large international collaborative research settings are really worth the effort. But at the end, one is inclined to say: We would do it again.

CONCLUSION

In my age group in my country, about one tenth enrolled at a university. About three quarters of them eventually graduated with a degree that is considered equivalent to a master degree at the average age of twenty five or somewhat higher. Almost one fifth of them were eventually awarded a doctoral degree, at the average age of somewhat higher than thirty. Only a minority of them strived for an academic career, and those striving did it mostly under risky conditions, and only a minority survived. Eventually, fewer than one tenth of the doctoral-degree holders became university professors, on average at the age of slightly more than forty years, and most of them stayed on in this domain for more than twenty years on average.

I had a privileged life course. Colleagues underscored this by presenting me a *Festschrift* in the English language when I turned sixty (Enders and Fulton 2002)

and a second *Festschrift* in the German language six years later when the research centre, my "basis camp" for climbing over thirty five years, had its 30th anniversary (Kehm 2008). After an impressive international conference and an unforgettable party in Berlin with hundreds of friends and colleagues from about fifty countries at my 70th birthday I could wind up without regret.

Yet, one tends to remain uncertain in academia about whether one's work has reached a satisfactory level of quality and relevance. When I was awarded the *doctor honoris causa*, I had to sit long hours in formal attire ("tails") and with a top-hat. In the speech meant to express my gratitude I asked why academics join the religious, military, medical and legal folks in wearing gowns and other conspicuous symbols, although they do not consider themselves in charge of life and death and they do not want to signal to others: "Trust me without understanding me". Academics rather want to promote intellectual comprehension. I argued that academics like cryptic symbols, because they want to reinforce confidence amidst painful uncertainty about whether their academic work is really excellent or not. Of course, I assured the awarding university that this symbolic act helped me to overcome my personal uncertainty.

One might need some intellectual talent and readiness to do work that we call research. Having been a hyperactive child might have facilitated work schedules of more than 150% of an ordinary employee. It turned out to be helpful that I liked to make strategic decisions. But I am convinced that a life-course depends on many contextual factors: A professor picked me from the crowd in the second year of my study and provided me the opportunity to make my living with interviews, data-processing and writing up of findings. This led to more complex tasks and even to a permanent contract at an internationally known research institution from the first day after graduation. This professor also advised me to select higher education as my area of research. Friendly support from scholars all over the world I got to know in this framework, a wonderful team spirit of the colleagues of the same age, and a marriage that made intercultural experience the matter of daily life – all these paved the further steps. When a German university decided for the first time to establish a full professor position in the area of higher education research as well as a research centre in the area, I was picked. This was early in the life course, at the age of 35, and to various coincidences I spent there eventually 36 years.

The appointment to a professorial position is clearly an event of career consolidation, but not an end of the process of the "making" of a scholar. I had to go on learning, because the coexistence of research and research management is demanding, the centre was expected to be exceptionally successful, because the world got more international and both of higher education in general as well as the small academic field of higher education research changed substantially over time.

My achievements depended largely on communication and collaboration with numerous scholars – ranging from local colleagues to partners word-wide, and, in turn, I have done much to promote international networking of higher education researchers. My wife asked me "Do you have thousands of friends or nobody at all?"

I could only respond that: I do not feel lonesome at all, but I do not know what will happen now as I gradually leave the academic world.

FAVORITE WORKS

Books

Das Dilemma der modernen Bildungsgesellschaft (1976).
Changing Pattern of the Higher Education System (1988).
Higher Education Systems: Conceptual Frameworks, Comparative Perspectives, Empirical Findings (2007).
Die Internationalisierung der Hochschulen: Neue Herausforderungen und Strategien (2007).
Higher Education and the World of Work: Conceptual Frameworks, Comparative Perspectives, Empirical Findings (2009).
The Work Situation of the Academic Profession in Europe (2013).

Articles

Struktur des Hochschulwesens und „Bedarf" an sozialer Ungleichheit (1974).
Kogakureki shakai – The Modern Education Society from the Comparative Point of View (1977).
Higher Education and Work in Europe (1988).
Towards a Highly Educated Society (1991).
Comparative Higher Education: Potentials and Limits (1996).
Higher Education and Changing Job Requirements: A Comparative View (1998).
Lifelong Learning as a Challenge for Higher Education: The State of Knowledge and Future Research Tasks (1999).
The Changing Debate on Internationalisation of Higher Education (2004).
Does Higher Education Matter? Lessons from a Comparative Graduate Survey (2007).
Between Over-Diversification and Over-Homogenization: Five Decades of Search for a Creative Fabrique of Higher Education (2009).
The Professional Relevance of Study (2009).
New Challenges for Higher Education and the Future of Higher Education Research (2013).
The Academic Profession in the Light of Comparative Surveys (2013).
Opportunities and Problems of Comparative Higher Education Research: The Daily Life of Research (2014).

REFERENCES

Enders, J., & Fulton, O. (Eds.). (2002). *Higher education in a globalising world: International trends and mutual observations. A festschrift in honour of Ulrich Teichler.* Dordrecht, The Netherlands: Kluwer Academic Publishers.

Gorzka, G., Heipcke, K., & Teichler, U. (Eds.). (1988). *Hochschule—Beruf—Gesellschaft: Ergebnisse der Forschung zum Funktionswandel der Hochschulen* [Higher education—employment and work—society: Findings of research on the functional change of higher education]. Frankfurt a.M. and New York, NY: Campus Verlag.

Janson, K., Schomburg, H., & Teichler, U. (2009). *The professional value of ERASMUS mobility*. Bonn: Lemmens.

Kehm, B. K. (Ed.). (2008). *Hochschule im Wandel: Die Universität als Forschungsgegenstand Festschrift für Ulrich Teichler* [Changing higher education: The university as the theme of research. Festschrift in honor of Ulrich Teichler]. Frankfurt a.M. and New York, NY: Campus.

Kehm, B. K., & Musselin, C. (Eds.). (2013). *The development of higher education research in Europe: 25 years of CHER*. Rotterdam: Sense Publishers.

Kehm, B. K., Schomburg, H., & Teichler, U. (Eds.). (2012). *Funktionswandel der Universitäten: Differenzierung, Relevanzsteigerung, Internationalisierung* [Functional change of the universities: Diversification, increasing relevance, internationalisation]. Frankfurt a.M. and New York, NY: Campus Verlag.

Schwarz, S., & Teichler, U. (Eds.). (2003). *Universität auf dem Prüfstand: Konzepte und Befunde der Hochschulforschung* [The university under scrutiny: Concepts and findings of higher education research]. Frankfurt a.M. and New York, NY: Campus Verlag.

Shin, J. C., Toutkoushian, R. K., & Teichler, U. (Eds.). (2011). *University rankings: Theoretical basis, methodology, and impacts on global higher education*. Dordrecht, The Netherlands: Springer.

Teichler, U. (1976). *Das Dilemma der modernen Bildungsgesellschaft: Japans Hochschulen unter den Zwängen der Statuszuteilung* [The dilemma of the modern education society: Japan institutions of higher education institutions under the forces of status distribution]. Stuttgart: Klett Verlag.

Teichler, U. (2007a). *Die Internationalisierung der Hochschulen: Neue Herausforderungen und Strategien* [The internationalisation of higher education institutions: Challenges and strategies]. Frankfurt a.M. and New York, NY: Campus Verlag.

Teichler, U. (2007b). *Higher education systems: Conceptual frameworks, comparative perspectives, empirical findings*. Rotterdam and Taipei: Sense Publishers.

Teichler, U. (2009). *Higher education and the world of work: Conceptual frameworks, comparative perspectives, empirical findings*. Rotterdam and Taipei: Sense Publishers.

Teichler, U. (2014). *Hochschulsysteme und quantitativ-strukturelle Hochschulpolitik: Differenzierung, Bologna Prozess, Exzellenzinitiatve und die Folgen* [Higher education systems and quantitative-structural higher education policy: The Bologna process, the excellence initiative and the consequences]. Münster: Waxmann Verlag.

Teichler, U., Arimoto, A., & Cummings, W. K. (2013). *The changing academic profession: Major findings of a comparative survey*. Dordrecht, The Netherlands: Springer.

Teichler, U., Hartung, D., & Nuthmann, R. (1980). *Higher education and the needs of society*. Windsor: NFER Publishing Company.

Teichler, U., & Maiworm, F. (1997). *The ERASMUS experience: Major findings of the ERASMUS evaluation research project*. Luxembourg: Office for Official Publications of the European Communities.

SERVAAS VAN DER BERG

THE MAKING OF AN EDUCATIONAL ECONOMIST IN A COUNTRY IN TRANSITION

A few years ago I watched in horror while a class of Grade 6 children in a school in Limpopo – South Africa's northernmost province and one of its poorest – laboriously tried to answer a simple multiplication question in a survey test. The question was: 7 x 17=? The children would draw seventeen sticks and then count them seven times to try and get the answer to this question. And after that whole complex exercise, some would still write down a completely wrong answer, like 53. I realized that for most of that class of bright-eyed children, many doors to future careers and opportunities that required mathematics had already been closed. This was the tragedy of South African education at its starkest.

In this pilot survey that my research group at the University of Stellenbosch, ReSEP (Research on Socio-economic Policy), undertook for the World Bank, only about 130 of 400 children in the participating schools could provide the correct answer to this simple question. Later, in the same test, they were asked: "*If there are 7 rows of 17 chairs, how many chairs are there?"* Not a single child of the 400 in the survey could answer this. So not even those who could, by whatever means, correctly answer the first question recognized that the second question was really the same.

This tragedy of South African education underlies all inequalities in the labor market. In a country in which income inequality is extremely high, it is difficult to see such inequalities being reduced substantially without major improvement in the quality of education received by the majority of children. Not many South Africans can remain indifferent to inequality – it is so starkly embedded in our consciousness from a young age that it is difficult to ignore. As a student, one of the things that attracted me to Economics, and especially to Development Economics, was the way in which this discipline illuminates the choices and trade-offs a society makes, the starkness of the opportunity cost of having to choose where to apply limited resources, through many different policies, institutions and processes. The magnificent complexity of social science started its fascination for me then, with social choices that have consequences for the way we live. But, in the words of Normal Bromberger, an economist who wrote a wonderfully rich chapter on inequality and distribution in South Africa that I have used for many years to introduce my students to the issues of income distribution:

M. de Ibarrola & D. C. Phillips (Eds.), Leaders in Educational Research, 217–229.

> ...it needs to be emphasised that those distributions of income in which we are primarily interested are determined by immensely complex processes in which government activity interacts with relatively autonomous initiatives and adjustments by 'the myriad forces of the market'. There does not exist a well-tested, widely-endorsed body of theory to model all of these processes. But it is clear that governments cannot readily control all of them, and there are limits to what governments may be able to do to change distributions. We must avoid assuming that if there is a change, or no change, government policy is responsible. Nor should we assume that government policies are either coherent or necessarily successful. (Bromberger, 1982: 167)

The principal question I have regarding the economic development process relates to what policies and interventions could draw more people into the economic mainstream. A graduate class-mate put it to me that the central question behind Development Economics ("Why do some societies not develop?") was not all that far removed from that asked by Economic Historians with their far longer time horizon, "Why do some societies develop?" Though, like my fellow student, I was also intrigued by the search for the causes of the Industrial Revolution, that holy grail of Economic History, what attracted me even more was the policy question that is so much part of Development Economics in the here and the now: What policies can improve the rate at which people are drawn into the economic mainstream?

At university, I became involved in the Progressive Party, the very small liberal opposition to apartheid. This involvement lasted through my university career and I played a leading role in the Young Progressives, the youth movement. But after that initial phase, political activism and party politics did not particularly attract me, and I sought alternative routes to engage in the policy discourse.

Two friendships from those university days had a strong influence on my interest in education and in developing my thinking. Bobby Godsell, John Pampallis and I spent many late nights together, discussing, arguing, reading poetry, and listening to music into the early hours of the mornings. Bobby had strong views on educational approaches and was attracted to the philosophy of Ivan Illich, whose orientation was completely foreign to me. Though I listened, I have to admit that education as a topic did not particularly appeal to me then. John became a teacher, spent a period teaching in our neighboring country, Botswana, and became so disillusioned with South Africa's racial policies that he left the country, joined the South African Communist Party, and then went to teach at the ANC's school in Tanzania. The next time I saw him was more than a quarter of a century later, when he had become the director of the Centre for Educational Policy Development (CEPR), a Johannesburg-based education think-tank; he invited me to present a seminar when my research in education had started to receive some public prominence. John is now adviser to the Minister of Higher Education, a role in which I had never imagined him, and though our views of the world and of education policy differ greatly, it has not affected our friendship.

Bobby has remained a friend for life. He became an important player in the South African corporate sector as executive director of Anglogold Ashanti, at the time the world's leading gold producer, and later as chairman of Business South Africa. His wife Gillian, a psychologist by training, has done considerable research and training of teachers, so education and other social issues are always on the agenda in our visits together, which happen far too seldom.

After university, I travelled for six months in Europe, and returned to take up a position as journalist at one of the smaller Afrikaans newspapers of the time, *Oggendblad*. I lasted only a year before moving on to become a researcher in what later became the Development Bank of Southern Africa. This was a frustrating period, when I tried to find ways of playing a policy role in an environment in which apartheid policies still held sway. Nevertheless, I learnt a lot about South African policy institutions, the policy making process, South African society and social issues. I was given the opportunity to co-edit for its first five years the journal *Development Studies Southern Africa*, pre-cursor to *Development Southern Africa*, long the journal of the Development Bank. (Through a strange quirk, this latter journal is now again to be housed within my research group, ReSEP). While working in Pretoria I met my wife Eunice, and when she expected our first child, I took a job at the University of Stellenbosch, in my wife's hometown. More than thirty years later, I am still at Stellenbosch and grateful for the fate that had brought me there. It is a beautiful town, situated in the Cape winelands, and the beauty of the location adds to my love of the work I do. I am privileged to be able to make a contribution to policy through my research, but also to work with a group of predominantly young researchers whose passion and technical abilities contribute immensely to the value and impact of our research.

At Stellenbosch, I started working on my doctoral thesis, about the relationship between economic growth and the satisfaction of basic needs in South Africa. My focus on social policy issues was by then already well established. The thesis dealt largely with issues of basic needs, poverty, and inequality, with education being one of the basic needs I looked at. The freedom that the academic researcher enjoys is to me immensely attractive. For me, the natural route to contribute positively to the society that makes such academic freedom possible – including financially possible – was to concentrate my research on policies that could benefit the poor. This interest in policy and how it influences economic and social outcomes, and particular poverty and inequality, has always been my central research concern.

When I completed my thesis, I was fortunate to be awarded an Alexander von Humboldt scholarship, which gave me a number of opportunities throughout my career to spend sabbaticals in Germany. The first long sabbatical – nine months – that I spent with my young family in Freiburg in 1988 will always be one of my fondest memories.

After my return to South Africa, a new phase in policy discussions opened up. Shortly before the release of Nelson Mandela from prison, a number of South African academics, business people and policy makers met with the ANC in exile

in Lausanne, Switzerland, to start discussions about the sort of society we desired for our country and about what economic policies would be most appropriate to achieve this. This was a liberating experience, and I was fortunate to meet many of the people who would later come to play an important economic policy role after the ANC's ascension to power. It initiated a long period of discussions and debate about post-apartheid economic policies, in which I was privileged to play an active role. At Lausanne I met, amongst other people, Tito Mboweni, who later spent a period as guest with us in our department at the University of Stellenbosch. In 1994, after the first inclusive elections, he became the Minister of Labour, and later President of the South African Reserve Bank. Through him and others I got to be accepted as a person whose policy views often differed radically from those of most ANC economic thinkers, but my *bona fides* were largely accepted and I was drawn into policy discussions in a number of fields. Thus, for instance, Trevor Manuel – at that time head of the ANC's Economic Planning section – asked me to act as adviser to an economic planning process that was set in motion. I was invited with some ANC economic policy makers to visit the USA as guest of the US Information Service, but clashes in our diaries eventually made it necessary for each of us to go on our own. For a month I was taken around the United States, visiting researchers and institutions, and getting to know a little more about poverty and social policy in this rich and amazing country.

The topic of the paper I presented at the Lausanne meeting with the ANC, and that was later published in a book (Van der Berg, 1992) under the title *Fiscal dilemmas over popular aspirations*, was the fiscal constraints on redistribution. This topic remained part of my repertoire for a considerable part of the transition period. I remember for instance at least two occasions on which I had to give a presentation on this topic in front of large audiences on the same platform as Tito Mboweni. This theme was to me one of opportunity costs and the central issue of scarcity. What I hoped to get across was that transition from apartheid would require hard fiscal choices, that fiscal populism had to be avoided, and that constructing the budget consequently should be approached as virtually a zero-sum game. Within fiscal constraints, spending benefiting blacks could not be at the level that whites had become accustomed to under apartheid, thus black expectations could not be met. Nor could white spending levels remain unchanged, given the existing inequalities. The only way to achieve equity in social spending was to increase social spending on blacks only moderately and to cut back substantially on spending that benefited whites. That was not a popular message for either a white or a black audience, as it satisfied the high expectations of neither, but it is nevertheless a message that formal ANC policy eventually embraced, through its GEAR policy that emphasized fiscal discipline. I return to that theme below.

In 1993 I was asked to sit on the steering committee of the first national household survey (the Project for Statistics on Living Standards and Development, or PSLSD), incorporating all the former homelands. This survey was undertaken with support of the World Bank, as the new government was not yet in power. This survey involved

amongst other things a literacy and numeracy test administered to a sub-sample of respondents. I did not get to work on these data at the time, but a few years later we started exploring this data to see what one could tell from this survey about the quality of education in black schools. The survey pointed to severe quality issues, as other research had shown, and as our analysis confirmed (Van der Berg, Wood & Le Roux 2002). Regression results by Case and Deaton (1999) from this survey implied that the average black teenager had a cognitive backlog equivalent to 10 years of schooling compared to their white counterparts, though differentials in years of attainment were far less. This is the horrible reality that our education system produced at the time, and we have not seen much improvement since.

At the time of the political transition from apartheid I was asked to do some research on the viability and coherence of the system of social grants and the implications of eliminating discrimination in the system following the transition. This report, part of which was written during a sabbatical spent at the World Bank in Washington, pointed to dangerous deficiencies in the Child Maintenance and Family Grant. Follow-up research was commissioned from a colleague, John Kruger, and subsequently the Lund Committee of investigation into social grants was appointed. I was a member of that committee, which recommended the institution of a Child Support Grant to replace the former grant. That grant, though small, is now paid to the caregivers of vast numbers of South African children, and the total value of payments is close to $3 billion per annum. Though economic growth also contributed modestly in this period, most researchers agree that it is largely as a result of these grants that the number of children whose parents report that they go to bed hungry fell from 31% in 2002 to 16% in 2008. But the grant system has its limitations and can only reduce poverty to a limited extent; what is really necessary is to incorporate people into the economic mainstream, which is my recurring research focus.

As I noted above, my research on the fiscal limits to redistribution was an attempt to convince the new policy makers of the fiscal constraints under which policy had to operate and that it would be dangerous to ignore these constraints. The macro-economic populism that had been so destructive in many Latin American countries was to be avoided at all costs. Such populism has been well described as "an economic approach that emphasizes growth and income redistribution and deemphasizes the risks of inflation and deficit finance, external constraints and the reaction of economic agents to aggressive nonmarket policies." (Dornbusch and Edwards 1991). Initially it was hard to convince many new policy makers of the importance of this, but these fiscal constraints were best accepted when the government introduced the GEAR strategy (I had served on the technical committee that drew up GEAR). The acceptance of this strategy by the Mandela government acknowledged the reality of fiscal constraints, the dangers of populism, and the need to make hard policy choices in a situation of limited options. That recognition by government was essential to allay fears amongst investors, domestic and foreign, that the new government was going to give in to macro-economic populism, with all its disastrous consequences. In the absence of this policy, the return to a path of

substantial levels of foreign and domestic investment and of sustained economic growth would at best have been much delayed.

But where I had placed much emphasis on fiscal constraints in this early work, my later experience would teach me that capacity constraints, or constraints in social delivery, are even more binding. This applies particularly in education, but also in other areas of social delivery.

Although social policies of all kinds have attracted my research interest for much of my career, my research on education, which now dominates my research agenda, was initially very intermittent. Our research on the PSLSD data referred to earlier stimulated further interest in research along these lines. When I managed to get hold of a matric dataset for schools, and information on schools in the Western Cape, I wrote a paper with Ronelle Burger that we then presented on a few occasions and also published (Van der Berg & Burger 2003). I then managed to obtain similar national data and presented the results widely, including at a joint conference held in Stellenbosch with the Centre for the Study of African Economies at the University of Oxford. This work was then incorporated into both a journal article and a book chapter (Van der Berg 2007 & 2009). Both these pieces of research illustrated how performance and the impact of resources in different parts of our school system varied. Gradually, people started seeing me as someone who does a considerable amount of education research. Also, because of the prominence this and some of my other work was receiving, Martin Gustafsson, at the time a researcher and educational planner within the national Department of Education, did his Master's thesis on Economics of Education under my supervision. This was excellent work, and Martin has since become a researcher within ReSEP while also advising the renamed Department of Basic Education. An analysis of the Pupil Progress Project survey for the Joint Education Trust (JET) started an important relationship with Nick Taylor, director of JET, who had a strong influence on my further empirical work in education.

In South Africa – and I have heard similar sentiments expressed by empirical education researchers in Australia and Germany – there is a strong anti-positivist sentiment amongst many university-based education researchers, and in this country there is an almost complete absence of an empirical research tradition. Many educationists objected to the use of education production functions and argued that case studies were a more valid way of researching education. Thus building relationships with education researchers and policy makers who did not share this prejudice was quite important. Fortunately, policy makers have a strong need for information that they can use in making policy choices, thus our work soon found more fertile ground. When Peliwe Lolwana, the director of Umalusi (the national certification authority, responsible for ensuring the standards of our matriculation examinations) asked me to become a member of Umalusi's Research Committee, that also helped me to establish new relationships.

In 2005, I submitted a paper to the SACMEQ Invitational Research Conference. This was an event that would turn out to have a major influence on my research

career, and particularly in focusing more of my research on education. SACMEQ, the Southern and Eastern Consortium for Monitoring Educational Quality, undertakes large scale surveys for a consortium of 15 educational ministries in Southern and Eastern Africa. This research conference was for papers analyzing data from the second wave of SACMEQ data collection, for Grade 6 students across the participating countries. Given the lukewarm response by many South African educationists to much of the educational research I had been undertaking, I was not sure how my work would be received in this international network. My paper was an analysis of SACMEQ's South African data using descriptive tables and graphs, ordinary regression analysis, as well as hierarchical linear modelling (HLM), which I taught myself because I had heard that it was used widely in education research. The paper demonstrated that there was little if any return to resources in the weakest part of our school system, the historically black schools (see Van der Berg, 2008). This pointed to an issue of the efficiency of resource use, which has since become an important theme in our work. It links to a strong body of international research, led by scholars such as Eric Hanushek, that has convincingly argued that resources in and by themselves do not necessarily bring much improvement in educational performance. The crucial matter is how resources are utilized. Ironically, in the better part of the South African school system resources do bring somewhat greater returns, particularly in the historically white and Indian schools of the apartheid era, which are now racially integrated but serve only about 10 per cent of the school system (mainly higher socio-economic status students). Thus more resources in education are only likely to further widen the learning gaps between high and low SES students, unless the factors that inhibit efficient resource use in poor schools are addressed.

As an aside, very recently (2013) we undertook an evaluation for the government, to measure the impact of the introduction and universalization of Grade R (a reception year, preceding Grade 1) in South African schools. The datasets we could put together from merging a number of official datasets allowed us to arrive at a causal answer, i.e. to measure the impact of Grade R. The answer was, however, quite discouraging: Overall impact was only 0.025 standard deviations in test performance in mathematics, and 0.102 standard deviations in home language. In other words, if one assumes a modest 0.40 standard deviations gain in a school year, Grade R only contributed about 12 days of learning for mathematics and 50 days of learning for home language. More disconcertingly – and this is where there is a link to what I referred to in the previous paragraph – the effects were virtually nil in the poorest 60 per cent of schools, while schools at the upper end of the wealth distribution gained more. So here again, the disappointing reality is that interventions meant to assist poor children in particular to overcome the learning deficits with which they enter school, actually widen the learning gap between the more and the less affluent.

But let me return to the SACMEQ conference. It was at this conference that I met Neville Postlethwaite, who in a short space of time had a remarkable influence on my research career. How I met him is in itself an interesting story. After arriving

in Paris on the night preceding the conference, I was having breakfast in the hotel when I overheard two strangers at a nearby table discussing the quality of the papers received for the conference, and one – Neville – was praising my paper. Indeed, the conference did my self-esteem a lot of good. I was awarded the SACMEQ medal for my paper, and I was received enthusiastically by the SACMEQ team. Neville, in his inimitable way, engaged me in discussion about my paper and my research, and through long conversations with him there and on future occasions, I came to learn much about educational research and researchers from across the world and over half a century. Neville cultivated me, encouraged me to "do more good educational research", and proposed that I write a paper on *Poverty and Education* for the Education Policy Series of the International Academy of Education and the International Institute for Educational Planning (within which SACMEQ had been housed in Paris). The series was edited by Hanushek, whom I have long admired for his leading role in the Economics of Education. I would later get to know him and his frequent co-author Ludger Woessman better in the International Academy of Education, of which I was invited to become a member in 2008.

It was easy to be flattered by Neville's attention; being an adviser to SACMEQ he always made sure that the people whom he had identified as potentially contributing to good research got to know each other and were able to interact. Through him and SACMEQ I got to know people like Ken Ross, Ncora Hungi, Juliana Nzomo, Demus Makuwa, Mioko Saito, Patrick Griffin of Melbourne University's Assessment Research Centre, and a great many others who played an important role in this initiative in Africa as well. I was drawn into SACMEQ processes on a major scale, serving on SACMEQ's Scientific Committee, attending a pilot survey for SACMEQ III in Kasane in the north of Botswana – in the heart of the spectacular Okavango wild life area, and interacting with SACMEQ members in various ways and acting as consultant to assist with reports by the country teams. I was now hooked on education research, not only in South Africa, but in Africa more generally. On a later occasion we were invited to Neville's home in Baigts-de-Bearn in the South of France, which he proudly showed to us while he talked about the people he had known in education research and about how editing the *International Encyclopedia of Education* helped him to afford that home. He was so clearly taken with doing this editing work, and so enthusiastic about doing it, that I remember thinking at the time that he would probably have done it for free.

The International Academy of Education introduced me to many other prominent education researchers, and the warmth with which I was received as a Fellow made it even more attractive to be involved in education research. This was a far cry from my initial reception amongst educationists in South Africa, many of whom distrusted quantitative research and especially economists.

By this time, though, both the volume and the prominence of our research had been getting a good reception in South Africa. At the end of 2010, the ANC with assistance of the Development Bank of Southern Africa started a process called *Road Maps to the Future* in Health and in Education. This entailed inviting some

stakeholders and policy thinkers to get together on two or three occasions to discuss relevant policy issues. From this there flowed a number of recommendations that were then put to the officials to comment on and to consider implementing. I was asked to make the initial and only formal input to the first two sessions, namely a diagnosis of the problems in school education. After discussion and debate, a Ten Point Plan was formulated that the Department of Education then committed to taking forward. One proposal that I had an influence on in particular was of great consequence, namely to "conduct external tests for all grade 3 and grade 6 learners every year, and provide the results to parents". Implementation went much further than this in one respect, as the Annual National Assessments introduced in 2011 tested all children in Grades 1 to 9. It is difficult for non-South Africans to comprehend the full significance of this. In many other countries, there is great public debate about the frequency and nature of assessment, so it is easy to simply transfer the arguments from those contexts to South Africa without considering the specific South African need. But there are specific things about the South African context which make this so important. There was until 2010 just one external test in the South African school system, in Grade 12, known colloquially as matric. At primary levels, parents in poor communities have little understanding of what they can expect of schools, and are powerless against better informed and educated teachers and principals. In a series of focus group discussions in Limpopo province for a World Bank study, we asked parents how one can recognize a good primary school. There were two common answers, the first being that in such schools children wear uniforms (shorthand for discipline in the school), the second was that children pass their exams. Parents had little understanding that whether children passed or not may tell one little about how much they have learnt. They could not know that half of Grade 6 children are already three years behind in Mathematics, or that the average Grade 5 child is given a full paragraph to write only every one and a half months (Dechaisemartin 2013), and that teacher absenteeism, which is high by African standards, is twice as high on Mondays and Fridays as on other weekdays (Taylor, Van der Berg & Mabogoane 2013). Without some form of assessment and feedback originating from outside the school, poor and often illiterate parents would remain blissfully unaware if their children are learning little at school; as long as they lack the information they are powerless. It is for that reason that the focus of the World Bank and others on accountability in social delivery is so crucial for developing countries (Bruns, Filmer & Patrinos 2012). Information on how well their children are progressing at school is a most fundamental right that parents should have, and it is a powerful tool in their interaction with those entrusted with their children's learning.

In discussing the introduction to our recent book on creating effective schools (Taylor, Van der Berg & Mabogoane), Nick Taylor – the educationist amongst us – was of the view that the economics of education has a completely eclectic approach to education. Thabo Mabogone and I immediately set that record straight: The fundamental perspective of economists to behavior is so deep and consistent that it does not need spelling out. That perspective is that all economic agents –

butchers and bakers and teachers, to name some – have their own interests. This makes it crucial to understand how people behave to serve those interests, which in turn depends on the rules or institutions within which they operate. By saying that teachers act in their own interests, economists are not depicting them as any better or worse than other people. The question simply is how far they are allowed to pursue their own interests, and what the impact may be on others. In that respect we differ from educationists, who generally are more inclined to assume that teachers' motives are above reproach. Economists, in contrast, would tend to first consider things from the perspective of the child in the school, the parents and the wider society, and then regard it as an empirical question whether the behavior of teachers serves these other interests as well.

My research on the economic aspects of education was one of the factors that contributed to my being awarded one of the prestigious National Research Foundation (NRF) Research Chairs. I became the South African National Research Chair in the Economics of Social Policy, and obtained a fair amount of money from the NRF to fund this. This, along with the funds I have been drawing into my research through research projects undertaken for various arms of government, a few World Bank projects, work for Unicef in South Africa, Botswana and Namibia, the European Union, and various bi-lateral donors, and with other sources of commissioned work, gave me the opportunity to increase both the scope of my group's activities and also the number of people working in it. Later we decided on the name ReSEP (Research on Socio-economic Policy) to refer to the work within this program. There were now some 20 people funded by ReSEP, and a few more in the Department and also at a neighboring university were drawn into our ongoing activities. I discovered in this process a new talent and new enthusiasm for directing the research of a team of excellent young researchers, highly skilled and motivated to make a contribution to policy and to improving the situation of poor people. (One of our researchers once said to a new graduate student that people study Economics at graduate level in our department either because they want to save Africa, or because they want to make a fortune in the equity market. The embarrassed student had to admit that his motives were not the former.)

The larger team meant that my own research naturally suffered, but now I could assist young researchers more in pursuing new ideas across a whole range of social policies. Our work spans fiscal incidence (who gains from spending), labor markets (and what role education quantity and quality play in labor market outcomes of employment and earnings), poverty and inequality analysis, various areas of social service delivery, including education, health, and the provision of housing and municipal infrastructure, and more. Although most of our research is focused on South Africa, we have also done some work in Mozambique, Botswana, Zambia, Namibia, Swaziland, Uganda, Malawi and even Sudan.

Yet in all of this, education remained my own main focus, and I attracted a number of young researchers, many of them PhD students, because of the interest that educational research holds for them. Our relationship with the Department of Education (now called the Department of Basic Education) has improved tremendously since my first

ventures into this field, to the extent that they have now commissioned us to do a lot of training of their officials in using data for policy making.

One of the reasons why education is so central to my policy concerns is that this is an area in which South Africa so abjectly fails. A major project we undertook for a program supported by the Presidency and the European Union was entitled "low quality education as a poverty trap". Through a series of related studies, it showed exactly what the title says: That those growing up poor are likely to end up in weak schools, with little opportunity for improving the quality of the education they receive, even though now even poor children complete at least nine years of education. Entering the labor market with education of such weak quality, they are bound to struggle to find jobs, and even if they do get employment, their productivity and consequently their wages will be low, thus offering little prospect that their children could get into better schools. Thus a vicious cycle ensues.

Education is also central to inequality in South Africa. Consider some of the factors that influence inequality at the household level: Household size; unemployment, which also affects the poor more and therefore increases household-level inequality; dividends and other forms of property income, which benefits the richer part of society and thus further increases inequality between households; and social grants, which is the only factor operating to reduce inequality, but has only a limited effect on inequality to though a greater effect on poverty. Thus wage inequality sets a floor under overall inequality. Central to wage inequality is the large wage premium: The shortage of high-level skills compared to a high and growing demand for such skills give qualified persons a high wage, whilst the over-supply of unskilled workers depresses wages even for those who do find jobs. Thus the wage gradient, directly related to the quantity and quality of education, is the central determinant of South African income distribution. In economic terms, the returns to education are convex (sharply rising with higher levels of education), as it is only the higher levels of education that also give a strong quality signal. So even if education had not been a source of interest to me, my interest in poverty and distribution would have led me to make it a major research concern.

It has been said that "without data, I am just another person with an opinion". Data helps to confirm one's suspicions and views, but also sometimes it serves to change such opinions. An example of the latter happened recently. We undertook a study of the performance of students who have received funding from the National Student Financial Aid scheme, NSFAS, a fund instituted to provide poor students loans on favorable conditions for undertaking university studies. Our expectation was that the performance of these students would not be good. As the funds are means tested, only some poorer students receive such funding, many of them from very weak school backgrounds. To our surprise, NSFAS students in fact outperformed others in terms of the rate of progression though the university system. We puzzled about this, and further interrogated the data, yet the results remained the same: NSFAS students graduated in greater numbers than their less disadvantaged counterparts, even when one controls for the universities they attend. So the data surprised us, and led me

to reconsider preconceived ideas. After long discussion we developed a hypothesis (thus far untested) that the incentives to complete their studies are simply greater for NSFAS students, who come from poor communities and have to repay their loans, so this may be why they are less likely to drop out than other students and more likely to persevere until they graduate.

FAVORITE WORKS

Journal Articles

Educational outcomes: Pathways and performance in South African high schools. (2012). With Reddy, van Rensburg, and Taylor.
How effective are poor schools? Poverty and educational outcomes in South Africa. (2008).
Apartheid's enduring legacy: Inequalities in education. (2007).
Convergence of a kind: educational attainment and intergenerational social mobility in South Africa. (2007). With Louw and Yu.
The targeting of public spending on school education, 1995 and 2000. (2006).
Education and socio-economic differentials: A study of school performance in the Western Cape. (2003). With Burger.
Differentiation in black education. (2002). With Le Roux and Wood.
Resource shifts in South African schools after the political transition. (2001).

Books

Creating effective schools. (2013). With Mabogoane and Taylor.
Signalling performance: an analysis of continuous assessment and matriculation examination marks in South African schools. (2009). With Shepherd.
Poverty and Education. (2008).

Chapters in Books

South African student performance in regional context. (2008). With Louw.

REFERENCES

Bromberger, N. (1982). Government policies affecting the distribution of income, 1940–1980. In R. Schrire (Ed.), *South Africa: Public policy perspectives* (pp. 165–203). Cape Town: Juta.
Case, A., & Angus, D. (1999). School inputs and educational outcomes in South Africa. *Quarterly Journal of Economics, 114*(3), 1047–1084.
Dornbusch, R., & Sebastian, E. (1991). *The macroeconomics of populism in Latin America.* Cambridge: Mass, National Bureau of Economic Research (NBER) Books.
Husén, T., & Postlethwaite, T. N. (1994). *The international encyclopedia of education*. Oxford: Pergamon.
Louw, M., Van der Berg, S., & Yu, D. (2007). Convergence of a kind: Educational attainment and intergenerational social mobility in South Africa. *South African Journal of Economics, 75*(3), 548–571.
Reddy, V., Van der Berg, S., Janse van Rensburg, D., & Taylor, S. (2012). Educational outcomes: Pathways and performance in South African high schools. *South African Journal of Science*, *108*(3/4), 1–9.
Taylor, N., Van der Berg, S., & Mabogoane, T. (Eds.). (2013). *Creating effective schools* (p. 296). Cape Town: Pearson.

Van der Berg, S. (1992). Fiscal dilemmas over popular aspirations. In G. Howe & P. le Roux (Eds.), *Transforming the economy: Policy options for South Africa* (pp. 61–76). Durban: Indicator Project SA & UWC's Institute for Social Development.

Van der Berg, S. (2001). Resource shifts in South African schools after the political transition. *Development Southern Africa, 18*(4), 309–325.

Van der Berg, S. (2006). The targeting of public spending on school education, 1995 and 2000. *Perspectives in Education, 24*(2), 49–64.

Van der Berg, S. (2007). Apartheid's enduring legacy: Inequalities in education. *Journal for African Economies, 16*(5), 849–880.

Van der Berg, S. (2008). How effective are poor schools? Poverty and educational outcomes in South Africa. *Studies in Educational Evaluation, 34*(3), 145–154.

Van der Berg, S. (2008). *Poverty and education* (Education Policy Series 10). Paris: Unesco, International Institute for Educational Planning/International Academy of Education.

Van der Berg, S. (2009). The persistence of inequalities in education. In B. Kahn & G. Kingdon (Eds.), *South African economic policy under democracy* (pp. 327–354). Oxford: Oxford University Press.

Van der Berg, S., & Ronelle, B. (2003). Education and socio-economic differentials: A study of school performance in the Western Cape. *South African Journal of Economics, 71*(3), 496–522.

Van der Berg, S., & Louw, M. (2008). South African student performance in regional context. In G. Bloch, L. Chisholm, B. Fleisch, & M. Mabizela (Eds.), *Investment choices for South African education* (pp. 49–69). Johannesburg: Wits University Press.

Van der Berg, S., & Shepherd, D. (2009). *Signalling performance: An analysis of continuous assessment and matriculation examination marks in South African schools.* Pretoria: Umalusi.

Van der Berg, S., Louise, W., & Neil le, R. (2002). Differentiation in black education. *Development Southern Africa, 19*(2), 289–306.

STELLA VOSNIADOU

AUTOBIOGRAPHY OF AN INADVERTENT EDUCATIONAL RESEARCHER

EARLY YEARS

I was born in Athens, Greece, shortly after the end of the 2nd world war. My parents were the children of immigrant Greeks from Asia Minor who moved to Greece after the 1920–1922 Greek – Turkish War, which resulted in a massive population exchange. I grew up in an extended family with my grandmother, my mother's brother and his wife living next door and many other relatives close by. Being the first child, I was surrounded with many loving adults who took care of me, fed me, played with and paid attention to me. Sometimes I think that all this love and attention of my early childhood years has been an endless pool from which I have drawn strength and self-sufficiency.

ADOLESCENCE

My happy childhood was followed by a rather difficult adolescence. My father died from lung cancer at the age of forty two. My mother had a job at the Greek Ministry of Education and worked hard to support my seven-year-old sister and me. My mother was the first and probably most important role model of a woman who combined work, professional development, and an absolute devotion to her family.

My adolescence was a gloomy period of relative self-enclosure. I concentrated on my studies, having an inclination for math and science although later I became more interested in the humanities and particularly in psychology. These were politically tremulous times for Greece, with considerable economic and governmental instability, resulting in the Greek dictatorship in the spring of 1967, which marked the loss of considerable personal freedoms. I felt rather imprisoned in this environment, not only politically but also intellectually and socially. I wanted to leave Greece.

Having made up my mind that I was going to study psychology, I decided that the best place for that was to go to the United States. At the time that seemed more like a dream rather than realistic thinking. It was rather unusual for a young woman to leave by herself and go to study as an undergraduate in the States. I had no family in the US, no relatives or friends and no means of support. I started going to the library of the American Union in Athens, looking at college catalogues and making applications to colleges in the States. One day a librarian who had gotten to know me from my frequent visits told me that she had just

M. de Ibarrola & D. C. Phillips (Eds.), Leaders in Educational Research, 231–239.

received an application form for a fellowship offered for undergraduate studies at Brandeis University. I not heard of this University before, but decided that I would not lose anything by applying. I was really delighted when I heard the news: I was accepted with a full scholarship at Brandeis University. My mother, who was not worried until then because she was persuaded of the futility of my efforts, was rather upset. However, I succeeded in persuading her that this was the best for me and she eventually conceded. Leaving my home, my mother and my sister was rather painful, but nothing could stop me.

UNDERGRADUATE YEARS: EDUCATION AND THE DEVELOPMENT OF MIND

Brandeis undergraduate culture was totally alien to me but fortunately there was a large group of international students with whom I could relate more, forming lasting friendships with some of them. The intellectual climate at the University was unbelievable. I loved my classes, my readings, the discussions, the lectures, everything. I was experiencing for the first time the fruits of a liberal arts academic environment where I could study anything I wanted. It was very different from what I then saw as the strict, disciplined, dry intellectual environment in Greek Universities, where undergraduate education was professionally structured and where you did not have the opportunity to experiment and explore before concentrating on one discipline in depth. My years at Brandeis have made me a strong supporter of liberal arts education.

Having enrolled at Brandeis as a psychology major it soon became clear to me that maybe that was the wrong decision. Behaviorism was not my cup of tea. I found Maslow not deep enough, and the new cognitive psycholinguistics that was emerging in psychology, following Chomsky's transformational grammar in linguistics, was something I could hardly understand at that time. I was drawn to philosophy. Brandeis had an excellent History of Ideas department. I started to appreciate my Greek background, my knowledge of ancient Greek allowing me to read Plato and Aristotle in the original. I read the British empiricists, the French rationalists, the German idealists, but did not like modern analytic philosophy. I took courses in poetry, in literature, in art. I discovered Freud and read everything he had written, doing my undergraduate thesis for the philosophy department on Freud's interpretation of dreams.

During my senior year I met a psychology professor who influenced me deeply. Her name was Eugenia Hanfmann. She had a Russian background but had studied psychology in Germany before immigrating to the US. Hanfmann had been a research assistant to Kurt Koffka, the well-known German Gestalt psychologist at Smith College, and a lecturer at Harvard before Maslow brought her to Brandeis as a full-time professor. Amongst other things she was also the translator and editor of Vygotsky's *Language and Thought*. Hanfmann introduced me to Vygotsky and Piaget and showed me how some of my philosophical questions and concerns could be approached in an empirical, experimental way. I was fascinated by Piaget's idea

of a "genetic epistemology" and by Vygotsky's arguments regarding the social origins of thought and the influence of culture on mental activity. For the first time, I was also able to see the links between philosophy, psychology and education. Hanfmann encouraged me to apply to graduate school to continue my studies. She thought I should study psychology at Clark University, because of links to European, developmental psychology. I applied for the Ph.D. program there but was not accepted. Clark only accepted two or three Ph.D. students a year at the time and I was not one of them. I went instead to Columbia, Teachers' College, for a masters' degree in psychology and education.

GRADUATE EDUCATION: THE BEGINNINGS OF PROFESSIONAL TRAINING

At Columbia I took many courses in developmental psychology and education, and started working with Lois Bloom with whom I did a master's thesis in developmental psycholinguistics. She had just published her book on child language and knew everything there was to know about language development. She was also a very careful methodologist and had developed meticulous procedures for collecting, transcribing and interpreting child language. I worked in her lab and learned how to do good empirical, observational developmental research while I also learned a lot about language and linguistics.

The next year I was accepted for a Ph.D. degree at Columbia but decided to go to Clark instead, which, in the meantime, had accepted my second application and also gave me a very good fellowship. The psychology department at Clark was a unique place to study psychology without the usual divisions between clinical, social, developmental, experimental, etc. Although my primary interest was in developmental psychology, I followed the whole clinical psychology curriculum including the necessary practical training. At the same time, I worked as a research assistant, originally with Ina Usgiris doing experimental work with infants and later with Rachel Falmagne on the development of reasoning in older children and the comprehension of language in children and adults. I completed my dissertation in the area of language comprehension under the direction of Rachel Falmagne in 1979.

Although I loved doing experimental work and had become by then a very good experimental psychologist, I decided to go ahead and complete my clinical training by doing a clinical internship at one of Boston's veteran administration hospitals. My experiences during the year of my clinical training made me realize, however, that the practice of a clinical psychologist was not for me. I became very critical of the lack of objective methods to decide on treatment, by the theoretical differences of opinion on the interpretation of psychological difficulties, by the absence of adequate scientific justification, and by our inability to really understand and treat serious mental illness. At the same time I was fascinated by questions about how people think and how they learn. I decided that I wanted to follow a research path in psychology.

During that time I also met my husband-to-be. He was then a student at MIT doing a Ph.D. in physics. We were part of a rather large and interesting community of Greek students in the Boston area who bonded during our years in a different country, sharing our similar culture, language, upbringing, and intellectual concerns. We were all concerned about the political situation in our motherland. The Greek junta had created an oppressive social environment, where people were followed and persecuted for expressing different opinions. The student movement in Greece grew and became massive, culminating in the violently suppressed student uprising of the Polytechnic in 1974. Tragic events also happened in Cyprus where an attempt by the Greek generals to oust Makarios was followed by a Turkish invasion and a war, which took the lives of many people.

As a scientist, my husband understood my need to grow intellectually and develop a professional career, and he was very supportive. Still, it was rather hard to combine the responsibilities of married life, and later of having a child, with a professional career. Fortunately, my mother had by then retired from her job and she was willing to come and stay with us for a while and help me out. I was very lucky and fortunate to have her support and help during that time.

BECOMING AN EDUCATIONAL RESEARCHER

Upon graduation, my husband obtained a postdoc in the Physics Department at the University of Illinois in Urbana-Champaign, and we decided to move there. I did not have a job originally but soon found a position as a postdoc in the Center for the Study of Reading and the Department of Educational Psychology. The Center for the Study of Reading (CSR) was funded as a Federal Center for the study of reading processes and for the development of educational programs and interventions to promote literacy and help children with reading difficulties. It was a wonderful place to be at the time, and it had a tremendous influence on my development as an educational researcher. The CSR was a place where the usual division between basic and applied research did not really apply. The problems the Center tried to solve were real educational problems related to reading. These quite practical problems were, however, approached from a basic research point of view. The Center was an interdisciplinary hub, with psychologists, cognitive scientists, linguists, and educators working together to improve the understanding of basic reading processes, ranging from eye-movement and basic cognitive science research to reading instruction and the practices of reading teachers. The Center's director, Richard (Dick) Anderson had collected some of the most important people who were doing research related to reading at the time, such as George McConckie, David Pearson, Anne Brown, Joe Campione, Andrew Ortony, William Brewer, Jana Mason, Rand Spiro, and Jean Osborne amongst many others.

I started working with Andrew Ortony doing research on the comprehension of non-literal language and on children's understanding of metaphors and analogies. In

June 1986 Andrew Ortony and I organized a workshop on "Similarity and Analogy" at the Allerton House of the University of Illinois. The workshop brought together all the main researchers on similarity and analogical reasoning at the time, including John Anderson, David Rumelhart, Philip Johnson-Laird, Lawrence Barsalou, Linda Smith, Ann Brown, Keith Holyoak, Douglas Medin, Dedre Gentner, John Bransford and many more. The book that resulted from the workshop (Vosniadou & Ortony, 1989, *Similarity and Analogical Reasoning*, Cambridge University Press) became the main reference book on analogical reasoning for almost 2 decades.

During my time at the CSR, I became interested in the problem of how children acquire new knowledge from text. That was the time when research on schema theory was showing the importance of prior knowledge in language and text comprehension. When we read something we activate prior knowledge and use it to understand new information. What happens, however, when what we already know comes in conflict with the information we read in text? It occurred to me that a great deal of the information that children receive from text, particularly science information, may be counter-intuitive and in conflict with their prior knowledge based on everyday experience. Take for example, children's knowledge about the earth, the sun, the moon, and phenomena such as the change from day to night and the seasons. We take it for granted the earth is a sphere that rotates around itself and revolves around the sun and that night happens because the earth turns around itself, and we do not realize that for children this information is extremely counter-intuitive. I started collaborating on a project with William Brewer to study knowledge acquisition in observational astronomy. We applied for, and were successful in obtaining, an NSF grant to pursue this research, which produced a number of influential papers on children's mental models of the earth and of the day/night cycle (Vosniadou & Brewer, 1992; 1994).

It turns out that by the time children go to school they have already formed strong beliefs, such as that we live on flat ground, that the earth is a solid piece of ground all the way down, and that night happens when the sun goes behind mountains, in the sea, or far out in the sky. Children's ideas based on their everyday experiences interfere with their understanding of scientific information, causing misconceptions. For instance, many children in their effort to reconcile the information that the earth is a sphere with their everyday experience of a flat earth create the misconception that the earth is like a hollow sphere and that people live on flat ground inside it with the sky being like a dome that covers it above. They may also believe that it is the sun that revolves around the earth every 24 hours causing the day/night cycle instead of the earth rotating around itself and revolving around the sun.

The research I did at the CSR with Bill Brewer helped us to better understand children's ideas about the world and how these ideas influenced school learning. It also had important educational implications. It showed how pivotal it is for teachers and curriculum designers to understand the kinds of ideas that children bring to school in order to design better instruction. Many times when I present my work to

teachers, they do not believe that the children can have such strange ideas, such as that the earth is a hollow sphere, or that the spherical earth is a planet but altogether different from the flat earth on which we live. Often I let them see the videos of the testing with the children in order for them to believe that their own children, the ones they have in their class, also can have these incredible beliefs. It makes them very conscious of the need to listen to children, and to let them talk, instead of the teacher doing all the talking and instead of focusing on the repetition of the correct scientific views.

BACK IN GREECE

In 1987 I accepted a job originally as an Associate Professor and in 1989 as Professor in the Department of Early Education at the Aristotle University of Thessaloniki in Greece. In 1992 I was invited to join the Department of Elementary Education at the National and Kapodistrian University of Athens. It was an exciting time in Greece where a new democratic government was trying to improve education and it was important for me to be back in my own country and be part of this movement. By then I had realized how crucial it is for teachers to understand how children think and learn so that they can teach them more effectively. My courses in Child Development and in Learning were very popular, and I was happy that a number of students were interested in pursuing graduate degrees with me. Through my Ph.D. students my research expanded to other areas of students' science understanding, their misconceptions of science, and the implications of all of these for teaching science. We started to study the development of students understanding of the concept of force and their explanations of earthquakes and volcanoes. We looked into their misconceptions about the nature of matter and about photosynthesis. After a while it became clear that the theoretical framework I had developed with Bill Brewer when I was at the University of Illinois in Urbana-Champaign, could be applied to many other areas of science teaching.

At the heart of the "framework theory" is the idea that young children start the knowledge acquisition process by developing a naïve physics which does not consist of fragmented observations but forms a relatively coherent explanatory system – a framework theory. Learning in science requires fundamental ontological, epistemological and representational changes in this naïve physics. After all, currently accepted science is the product of a long historical process characterized by radical theory changes which have restructured our representations of the physical world. Synthetic conceptions and fragmentation can be produced when learners use constructive, enrichment types of learning mechanisms to assimilate scientific information to an incompatible prior knowledge.

Going to Greece meant also being part of Europe. It was the time when the European Union was initiating major new projects to facilitate the creation of European education and research networks. I became active in the European Association of Research on Learning and Instruction and became its president in

1997 and chair of the 1997 EARLI conference in Athens, Greece. I established many research connections with my colleagues in Europe, collaborated in research projects, and travelled extensively to give invited talks and participate in conferences in Europe and in the US. It was a very exciting time.

In 1992 I organized a NATO Advanced Study Institute on "The Psychological and Educational Foundations of Technology-Based Learning Environments" which was held in Crete. It was a really extraordinary meeting which brought together most of the main researchers in the field of learning and instruction from Europe and the US and their students and postdocs. It was attended by Erik De Corte, Bob Glaser, Heinz Mandl, Jim Pellegrino, Susan Goldman, John Bransford, Joan Bliss, Jon Osborne, Marlene Scardamalia, Carl Bereiter, Micki Chi, and many others. The proceedings of the Advanced Study Institute were published by Springer-Verlag in a volume entitled *Technology-Based Learning Environments: Psychological and Educational Foundations*, edited in addition to myself, by Erik De Corte and Heinz Mandl. However, the exchanges and discussions that took place during this meeting made it apparent that the ASI proceedings should be supplemented by additional coverage of the issues involved in the design and theory of technology-operated learning environments. Therefore, we decided to solicit more detailed and theoretically oriented chapters from an internationally representative number of ASI participants, as well as from other researchers in the field, and edited with the additional help of Bob Glaser a second book entitled *International Perspectives on the Design of Technology-Based Learning Environments,* which was published by Erlbaum

While in Greece I realized that there were very few translations of important books in educational and developmental psychology available for undergraduate students to read. I talked about it with one of the major publishing companies of college textbooks in Greece and we agree to establish an Educational Psychology Series which over the years has published more the 30 volumes, some translations and some books written by Greek authors. I supervised the translation of 11 of them, including Vygotsky's *Mind in Society*, Siegler's *Children's Thinking*, Margaret Donaldson's *Children's Minds*, George Miller's *Language and Speech*, amongst others. I wrote three introductory texts in developmental and educational psychology myself, and edited seven other volumes in the Greek language for use by undergraduate students.

In 1996 I accepted a position as professor in a newly established Department in the Philosophy and History of Science at the University of Athens where I stayed until 2013. There I created a Division in Cognitive Science, a Laboratory in Cognitive Science, and an Interdisciplinary Graduate Program in Basic and Applied Cognitive Science, in collaboration with the Psychology Department and the Computer Science Department from the University of Athens and the Computer Science Department from the Economic University of Athens. The graduate program was especially successful, being the only graduate program of its kind in a Greek University, and it attracted many particularly capable graduate students many of whom went on to study or work in other European or American Universities. I had

the privilege to work with some of them who produced excellent doctoral theses and who have now found work as assistant and associate professors in different universities in Greece.

CLOSING THOUGHTS

So why did I become an educational researcher? I do not really know. There are many things in life that we do not plan. Chance plays a much more important role than we usually think. Being born in Greece I would not have had imagined that I would end up studying in the US and spending almost 20 years of my life there. And I could never have forseen that now, late in my life, I would start a new career at the Flinders University of South Australia where I have just started to work as a Strategic Professor in Education. My parents did not go to the University and did not have high aspirations for me. I never expected to get a Ph.D., not to mention being a University Professor.

My years at Brandeis were extremely important in shaping the rest of my life and my years at the Center for the Study of Reading were particularly instrumental in making me an educational researcher. Role models were also very important and there were certain pivotal women who provided me with the model of a professional woman, a scientist and a feminist, starting with my mother, and my teachers Eugenia Hanfman, Lois Bloom, Ina Uzgiris, and Rachel Falmagne. But I think it was curiosity, the desire to investigate and learn new things, and the belief that anything is possible if you try hard, that has kept me going throughout the years.

FAVORITE WORKS

Capturing and Modeling the Process of Conceptual Change. (1994).
International Handbook of Research on Conceptual Change (2008).
International Handbook of Research on Conceptual Change, 2nd ed. (2012).
Mental Models of the Earth: A Study of Conceptual Change in Childhood (1992). With Brewer.
Mental Models of the Day/Night Cycle (1994). With Brewer.
Designing Learning Environments to Promote Conceptual Change in Science (2001). With Dimitrakopoulou, Ioannides, and Papademitriou.
Similarity and Analogical Reasoning (1989). With Ortony.
Extending the Conceptual Change Approach to Mathematics Learning and Teaching (2004). With Verschaffel.

REFERENCES

Vosniadou, S. (1994). Capturing and modeling the process of conceptual change. *Learning and Instruction, 4*, 45–69.
Vosniadou, S. (Ed.). (2008). *International handbook of research on conceptual change*. New York, NY: Routledge.
Vosniadou, S. (Ed.). (2012). *International handbook of research on conceptual change* (2nd ed). New York, NY: Routledge.
Vosniadou, S., & Brewer, W. F. (1992). Mental models of the earth: A study of conceptual change in childhood. *Cognitive Psychology*, *24*, 535–585.

Vosniadou, S., & Brewer, W. F. (1994). Mental models of the day/night cycle. *Cognitive Science, 18*, 123–183.

Vosniadou, S., Ioannides, C., Dimitrakopoulou, A., & Papademitriou, E. (2001). Designing learning environments to promote conceptual change in science. *Learning and Instruction*, *11*(4–5), 381–419.

Vosniadou, S., & Ortony, A. (Eds.). (1989). *Similarity and analogical reasoning*. Cambridge: Cambridge University Press.

Vosniadou, S., & Verschaffel, L. (2004). Extending the conceptual change approach to mathematics learning and teaching. *Learning and Instruction*, *14*(5), 445–451.