

General Neurolinguistics

(The Mechanics of Conceptual Thinking)

André Michaud

Service de Recherche Pédagogique

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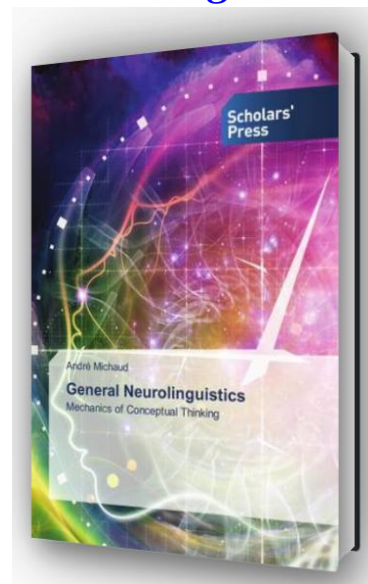
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General Neurolinguistics is the field of research that naturally emerges from *General Semantics* as defined by Alfred Korzybski when the mental barrier due to the unjustified certainty that physical reality cannot be confirmed with certainty and cannot be understood objectively is removed, as Korzybski hypothesized.

In relation to the discoveries made by Donald Hebb, Ivan Pavlov and Paul Chauchard, this discipline aims at explaining how the conceptual thinking mode that naturally emerges from the mastery of an articulated language allows describing and understanding the external world observed via our sensory perceptions and then allows measuring it via the mathematical thinking mode that emerges from the generalizations allowed by this same conceptual thinking mode.

General Neurolinguistics



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Integration in a final monograph of the five articles of project

General Neurolinguistics

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*"Thinking is a symphony
whose notes are words"*

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Foreword

General Neurolinguistics is meant to correspond to the major revision of *General Semantics* that Alfred Korzybski mentioned on numerous occasions as most likely to occur within 25 years of his passing away (1950), and that naturally emerges from it when the mental barrier due by the unwarranted certainty that physical reality cannot be confirmed with certainty and cannot be objectively understood is removed.

Interestingly, the analysis leading to this particular revision began to be carried out in the 1970's, that is, within the time frame that Korzybski expected, even though it could be fully documented and related to the complete set of required formal references only much later, due to the time that was required to identify, locate and correlate every major element of the solution that led to the present synthesis.

A summary description of General Neurolinguistics followed by a summary description of General Semantics that it is meant to enhance, will be provided in **Chapter 1**, followed by a summary analysis of the influence of the motivation of the members of a society's elite on the determination of the structures of their societies; a motivation surprisingly primarily driven by the genetically programmed defensive reactions of humans beings when they feel insecure about their own ability to *survive* in their environment – that of course also includes their social environment – which has been instrumental in the establishment of social structures throughout history.

Some of these social structures have not always been adequately adapted to the changing needs of the populations that they encompass and sometimes end up making large segments of these populations highly insecure.

But for these inadequate social structures be adapted in such a way that the resulting feeling of insecurity of these populations is reduced, the level of social awareness of the decision-makers of the elite of these societies must be such that they are aware of the benefits for themselves of adapting these structures. The relation between social awareness and the motivation of individuals will be put in perspective in **Section 1.4**.

But since such a level of social awareness seems to develop naturally only in people who are negatively affected by inadequate social structures, and since most members of the elite are generally protected by their status and financial means from these negative effects, another means must be used to activate a sufficient level of social awareness among the elite for these changes to take place, if this level does not seem sufficient for changes to be implemented.

Now, it is noted that social structures are evolving more readily in societies in which the educational system provides a broad base of general knowledge to its population. It would seem, therefore, that in order to encourage this evolution in societies where it is slower, it would be sufficient to encourage the orientation of the educational programs of these societies towards such teaching of broader general knowledge bases.

The election of decision-makers motivated to improve social structures is not uncommon in societies where such education is provided, but in societies where such

teaching is not the norm, few such decision-makers are elected and the social structures of such societies change very little.

It was a solution to this problem that Korzybski tried unsuccessfully to get his country's elite to accept in the first half of the twentieth century. A summary analysis of the causes of this historical resistance of the academic community to the introduction of this new paradigm of ontological nature, which could have contributed to a positive evolution of social structures, will be exposed (see **Section 1.10**), i.e. an intractable resistance illustrated and confirmed by the 25-year case study of a society that historically taught such an expanded knowledge base, but abandoned this teaching in the second half of the twentieth century, with disastrous consequences.

That is, a society whose educational elite, inspired by continental European teaching methods, had all the knowledge necessary to resolve this type of issues, but which the university elite from which this society's political decision-makers emerged, coming from an Anglo-Saxon inspired university system, oriented rather towards a need for immediate economic progress, forced to retire in the 1960s and then remained deaf and blind to any attempt to make them pay attention.

The relation between the extent of the general knowledge base of individuals and the extent of their resulting level of social awareness will be put in perspective,

Finally, a brief overview will be presented of the *comprehension process* understood by Korzybski, which emerges from the use of articulated language, support for conceptual thinking, which is established in specialized areas of the multilayer neural network of the neocortex, whose comprehension and proper use promote the acquisition of objective knowledge about physical reality.

This book reproduces and proposes in a single finalized integrated text a series of five articles that were formally published in various scientific journals, four of which having also been republished in expanded versions upon invitation, in a specialized collection of compilations of articles selected from the global offer, that the editors deem sufficiently worthy of attention to be made available more immediately to students and researchers.

These articles synthesized the converging research carried out during the past century in numerous countries by researchers whose conclusions were published in various European languages that have now been correlated to be put at the disposal of the formal community, regarding the successive discoveries that were made over the course of the 20th century about the function of the verbal areas of the neocortex in the establishment of conceptual thinking.

Very few in the international community remain aware that in the first half of the 20th century, leading edge research in numerous fields carried out in Europe was formally published only in languages other than English. When English became the standard formal publication language in the mid 20th century, a number of these leading edge articles were translated to English to be put at the disposal of the international community, but far from all of them, particularly in fundamental physics, in neophysiology and in the educational sciences. This is an issue now being addressed, at least in the domain of fundamental physics, by institutions such as the *Minkowski Institute* in Montreal.

Of the untranslated set, some concerned important discoveries that were unfortunately not made available to the international community in English, and early in the 1950s, general opinion tended toward the idea that what had not been translated must not be important enough to be translated, and even some works of critical importance to education ceased to be consulted, as new generations of scholars in all countries henceforth started trusting only works published in English, or translated from English. This issue will be addressed more concretely in the Afterword of this book, with a concrete example, with supporting evidence, of the damage that resulted in a specific case.

Readers will also observe that many of the quoted formal sources are in French or German, simply because they belong to the neglected formally published leading edge research set that was not translated to English, which is what explains why they never were referred to in English language formal publications. The set of references to formal publications related to these converging research studies is now made available to the community in these articles and is grouped in the Reference section of this monograph.

Besides **Chapter 1** already summarily presented, **Chapter 2** synthesizes the manner in which the converging discoveries made by leading edge researchers of the 20th century allow explaining the mechanics of conceptual thinking.

This Chapter summarizes the latest developments in understanding how the brain processes information by data sets correlation, and how our three thinking modes interrelate, which are: 1) the non-verbal thinking mode by *images association* stemming from our direct sensory perceptions, named the *first system of signalization* by Pavlov; 2) the verbal thinking mode by *words association* that generalizes the perceptions of the first system, named the *second system of signalization* by Pavlov; 3) and the mathematical thinking mode by *association of idealized geometric and mathematical concepts* emerging from the second system, named the *third system of signalization*.

Chapter 3 summarily describes how the discoveries made by Donald Hebb about the manner in which the neocortex multilayer neural networks processes and stores information can explain the relation between our sensory perceptions and the words of articulated languages that we use to describe and understand them. The discoveries made by Paul Chauchard of the relation between level of intelligence reached by individuals and the density of the synaptic network of interconnections established during infancy in the verbal areas of the neocortex will be related to Hebb's discoveries.

The automatic correlation mechanics of the neocortex multilayer neural network, that allows the generalization ability discovered by Ivan Pavlov as being due to the use of articulated languages, will be related to the reasoning method defined by Alfred Korzybski, which will explain why this method is so effective in helping to establish a clearer understanding of our environment. Finally the reasoning mode by perception of successive coherences discovered by Korzybski will be clarified in light of discoveries made by Pavlov, Hebb and Chauchard.

Chapter 4 describes the relationship between the level of intelligence reached by individuals and the age at which they reach reading fluency, which clearly puts in perspective how and why each child must be guided as early as possible to achieve an autonomous mastery of all aspects of articulated language, in order to ensure his or her

enthusiastic and easy schooling, i.e. a mastery of the reading skill, which when correctly taught, results in the parallel development of all other verbal skills. The possibility of a relationship between a delayed mastery of articulated language and ADD/ADHD is also analyzed.

Finally, **Chapter 5** presents the critical analysis of a field research report on ADD and ADHD, carried out independently but simultaneously with the sociological study that laid out the reference frame for the present case study, a field study carried out in the primary schools of a major city of the province of Québec and whose conclusions were also consistently ignored over a period of more than 20 years – more than 25 years in the case of the need for early learning of all language skills – despite countless attempts over these periods to trigger a public debate involving our elite by direct individual contact with any individual in our educational and political elite who appeared to show the slightest level of interest for these issues, according to their opinions in the media – way over the thousand individuals mark over the course of the study, but that elicited no response whatsoever –, which confirms beyond any doubt Korzybski's conclusion about the historical resistance of academic communities to the introduction of new, possibly ontological paradigms that could benefit societies.

To this author's knowledge, this field study was the first and only such study ever carried out in Canada with regard to the real causes of ADD and ADHD diagnosing in young children during their first years of schooling. This field study was published in 1999, the same year as the sociological study carried out in parallel. The critical analysis of this field research report from *Cohen et al.* was informally made public a few years after the report's publication and was formally published in 2016.

A certain amount of overlap of the descriptions will be observed between all five chapters, but since each chapter mainly reproduces the actual content of a separately published article, it was chosen not to reduce these overlaps so as not to interfere with the specific lines of reasoning that each article was meant to emphasize. This allows all five chapters now further clarified and integrated to remain independent of each other so they can be read in any order without prejudice.

The Case Study

The case which is at the origin of this synthesis project is the evolution of the education system in the French-Canadian community of the province of Québec, my community, from the 1950's to 2022, year of publication of this monograph, i.e. a retrograde evolution that degraded one of the best education systems in the world, historically grounded in the best practices of the education systems of continental Europe, directly inspired by the knowledge and research of the French university system of the time, to its current sorry state.

Until the mid-1960's, all children in the province were taught to read to autonomy in the first grade of primary school. I directly know about this because I still have the book I received as a prize at the end of my first year in 1950 because I had learned to read on time. Those who did not read autonomously by the end of first grade had to succeed before entering the second grade.

All students who completed high school had been taught a relatively extensive general knowledge base in physics, chemistry, biology, classical literature and philosophy and had the opportunity to study the history and literature of our culture down to its extensive underlying Greco-Latin French roots.

Those aiming at a career in education could enter the *classical course*, an 8 year course leading to the equivalent of a master's degree [15], giving them access to the latest European progress in this domain, and deep study of physics, chemistry, biology, classical literature and the philosophies, in order to teach them at the secondary level and for the training of primary school teachers in our network of *écoles normales*.

To enhance their general knowledge base, they studied ancient Greek from which emerged the roots of so many words of our languages, by studying the *Iliad* and the *Odyssey*, and finally Latin, to the point of being able to read Newton in his original text, for example, which was the language of international scientific communication back then, and whose coined expressions can still be found in so many formal publications.

Such was the level of education of our teaching and intellectual elite until the 1960s. It was these learned scholars, specialized in education who educated our people until the mid-1960s, and who largely preserved it from the assimilation policies of the British Empire after the 1700's conquest.

Those who had the means to pursue careers other than teaching had access to a local French-language university system whose programs were not modelled on the continental Europe university system that underlied the knowledge of our education elite, but on the North American Anglo Saxon system which, as early as the 1940s, had begun to prioritize economically oriented specialties and applied research, at the expense of fundamental research in the humanities and social sciences still maintained in Europe, a trend that has been on the increase ever since.

But since a catastrophic educational reform implemented in the second half of the 1960s, precisely by this specialized university elite who knew nothing of the recognized practices of our then educational elite, but from which emerged the decision-makers of the day (see **Section 1.9**), the quality of education provided to our children has degraded so much that more than half of our population aged 16 to 65 was considered functionally illiterate by the OECD in 2013.

This situation is at the origin of this neurolinguistic synthesis project that resulted in the identification and synthesis of the leading edge formal research on education that was already available in French the 1960's, in Europe as well as in Canada, apparently unbeknownst by our then *university elite*, now regrouped in this monograph.

For those who may be interested in a more in-depth analysis of 1) our social environment in Canada, 2) where the knowledge presented in this book came from, which was an integral part of our culture in the 1960s, 3) why our academic elite ignored it when the 1960s reform was implemented, and finally, 4) how this reform affected the social structures of our community – an insidious choice to which the elites of many other cultures around the world seem to have been exposed – these four topics are presented separately in the next four sections of this foreword.

Our culture

Our culture is not very well known at the international level, even in French speaking countries, most being under the impression that our population is restricted only to the Province of Québec. This is due to the fact that upon its emancipation from the British Empire, the Canadian government refused to recognize the existence of our people and of the Acadian people and has maintained this choice ever since, in a rather contemptuous manner, it must be said, thus silently maintaining the ongoing policy of assimilation instituted by the British regime, without having had to admit it openly.

Since it is never mentioned in official federal documentation, even the name of our people *the French-Canadian people* has now practically disappeared from the public sphere, now replaced by generic terms such as *Francophone Canadians*, *Franco-Quebecers*, *francophones out of Quebec*, *Franco-Ontarians*, and so on for each province, that arbitrarily splits us into numerous disparate groups of mere *other language individuals* without a common culture.

All of this is baloney of course, since that beyond the language that we speak it is our European-inspired culture that characterizes us, which is different in many respects from the Anglo-Saxon culture. Actually, we are about 9 million strong across Canada, with a Diaspora in the United-States from which about 13 million are descended, many still speaking French. These figures include, of course, the more recent arrivals of all origins that have adopted our culture in the past and continue to do so.

We were moving about all over North-America before the British conquest wherever it was easier to earn a living and raise a family, just as we are still doing today. We have a very specific culture across Canada with specific historical roots going back to the 16th century, except for the Acadian people, who have different roots in history and thus have a different culture, which is the second French language culture of Canada, which the Canadian government has never recognized either.

The Acadian population, to which I also have links, since my mother was Acadian, more specifically a Brayon, born in northern Maine, descended from Acadian refugees that were fleeing mistreatment by British colonists who were grabbing their lands in the Bay of Fundy area in the 1700's, is spread out over the Eastern Provinces of Canada, including part of eastern Québec and the northern part of Maine in the US. The French-Canadian and Acadian populations are now reduced to a little over 20% of Canada's population.

A recent incident mentioned in the media is very revealing of the type of harassment that we face and which has not diminished even after the emancipation of Canada from the British Empire, neither of which has recognized the existence of our culture.

Even in the province of Quebec, French-Canadian employees of certain companies are still openly forbidden to speak French with each other at work by condescending owners, who have remained nostalgic of the domination and assimilation methods of the British Empire, under whose rule the use and even the teaching of French was forbidden by law in many provinces, finally giving it up in Ontario in 1944, but which virtually eradicated us from Manitoba, where we once were the majority.

In fact, French Canadians are systematically refused service in thousands of businesses in the city of Montreal, the metropolis of the province of Quebec and heralded as the largest French-speaking city in America, unless they speak English. During the organization in June 2022 of the event *Les Francos de Montréal*, an event meant to proudly celebrate the French fact in Canada – according to the Minister of Canadian Heritage –, the French-Canadian employees of the Montreal based company in charge of organizing the event were forbidden to speak French among themselves during the preparation of the event. Even employees who did not speak English were instructed in English only, causing many to give up and resign [135].

"Le français fait partie intégrante de notre histoire et de notre identité collective... C'est avec fierté que le gouvernement du Canada appuie ce festival haut en couleur."

Hon. Pablo Rodriguez, Minister of Canadian Heritage, 2022

"French is an integral part of our history and of our collective identity... The Government of Canada is proud to support this colourful festival."

In short, given that our collective rights are not recognized by the federal government, we are often in court as individuals across Canada, when it is even financially possible, to force the respect of a minimum of our collective rights in our own country, with generally disappointing results because the Supreme Court judges are all appointed by the federal government, which does not even hesitate anymore to directly get involved to counter our attempts. The Acadians are confronted with the same situation.

However, the present case study is unrelated to this disappointing situation. It rather specifically concerns the deterioration of the education system in the province of Quebec since the 1960s, which is of provincial jurisdiction in Canada.

Where did the knowledge come from

The French Canadian culture happens to be one of the few cultures, perhaps the only one in fact, due to its French origin and its privileged location in the heart of English-speaking North America, combined with the cultural influence of our remarkably well-educated educational elite, that brought together a set of circumstances that gave our general population easy access to both the cutting-edge European French-language scientific production not translated into English, and to the henceforth standard international English-language scientific production.

These circumstances gave us easy access to cutting-edge research that to this day still has not been translated to English, especially in the field of fundamental physics through the writings of Louis de Broglie and a few others; in education through those of Jean Piaget and a few others; and, of paramount importance, to the writings on neurophysiology of Paul Chauchard and his colleagues, whose research gave access to Ivan Pavlov's major discovery that the mastery of articulated language is the very foundation of conceptual thinking in the human species; Pavlov's work on this issue being available only in German to this day.

An incredible popularization collection in particular, unique in the world, a project due to the dedicated management of *Les Presses Universitaires de France*, the *Que Sais-je*

collection, was available to all in the province, comprised of thousands of inexpensive little one hundred pages or so popularization works, each written by an invited top French academic, high level specialist in his field, some of whom were the leading edge discoverers themselves, that introduced readers to all of the cutting-edge research in all fields, some of which are given in reference in this monograph.

The knowledge that this collection gave access to in the 1940's, 50's and 60's was truly universal, covering all up to date leading edge discoveries in every research field. Any layperson interested in popularization literature then had the opportunity to acquire a general leading-edge knowledge base that was pivotal in causing numerous youth in French speaking countries to orient their careers towards fundamental research.

Indeed, this might well explain why two French-Canadian physicists, Paul Marmet and Larkin Kerwin were so advanced in their field that Marmet ended up developing a fundamentally important equation still not understood in the physics community, but that allowed finally understanding the relation between the magnetic field of the electron and its mass [129] in an article that he published in 2003 [130], besides having developed in the 1960's at *Université Laval*, under the enlightened guidance of his mentor Larkin Kerwin, who was also for a while rector of this university, a new electron source, able to generate and guide thermal electrons possessing momentum energy as low as a few eV each, allowing for easy exploration of the properties of negatively ionized atoms in nature [131], that resulted in about 70 articles on spectroscopy to be published.

So misunderstood was he, that his colleagues at the *Ottawa University* ended up having him deprived of his assistant professor tenure, specifically for doing fundamental research that they did not understand, and malevolently destroyed the priceless apparatus that he had developed. His carrier is summarized on the website of his Estate [29], and a tribute is paid to his contribution in the appendix of the article that explains why his discovery is so important [28]. For more on this case, see **Section 1.8**.

But the situation has now changed, and there no longer seems to exist a collection of such accessible popularizing cutting-edge research books in the world, written by the researchers themselves. This situation will be put in clearer perspective in the Afterword of this book.

I remember that thanks to the very high level of social awareness of our educational elite, rotating racks were available even in the small villages of the province, one for the *Que Sais-je* collection, one for French and American illustrated *comic books*, one for French novels and other popularisation works, one for French science-fiction and one for American science-fiction, all of them reloaded monthly. Given the ready availability at that time of such a high quality collection of popularization works throughout the province of Quebec, many French-Canadians had the opportunity to acquire a vast array of advanced general knowledge.

Interested as a laymen in popularization works, I eventually became familiar with the discoveries clearly described by Chauchard, unaware at the time that this material was not available in English and confident that the French-Canadian university elite was keeping up to date with this progress, the most important conclusion of which was the importance for all children to learn to read in infancy. So, when the mid-1960's education

reform was set under way, I was candidly convinced that this reform was meant to better adapt the teaching method to the latest discoveries in this domain.

Not being directly involved in education, the following decades went by without me paying much attention. Only much later, in the mid-1990's, was my attention drawn again to this issue, when we received a short note from our daughter's teacher full of spelling errors! I soon discovered that the functional illiteracy rate in our population had progressively increased to reach 35% in 1994 according to the OECD figures and was apparently still on the rise.

The Choice

An in-depth sociological study then revealed that not only had the pedagogical knowledge of our educational elite of the 1960s not taken root in the Quebec university community, but that it was even totally unknown to them, despite its availability in numerous widely available popularization works.

It turned out that the *Quebec Ministry of Education*, created in the 1960s as part of the *Parent Reform*, led by an anonymous university elite that had improvised themselves as educational specialists despite their ignorance of their own European scientific heritage, now relied only on material translated from English.

The *classical course* was deemed obsolete and ceased to be taught, the *écoles normales* were closed and their highly qualified professors were invited either to retire or to become field teachers to teach the new reduced curriculum. A 3-year course in the new *Faculties of Education* was now deemed sufficient to train the future generations of teachers, increased to 4 years 30 years later, given the serious deficiencies progressively observed, that is, half of the 8 years of training that qualified teachers had before the 1960s reform.

Moreover, no university graduate or even doctoral or post-doctoral graduate in any other field of specialization – the only ones who are deeply competent in their own field – is allowed to teach in Quebec at the elementary and secondary levels, unless they take this 4-year course in a Quebec Faculty of Education in addition to their specialized training, a requirement that no reasonable person is likely to consider.

Ignorant of the widely available leading edge progress untranslated to English made in neurophysiology originating from France, Germany and Russia, these academics whose knowledge in pedagogy was too limited to understand the consequences of their decision, forced the requirement to teach the mother tongue up to minimal autonomy in reading in the first grade year of primary school to be abandoned, and arbitrarily spread the acquisition of this level of mastery over the first three years of primary school, despite the recent discovery that reaching this minimal level of reading autonomy becomes much more difficult past the age of 7, due to an irreversible physiological maturation process (myélinisation of the verbal areas of the brain) genetically programmed to occur for all children at about this age of 7, which renders more difficult the subsequent improvement of all verbal skills for which this threshold of minimal fluency is not reached before this physiological maturation deadline.

The outcome of their decision was a steady increase in the functional illiteracy rate in the adult population of the province of Quebec that reached the barely believable level of 53% of the population in 2013, according to OECD figures, and there are now talks in 2022 of 60% rates in some regions of the province.

Concurrently, a steady increase was observed in the prescription of psychostimulant drugs to control behaviors that were already known, in truly informed circles, to occur in children who do not achieve sufficient mastery of their language in a timely manner, without any indication that radical measures were being implemented, or were even considered, to reverse this deterioration rate.

Apparently completely unaware of the comprehension difficulties that insufficient mastery of all language skills in a timely manner causes in children, but perceiving that fewer and fewer students were succeeding in their schooling, these anonymous pedagogues found no better way to restore success rates than to progressively reduce the level of difficulty of the passing exams, and even, which is the ultimate height of absurdity, for the very level of language mastery, and to reduce the content of the general knowledge courses now deemed too difficult at the secondary level.

The result over time was that the following generations of teachers, emerging from this failing system, even less informed and not sufficiently proficient in their own mother tongue to teach it properly, began to train the following generations of children. This is what attracted the attention of the present author in the 1990's, when we received this short note from our daughter's teacher, full of spelling errors.

Running out of options to increase the success rate, given their limited knowledge in pedagogy, these improvised pedagogues finally eliminated other topics now considered too difficult from the secondary school curriculum, such as classical European literature and the history of our people, two of the pillars of our French Canadian culture, causing it to wither away over time to the point that the last generations of our people are barely aware of their own history and culture.

These anonymous pedagogues were eventually replaced by other anonymous newcomers educated in the flawed system that their predecessors had put in place, from which generation after generation of a new elite emerged with insufficient general knowledge for them to develop a sufficient level of social awareness and sufficient competence for rational management of public affairs.

This explains why, by the end of the 1990s already, no one in this ignorant elite, now in control of all levers, was any longer able to understand and react to the alarm signals given by the *Cohen et al.* survey report on ADD and ADHD, and by the sociological study carried out in parallel, when they were published in 1999. See **Chapter 5**.

It must be said that the millions of our population who can read easily and keep the economy running relatively smoothly easily masks the fact that the remaining millions have become functionally illiterate in the eyes of an elite primarily concerned with its own well-being, which is already satisfied by the current state of our society. See **Section 1.9**.

The height of irresponsibility is now being reached, 20 years after the publication of the *Cohen et al.* survey report and of the parallel sociological study, that is, 60 years after

the improvised reform of our education system, our *Minister of Higher Education* is now considering to ban the teaching of the history of Western civilization, the last remaining pillar of our culture.

The Consequences

In Quebec, the capacity to intelligently manage public affairs has diminished so much over the last 40 years due to a too low level of general knowledge among the province's elite, which limits their ability to acquire a sufficient level of social awareness and a rational capacity to understand and adequately manage major societal problems, that the governmental structure has become unable to function adequately.

At all decision-making levels of the government structure, many managers in place are reduced to managing all cases blindly, following their general rule book and procedures as thoroughly as possible, without regard to the particularities of each case, so as to absolve themselves of any responsibility for the negative consequences of some of their decisions, which can be particularly disastrous in areas that concerns the most vulnerable, such as health services and child protection.

When alarm signals are raised by those aware of evolving problems that fall outside the narrow confines of the procedures that secure them, these managers typically offer only silence or noncommittal responses to those signals and maintain, against all common sense, situations that have become unacceptable to their victims, instead of referring the problem to the upper level of authority to intervene, which is constantly blocking the chain of communication from bottom to top of the management structure, and the chain of decisions from top to bottom.

Some recent dramas amply reported in the local media indeed painfully demonstrate this. For example, in the first 2 months of the covid pandemic, in many long-term care hospitals, thousands of people died of covid-19 (*about ten times more than in the neighbouring provinces*), or worse, also from hunger and thirst, abandoned to their fate by staff who were fleeing the premises, without anyone in the management structure succeeding in alerting the highest levels of decision-making, until the day a journalist publicly documented the out-of-control hecatomb in a local newspaper.

Another case of neglect, so unspeakable that one hardly manages to believe it, of a little 7-year-old girl, whose name it is forbidden under penalty of legal action to publish, was found one morning suffocated to death from having been completely wrapped with packing tape, after having been abused for years. Happy in the first years of her life while living with her grandmother, she was later forcibly placed in the custody of people who apparently did not love her, a custody that was maintained even after one of them was found guilty of aggravated assault against her when she was only 5 years old. None of the alarm bells rung by concerned people, or even directly observed, elicited the slightest reaction of help from the authorities for this little girl, who, emaciated and looking constantly hungry, was rummaging the garbage cans at school towards the end of her life in search of food, in full view of and to the knowledge of the immediate authorities.

Some cases on the chronic side, that no decision maker seems able to even help turn around: For decades, food so deficient and unpalatable is served in some long-term care

hospitals that patients often cannot bring themselves to eat it, leading them gradually and inexorably into a state of chronic malnutrition.

On the general population side, hundreds of thousands of people no longer have access to a physician in the public system, or even to immediate emergency care in many hospitals unless they can afford to go private or out-of-province for treatment, while overworked front-line workers are becoming exhausted, constantly putting out fires not of their making, and end up leaving the profession, discouraged that from top to bottom of the management structure, no one seems able to assume their responsibilities.

Shortage of physicians, shortage of nurses, shortage of pharmacists, shortage of well-trained teachers – there is a 1400 teacher shortage in 2022 –, shortages of adequate social measures of all sorts, due to the mismanagement of an elite with too little general knowledge to have developed a sufficient level of social awareness and a capacity for long-term planning that have disappeared for decades at all levels of the management structure; combined with an indifference induced by their living conditions which, even in the current state of society, are sufficiently satisfactory for them not to have become aware for decades of the preventive educational measures that would have prevented these shortages from occurring.

In short, the overall management structure has become so deficient in so many areas that it is now the subject of almost daily denunciations in the media, which has now become the standard means by which the authorities are now made aware of issues under their jurisdiction. On the same day taken at random, from a local newspaper: –Patients left in their excrements for hours here... –Ten ambulances waiting in line for hours without their patients being taken charge of at the door of a hospital there... –A person dies at home while waiting for hours for an ambulance that finally arrives too late..., etc., elicit barely a few *reassuring* explanatory words from some nondescript supervisor, but no long term remedial action ever planned and implemented, in other words, the same insipid explanations for the same situations that have been repeating themselves and getting worse for decades now. The competent and conscientious managers who remain in their posts, overworked and trapped in this unmanageable structure, are thinking of resigning, and end up jumping ship.

Sixty years after the education reform of the 1960's, it can be observed that after the enthusiasm of the first years, aroused by the expected but never realized benefits of this improvised reform, the entire political and intellectual elite of the province of Quebec, who no longer knows anything about our literary and scientific heritage, unique in the world, quickly became completely indifferent to the quality of education of its own upcoming replacements elite, with the results that can now be observed.

In 2022, even these reports of a functional illiteracy rate now reaching 60% in certain regions of Quebec, raise no sign of even budding awareness in educational circles, or in political circles, of the urgency to act, while the so simple solution to this catastrophic situation for the survival of our culture, simply is for all children to learn all verbal skills in due time, that is, before the age of 7, as was the norm before the 1960's reform.

But now that at least all the formal references to these untranslated articles and books are becoming available in formally published articles in English, it is to be hoped that the upcoming generation will again have access to this knowledge, which would make it easy

to tackle the problem and perhaps reacquaint themselves with their cultural heritage and thus reconstitute this elite of uncommon general knowledge which is now gone, and finally re-establish a capacity for long-term planning that would once again allow for proper management of public affairs and perhaps prevent the complete disappearance of our culture, because a language not underpinned by a specific culture has no chance to survive.

We can therefore observe that the assimilation problems that we have in the absence of any formal representation to legally represent our culture, following the refusal of the Canadian government to recognize its existence, is pretty small potatoes compared to the extent of the damage caused by the progressive and systematic destruction of our culture, supported from within at high speed for the past 60 years by our own university elite, completely ignorant of its own literary and scientific heritage, retaining only a poorly taught language disconnected from its cultural roots; an elite now only interested in its own well-being and of which 27% of the new cohorts of graduates were considered functionally illiterate by the OECD in 2016.

That is, a cultural suicide the likes of which has not been seen since the cultural suicide of the Roman Empire after their own elite banned the teaching of the Greek science, thus causing its progressive destructuring until its final collapse, while their leaders were keeping on flaunting their pride of being part to the Empire's elite.

What happened in Quebec in the field of education should be a warning to all societies tempted to neglect the adequate teaching of the mother tongue to the level of minimal autonomy in due course, and to favour hasty specialization at the expense of the teaching of a broad general knowledge base in secondary school.

This synthesis project now makes available to the international educational community a body of formally published findings, much of which was already known in Europe in the 1960s without having been translated into English; a body that confirms beyond any doubt the benefits of early learning of all language skills, and of the acquisition by all of a wide range of general knowledge.

6. Afterword

There is a serious misconception among researchers around the world and particularly among researchers of Anglo-Saxon cultures, that all cutting-edge research is now routinely translated into English to be made available to the international community.

This issue concerns not only the now-forgotten but still available leading edge articles and research works published in languages other than English from the first half of the twentieth century, but also a host of research works conducted since then that, for various reasons, have not ended up being formally published in English.

Until a common awareness of this issue emerges at the international level, potential critically important research that logistical, budgetary, or administrative considerations

make formal translation and publication in English beyond the reach of the researcher, the research team, or even the organization financing the study, will escape the general attention of the international scientific community, which was the case for the *Cohen et al.* field research report [120] whose critical analysis is presented in **Chapter 5**.

The consequence is that important lines of research stagnated for decades at the international level, while in some non-English-speaking communities, where popular works of European origin, not translated to English, described and explained significant, even decisive, advances that became public knowledge in these communities. This was true, if not of their elites, who tended by training to study formal reference works of Anglo-Saxon origin that had become trendy at the time, but at least of their general population, for whom the popular works of European cutting-edge research not available in reference works of Anglo-Saxon origin were widely available to the public in their own languages.

This was precisely the case in the French-Canadian community of the 1960s due to the universal availability in that community of the *Que sais-je* collection, and of other collections of popular works of French origin. The outcome was that in the second half of the 1990's, a project to synthesize the body of convergent research already published in French, German and English in the 1960's, all easily available in this community in the fields of education and neurophysiology was undertaken to be eventually presented in this monograph.

In parallel also, in the second half of the 1990s, a project based on the convergent research already published in French, German and English easily accessible in our community in the 1960s in the field of fundamental physics was also undertaken, the updated sum of which is now available in a set of two monographs [45] [46], and a final paper [125], the function of which is to serve as a proof of the validity of the method of reasoning proposed by Korzybski (see **Section 3.13**) now confirmed to be complementary to the findings of Pavlov, Hebb and Chauchard.

These two lines of leading-edge research have now been brought back to be put at the disposal of the international community to be finally assessed. But time is running out, however, to finish analyzing all of the articles not translated into English produced in Europe in other lines of research before the 1960s, for it can be observed that even in the *Que sais-je* collection, which used to be universal in scope, the beginnings of a deterioration is already perceptible.

This degradation specifically relates, not the non-republication of the popularization works of a scientist such as Pierre Rousseau that he published in this collection for example, but to the *complete obliteration* of his contribution to the collection.

Pierre Rousseau was an astronomer, a talented mathematician and an outstanding popularizer, one of the rare high-level mathematicians capable of clearly explaining all the theories of fundamental physics without resorting to mathematics. This he did in two of the first books of the *Que sais-je* collection, book number 2 [126] and book number 48 [127], descriptions which have remained the reference framework within which the entire synthesis of the electromagnetic mechanics of elementary particles presented in References [45] [46] [125] was developed.

As a tribute to his contribution to the elaboration of this synthesis, the epigraph of the first monograph on the electromagnetic mechanics of elementary particles [45] was a quote from his 1941 *Que sais-je* Number 48 book [127] about the nature of light:

"Le photon est un papillon chatoyant qui s'échappe de la chrysalide de l'atome."

"A photon is a shimmering butterfly escaping from the chrysalis of the atom."

My copy of issue 48 [127] published in 1941 having deteriorated greatly over time due to so many repeated re-readings, I ordered a new copy in the early 2000s.

To my surprise, I did receive a copy of book number 48, but not Pierre Rousseau's work, rather a work with the same number 48 [128], but published in 1996, with the same title *La lumière*, but written by another researcher *Émile Biéumont*, which, although very interesting and completely mathematized, does not refer to the same past works whose experimental data justified the classical equations of fundamental physics.

A quick check shows that the very name of *Pierre Rousseau* has disappeared from the list of authors who contributed to the *Que sais-je* collection, and I can confirm by direct experience that even if the Wikipedia page that summarizes his biography mentions that his works in the *Que sais-je* collection are still available, they are not.

It seems, therefore, that the philosophy that presided over the creation of the *Que sais-je* collection, to systematically popularize the current developments of research as they are confirmed, has become more selective in the hands of the new generations of administrators, who are now progressively eliminating the writings of the past that seem to them *no longer fashionable* and consequently would not be important enough to be maintained. This opinion is contradicted by the two syntheses previously mentioned whose foundations are part precisely to these *out of fashion* writings.

Due to their neglect of their own pioneering scientific heritage, these French administrators also removed from the collection the so very important works of Paul Chauchard and of his colleagues, that describe critical aspects of their discoveries in neurophysiology, thus depriving the younger generations of their own culture of their never translated to English cutting edge advances in this field. His name has also disappeared from the list of the contributing authors.

It seems, therefore, that research deemed outdated described in the first thousands works of the *Que Sais-je* collection have simply been wiped off the map, and it may well be that the two lines of research recovered in the course of this project are all that will remain of the heights of research done in Europe at that time, that French researchers had entrusted to the *Que Sais-je* collection, thinking that their reviews would remain permanently available, but that were not translated in time into English to be preserved.

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Ultimate Attempt

In relation with the importance of early learning of all verbal skills revealed by the analysis of the references on which this article was based, the author gave his opinion in an article published in a local daily newspaper, *Le Soleil* of September 22, 2021, on the state of language and culture teaching in Quebec; a state whose case study was at the origin of this research project on neurolinguistics 25 years ago, an issue that can potentially affect all languages and cultures, an ultimate attempt that elicited no reaction whatsoever:

[Qui sommes nous ?](#)

Here is the English translation of the original article published in French in *Le Soleil*:

Who are we?

POINT OF VIEW / The idea came to me to give my opinion while reading that of Konrad Sioui expressed in his text entitled *Brûler le passé* (Burning the past), in *Le Soleil* of Saturday, September 18, 2021, about an exalted person who had been inciting people to burn books. I agree with him that no nation should tolerate that anyone who does not share their culture should have the arrogance of claiming to define it. I also agree with his conclusion that Quebecers are natural objective allies of the *First Nations* in the defence of our respective cultures and languages.

His text made me ask myself the title question. We often refer to ourselves as "the Francophones". I even read and heard more than once our own politicians and columnists refer to us as the "Francophone people". Really!

To be read also: [Brûler le passé!](#) (Burning the past!)

There are about 300 million French speakers on the planet. Oddly enough, apart from the common language, I search in vain for the common values I share with this universal "francophone people". In fact, these 300 million individuals are regrouped into a large number of local cultures, each rooted in its own history, that forged their local set of cultural values. A people is defined primarily by its language, of course, but mostly by its culture.

To know who we are, we must know where we come from. Personally, I know very well where I come from. My mother was Acadian, born in the United States, descended from refugees fleeing the mistreatment of British settlers in the 1700s and given land by the Maine authorities. My father was French-Canadian, born in Quebec, the descendant of a French settler who was given land near Quebec City in the 1650's. I am French-Canadian by culture, so I have very direct affinities with the two French-speaking peoples of North America.

But what is in fact this culture that differentiates us from other francophone peoples? The Acadians know it very well in their case, and they celebrate it joyfully every year on

many occasions. They celebrate the cultural heritage that their history has forged, their common values.

I remember that the French-Canadians also joyfully celebrated every year our cultural heritage, which, beyond the popular language, was based on a formal mastery of our language, for which even the sports commentators had the greatest respect, on our history taught in high school, and on the great classical literature stemming from the Western socio-cultural heritage from which our culture was born.

For some of us, culture means primarily a high level of mastery of French, for others a deep knowledge and love of classical literature. For others, it is the literary and artistic production of our culture, from the touching poetry of Leclerc, Vigneault, Ferland, to that of our outstanding performers, Céline, Lara, Jerry, Marjo, to the talent of our incomparable musicians, Léveillé, Hill, our great actors, Brathwaite, Côté, Messier, our top scientists, Reeves, Marmet, Kerwin, our great athletes, GSP, Lemieux, Lafleur, our talented stand-up comedians, right up to the extreme self-deprecating parodies of *La Petite vie*, some episodes of which make us laugh so much, a modern legacy of the vaudeville of Jean Grimaldi's historical tours.

In my case, it is also the privileged access that our language gives us to the important European scientific knowledge of the first half of the 20th century that still has not been translated into English. Few people are aware that, during this period, the most advanced researchers in certain fields were French, German, Russian, and that some of their discoveries are still unknown and not rediscovered by the Anglo-Saxon scientific community, particularly in pedagogy and related sciences. In short, I love everything about our culture.

How on earth did we become mere "Francophones", the last generation of whom knows nothing of our history and of our European literary and scientific heritage because it was never taught to them, and more than half of whom are considered functionally illiterate by the OECD? We are becoming a people of nine million "Francophones" in Canada with no specific culture, which the thirteen million descendants of the French-Canadian diaspora in the United States can no longer identify as the culture from which they emerged.

With the 1960s "*Parent Reform*", the requirement to learn French to the point of reading autonomy in the first year of elementary school, which had been compulsory and highly supervised before the reform, was dropped, as was the requirement for a more advanced mastery thereafter. This resulted in generations of children with an approximate knowledge of French, from which emerged in the 1980s the first generations of teachers with an approximate knowledge of French, unable to understand and teach the great classics of literature and to explain our history, which led to the disappearance of these courses deemed too difficult, including that of the history of our people, a situation that has only worsened since.

Ultimate manifestation of unawareness, our Minister of Higher Education is now preparing to ban the teaching of the history of Western civilization, the last remaining pillar of the three pillars of our culture.

For us to rediscover who we are and for our culture to survive, after 60 years of out-of-control drift, our successive Ministers of Higher Education must finally begin to entourage themselves with competent pedagogues who love our culture, who would advise them to reintroduce the teaching of French up to a minimal level of reading autonomy already in the first grade of elementary schooling with subsequent perfecting, as was done before the reform and as is done in all cultures that control well the literacy level of their population, a reintroduction of the teaching of our history and the maintenance of the teaching of the history of Western civilization and of its classical literature.

This is the price to pay for our culture to survive and for us to one day joyfully celebrate again the cultural legacy of our people.

Other articles in both projects concerned:

INDEX – General Neurolinguistics – Conceptual Thinking
INDEX – Electromagnetic Mechanics (The 3-Spaces Model)