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Edy-Claude Okalla Bana

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THE QUEBEC LEADER FOR CONSULTING ENGINEERING: SNC-LAVALIN (1911-1991)

Edy-Claude Okalla Bana
Université du Québec à Trois-Rivières
edy.claude.okalla.bana@uqtr.ca

Introduction

As Dominique Barjot was describing in a recent article[1] an important number of works coming from different fields such as management, history or sociology has underlined the growing importance of the project management[2], especially within industry[3] or building[4] sectors. They have been the cause of a deep change within the management methods with: the generalization of the

1 – D. Barjot, « Existe-t'-il un modèle français de l'ingénierie? », *Entreprises et Histoire*, n°71, juin 2013, p. 6.
2 – G. Garel, « Pour une histoire de la gestion de projet », *Gérer et comprendre*, n°74, décembre 2003, p. 77-89. Read also V. Giard, *Gestion de projet*, Paris, Economica, 1991, and Garel, G., *Le management de projet*, Paris, La Découverte, 2e édition, 2011.
3 – S. Lenfle, and C. Midler, «Management de projet et innovation», in P. Mustar, and H. Penan, (dir.), *L'Encyclopédie de l'innovation*, Paris, Economica, 2003, p. 49-69. Read also S. Lenfle, *Compétition par l'innovation et organisation de la conception dans les industries amont*, thèse de doctorat de sciences de gestion, Université de Marne-la-Vallée, 2001; K. Clark, T. Fujimoto, *Product development performance. Strategy, organization and management in the world auto industry*, Boston, Harvard Business School Press, 1991.
4 – S. Ben Mahmoud Jouini, C. Midler, *L'ingénierie concourante dans le bâtiment. Synthèse des travaux du Groupe de Réflexion sur le management de Projet (GREMAP)*, Paris, Plan Construction et Architecture (PUCA), 1996; S. Ben Mahmoud Jouini, *Stratégie d'offres innovantes et dynamiques des processus de conception. Le cas des grandes entreprises françaises de bâtiment*, thèse de doctorat de sciences de gestion, École Polytechnique, 1998.

Concurrent Engineering[5], the adaptation of the strategic management of the design process to a competition context by an intensive innovation policy[6]. The project management, especially if it is concurrent[7], is to a significant degree, a determining factor of the international influence of the engineering firms[8]. In Canada and particularly in the Quebec province, the history of the engineering and more precisely the history of consulting engineering is intimately related to the project management and really starts during the 19th century, as the industrial revolution came late in North America, when industrial needs

5 – F. Charue-Duboc, and C. Midler, « L'activité d'ingénierie et le modèle de projet concourant », *Sociologie du Travail*, vol. 44, n°3, juillet-septembre 2002, p. 401-417. Voir aussi P. Cohendet, P. Llerena, *Flexibilité information et décision*, Paris, Economica, 1989 ; V. Giard, *Gestion de projet…*, *op. cit.*

6 – M. Akrich, M. Callon, B. Latour, « À quoi tient le succès des innovations ? », *Gérer et Comprendre*, premier épisode, « L'art de l'intéressement », n°11, juin 1988, p. 4-17, deuxième épisode, « L'art de choisir les bons porte-parole », n°12, septembre 1988, p. 14-29 ; S. Mahmoud Jouini, C. Midler, « Compétition par l'innovation et dynamique de conception dans les entreprises françaises. Réflexions à partir de la confrontation de trois secteurs », *Entreprises et histoire*, n°23, décembre 1999, p. 36-62 ; P. Iansiti, *Technology Integration*, Boston, Harvard Business School Press, 1998 ; I. Nonaka, H. Takeuchi, *The knowledge creating company: how Japanese companies create the dynamics of innovation*, New York: Oxford University Press, 1995 ; G. Zaltman, R. Duncan, J. Holbeck, *Innovation and organizations*, New York, John Wiley & Sons, 1973.

7 – As Dominique Barjot was explaining, this is the case when it's implying a strong coordination between professions working simultaneously on a project. Read V. Giard, C. Midler, « Management et gestion de projet : bilan et perspectives » in Y. Simon, P. Joffre, (dir.), *Encyclopédie de gestion*, Paris, Economica, 1996, p. 110-111.

8 – P. Le Masson, B. Weil, A. Hatchuel, *Les processus d'innovation. Conception innovante et croissance des entreprises*, Paris, Hermès, 2006.

ABSTRACTS

The genesis of the Quebec firm of consulting engineering and construction SNC Lavalin goes back to the foundation of the Arthur Surveyer & Cie, a consulting engineering office founded by Arthur Surveyer, in 1911, while teaming up with his two associates, Georges Chênevert and Emil Nenninger. It also goes back to the birth of the consulting engineering office founded by the engineers Lalonde and Valois (L&V). The oil crises of 1973 and 1979 and the period of economic recession that was ensuing during the 1980s complicated the development of the two firms. Nevertheless, the two consulting engineering offices achieved an uncommon path which brought them to expand locally, in Canada, but also internationally worlwide. Becoming early competitors, they developed by means of models specific to each firms. Later, due to economic recession, they started to share the same business strategy that is the diversification of their activities, till the moment when, in 1991, they were brought to discuss about a common destiny through a merger of their flowchart and share their know-how into one company.

JEL Classification : **D22, D92, E32, F23, F44, L21, N12**
Key words : **consulting engineering office, Quebec, economic recession, business strategy, diversification, worldwide expansion policy.**

RÉSUMÉ

La genèse de la firme québécoise d'ingénierie conseil et de construction SNC Lavalin remonte à la création d'Arthur Surveyer & Cie, un bureau d'ingénierie conseil fondé par Arthur Surveyer, en 1911, lorsqu'il s'associa avec ses deux collaborateurs, Georges Chênevert et Emil Nenninger. Elle remonte également à la naissance du bureau d'ingénierie conseil fondé par les ingénieurs Lalonde & Valois (L&V). Les crises pétrolières de 1973 et 1979 et la période de récession économique qui s'en suivit, pendant les années 1980, compliqua le développement des deux firmes. Néanmoins, les deux bureaux d'ingénierie conseil connurent un itinéraire particulier qui les amena à une expansion locale, au Canada, mais aussi internationale dans le monde entier. Devenus très tôt des concurrents, ils développèrent des modèles qui leurs étaient spécifiques. Plus tard, du fait de la récession économique, ils commencèrent à partager la même stratégie d'affaires, c'est-à-dire la diversification de leurs activités, jusqu'au moment où, en 1991, les deux entreprises soient amenées à discuter d'un destin commun pour fusionner leur organigramme et partager leur savoir-faire dans une seule entreprise.

Mots-clés : **bureau d'ingénierie conseil, Québec, récession économique, stratégie d'affaires, diversification, politique d'expansion mondiale**

started to increase very quickly[9]. From the first English military engineers to the Quebeckers engineers, with the construction of Roads, railways and waterways, the thirst for technical knowledge brought to the foundation of the Polytechnic School of Montreal in 1874 – which was built with reference to the Polytechnic School of Paris (France), founded in 1873 – and was, indirectly, at the cornerstone of the birth of the most influential engineering firm of Canada, nowadays. The genesis of the Quebec company of engineering and construction SNC Lavalin goes back both to the foundation of the Arthur Surveyer & Cie, an consulting engineering office founded by Arthur Surveyer, in 1911, while teaming up with his two associates, Georges Chênevert and Emil Nenninger, and from the foundation of another consulting engineering office founded by the engineers Lalonde and Valois (L&V).

The birth of the professional engineering in the Province of Quebec

After having been employed for seven years by the Department of Public Works of Canada, Arthur Surveyer (1878-1961), became expert in hydraulic systems and opened in 1911, his own consulting engineering office in Montreal, named Arthur Surveyer & Cie[10]. During this period he also became a spokesperson for the entire profession of engineering in Canada. He was a member of the boards of directors of the Polytechnic School of Montreal, of the Canadian Society of Civil Engineers and one of the National Research Council of Canada. He was also writing articles for the quarterly magazine Canadian, the first real publication of Quebec devoted to engineering. In November 1917, he gave the following definition of the engineer:

> An engineer is a person familiar with known scientific truths and respectful of the laws of nature, one who plans, executes, and economically manages works that will improve the comfort and well-being of humanity[11].

The February 14th, 1920, Arthur Surveyer, founded with some colleagues, the corporation of Professional Engineers of Quebec. Until this period, no university degree was required to become an engineer in Canada. It was enough to do a simple on-the-job training and co-optation by three accredited engineers. It arrived even that some people circumvent this rule. Thanks to Arthur Surveyer, the corporation made a campaign in order for all engineers

9 – A. Motulsky-Faladeau, « Les architectes du génie », *Imagine*, vol. 4, n°2, Hiver 2011-2012, p. 8.
10 – SNC-Lavalin, *SNC-Lavalin. The first 100 years*, Friesens Press, Altona, Canada, 2011, p. 6.
11 – http://www.snclavalin.com/about_history.php?lang=en

practicing in Quebec to have the required training[12]. The Arthur Surveyer & Cie had ambition to become a true office of consulting engineers. In 1921, he crossed simultaneously two major steps: a breakthrough in the industrial sector and on the international market thanks to a major contract with the Giscome Lumber Company which appealed to him for his expertise in hydraulics and he entrusted the study of the establishment of a paper mill in Aberdeen, in the State of Washington, USA[13].

The development of Arthur Surveyer & Cie (1920-1937)

Therefore the office of Arthur Surveyer started the decade 1920 under good auspices. In 1923, when finding a workforce of engineers to fill positions in his cabinet, he hired two graduates of talents, Georges Chênevert and a month later, a young Swiss man with an architecture degree, just landed in Montreal and whose name was Emil Nenniger. Thanks to the extraordinary industrial expansion that the Canada had known in the mid to late 1920s, the bureau Arthur Surveyer & Cie was to exploit the market opportunities with the civil engineering projects, buildings, and hydraulic thanks to American companies that invested in Canada. Nonetheless, the October 24, 1929, the stock market collapsed these projects with the interruption of American investment. The investment company founded a few years earlier by Arthur Surveyer knew significant losses. Its engineering activities were slowing down. The office Arthur Surveyer & Cie persisted with its diversification in the area of the financial assessment, an area in which there were just a few consulting engineering in this period. In 1936, while the financial crisis was coming to its end, Emil Nenniger, became the specialist in industrial processes and structure of the business, and Georges Chênevert, became the expert on buildings and on legal issues of the company. They became on their own proposal to Arthur Surveyer, associated with 20 % each of the Arthur Surveyer & Cie Office. The March 11, 1937, after several months of negotiations, a first contract of 10 years for the stock company was established between the three men[14]. Constituted with a capital of $10,000 CAD, distributed as follows:

TABLE 1 **THE CAPITAL DISTRIBUTION OF THE ARTHUR SURVEYER & CIE OFFICE IN 1937.**

	CAPITAL $10 000 CAD CAPITAL DISTRIBUTION	
Clientele	Supplies (Office supplies, books…)	Working Capital
$4 000 CAD	$3 000 CAD	$3 000 CAD

Source SNC-Lavalin. « Les 100 premières années », *op. cit.*, p. 24.

12 – SNC-Lavalin, *SNC-Lavalin. The first 100 years…, op. cit.*, p. 13.
13 – *Ibidem*, p. 15.
14 – SNC-Lavalin, *SNC-Lavalin. The first 100 years…, op. cit.*, p. 23-24.

The birth of the engineering firm Lalonde & Valois (L&V) in 1936

In the same period, in 1936, the oncoming of the prime minister of Quebec, Maurice Duplessis, inaugurated a more liberal period in Quebec. Indeed, this government, unlike the previous Conservative government, decided to significantly improve the infrastructure of Quebec by inaugurating a program estimated at $50 million. Two engineers from the Polytechnic School of Montreal, John Paul Lalonde and Romeo Valois, took this opportunity to open their first office of consulting engineering in Montreal. The engineering firm Lalonde & Valois (L&V) was immediately put in charge of a series of mandates for the design and the supervision including the implementation of the studies and the design of four successive sections of the route 11, north of Montreal. Regarded later as one of the provincial highways the best designed of the Quebec province, L&V completed the work at the end of the year 1938. It was a contract of $100,000 CAD[15]. At the end of the year 1938, L&V now had several dozens of employees. From September 1939, the entry in the Second World War had a significant impact on the Canadian economy. With the bill for the mobilization of domestic resources, all human and material resources were therefore geared toward the economy of war which absorbed almost the entire production of Canadian steel. The sector of civil engineering and L&V in particular was one of the first to suffer from the consequences of the scarcity of this building material. Specialized in the design of structures in reinforced concrete, the absence of steel thus made it impossible for their construction[16]. In 1940, L&V was reissued all of same of the economy of war, since he obtained his first contract outside of Quebec. It was the design of a military wharf in Halifax, Nova Scotia. However, the engineering firm was idling during this period and until December 1943, date on which the company H.A. Dixon tasked them with the design of 15 bridges for a new railway line that the Canadian National (CN), the national railway company, wanted to use to cross on the island of Montreal, between its junction and the starting point of the line of the End-of-the island, there was a distance of 24 kilometers[17].

The resiliency of engineering companies during the War: the case of Arthur Surveyer & Cie

Despite the outbreak of the Second World War, the company Arthur Surveyer & Cie and the cabinet Lalonde & Valois continued, nevertheless, to obtain some contracts for engineering. The market of engineering in Canada affected by the crisis of 1929, saw the latter extend to the end of the year 1937. The turnover of Arthur Surveyer & Cie on the whole of the exercise that overtook was $17,

15 – *Ibidem*, p. 30.
16 – *Ibid*., p. 31.
17 – *Ibid*.

218.04 CAD. Once the rent, office expenses and wages paid, it only remained to the associates a meager profit of $ 458.02 CAD to share. However, toward the end of the year 1937, Arthur Surveyer was invited to sit on a board created by Public Works Canada whose mandate was to look into a serious health problem which the City of Quebec was facing. The Saint-Charles River, in which the City was pouring into its waste water for many years had become an environment conducive to the outbreak of disease transmitted by this polluted water. The commission decided to repair the network in a comprehensive manner after studying several options. Arthur Surveyer & Cie was entrusted with the mandate not only to carry out the plans and specifications, but also to oversee the construction of a modern network. This latter was to circumvent the Saint-Charles River to dump directly into the St. Lawrence River[18].

At the beginning of the year 1938, Leo Timmins, requested to Arthur Surveyer to propose a way to extend the activities of one of his companies, the Chromium Mining and Smelleding Corporation. It was decided to build a new plant which the design and supervision were entrusted to Arthur Surveyer & Cie. It was its first breakthrough in the area of mining and metallurgy. The supervision of the study of the project was entrusted to Emil Nenniger and of the spring 1941, Arthur Surveyer & Cie won the contract to design and supervise the construction of a metallurgical plant. This same year, the company hired another Swiss man, John Turcke, graduated from the Swiss Federal Institute of Technology Zurich[19]. With the outbreak of the war, the industrial companies became the biggest clients of the industrial societies of Canada. Alcan (formerly Aluminum of Canada) was part of the firms that profited the most. The gross production of aluminum was multiplied by five per year at least between 1939 and 1944 in order to respond to military demand for England. It was good news for Arthur Surveyer & Cie which maintained an excellent trade relation with Alcan since their first contract in 1927. The consulting engineering office benefited a lot of the war economy especially when Alcan entrusted it with the mandate to oversee the study and design for a factory of brucite in Wakefield in Quebec, a casting foundry of sand in Toronto, Ontario, and a treatment plant for the red mud of its aluminum plant in Arvida, Quebec, between 1940 and 1942[20].

18 – *Ibid*., p. 33-36.
19 – *Ibid*.
20 – SNC-Lavalin, *SNC-Lavalin. The first 100 years…*, *op. cit*., p. 36.

The export of the Quebec engineering and the development of SNC Lavalin following the model of the American major consulting engineering firms

The post-war period marked an important turning point for Arthur Surveyer & Cie and Lalonde & Valois. In the spring of 1946, Arthur Surveyer and his two partners began to discuss the renewal of the agreement, signed ten years previously, which had led to the establishment of the firm Arthur Surveyer & Cie. At the end of the negotiation, Arthur Surveyer agreed to renounce to a part of his profits, from 60 to 40 %, while Georges Chênevert and Emil Nenniger shared the rest. The December 31, 1947, this second agreement signed by the three men had also consecrated the change of the company's name. To be more representative it became Surveyer, Nenniger & Chênevert (SNC)[21]. Carrying many of the contracts in several of the large industrial projects of the after war, the new entity designed and oversaw, at the end of the 1940s, the construction of the first road bridge for high traffic in alumina in the world. It was the arch bridge in alumina of Arvida in Quebec. With this bridge, Alcan hoped to demonstrate the versatility of aluminum as structural material[22].

The expansion and the internationalization of SNC and LVLA

In the wake of the Quiet Revolution which was intended to offer to the Quebec province the instruments of its economic sovereignty, the prime minister of the province, Daniel Johnson gave primacy to the engineering firms of the Quebec province for winning the big provincial contracts[23]. It is also important to point out the fact that this period was considered as the golden age for the engineers of Quebec[24]. Thus, in 1954, SNC was first chosen by the national electricity company Hydro-Quebec to achieve a preliminary study for a huge hydroelectric development on the rivers Megiscan, Outardes and Manicouagan, in the north of the province. And then the October 2, 1959, following the preliminary study conducted by SNC, the company was also assigned to the contract for the design and the supervision for the larger dam to multiple vaults

21 – *Ibidem*, p. 45.
22 – *Ibid*.
23 – *Ibid*.
24 – Jorge Niosi, *La montée de l'ingénierie canadienne*, Presses de l'Université de Montréal, Montréal, 1990, p. 43-78.

of the world, to the height of the falls No.5 on the Manicouagan River. It was assisted by the French company Coyne & Bellier, an expert in dams. Moreover, it was on its recommendation that Hydro-Quebec opted for a vaulted structure to multiple rather than for a dam-weight in concrete. The dam which was called Manic-5 was intended to retain the waters of the largest hydroelectric reservoir of Canada. To accelerate the calculations the company made use of a cutting-edge technology for the time the computer[25]. SNC worked alongside the company Lalonde & Valois (L&V) which had changed its company name, in 1963, when it took some new associates. The new company formed was called Lalonde, Valois, Lamarre & Associates (LVLA)[26]. In the meantime, SNC began quickly its expansion. In the fall of 1959, the company made the acquisition of its first subsidiary, a printing company named Ozal which became later Reprotech. In 1960, SNC founded a company for soil analysis called Terratech work forces and opened a marketing bureau in New York under the corporate name SNC International. The April 17, 1961, Arthur Surveyer died at his home at 82 years after 50 years at the head of the consulting engineering firm that he had founded in 1911[27].

On the side of LVLA, at the height of the expansion of major constructions in Quebec, Bernard Lamarre, one of the all recent associates and Jean-Pierre Valois decided to establish a subsidiary dedicated to the research of mandates abroad. It was known as Lamarre Valois International. After studying the potential of different markets, they thought that it was the francophone countries of Africa which offered the best prospects for development among the overseas markets for LVLA. Indeed, because of its non-colonial past with Africa, it was easier for a Canadian firm to offer North American technology to the African leaders of the francophone countries barely independent. They called for Yves Beauregard, a Bernard Lamarre's former classmates from the Polytechnic School, who worked with the representation of the United Nations in Cameroon[28]. They found in him the resource person who would permit to LVLA to settle down on the Africa continent. The experience of Yves Beauregard was crucial because he explained to Bernard Lamarre the two strategies for obtaining contracts abroad for a Canadian company which had no international experience. The two options were either work with the Canadian International Development Agency (CIDA), or to team up with a company which already had some international references. Later, Yves Beauregard joined the company in 1964 as president of Lamarre Valois International in Senegal. From the beginning of the year 1967, Lamarre Valois International association with Norman D. Lee & Associates, a specialist in transport based in Vancouver, to perform a study of transport networks in the Dahomey (now Benin)[29].

25 – SNC-Lavalin, *SNC-Lavalin. The first 100 years..., op. cit.*, p. 64-68.
26 – *Ibidem*, p. 54-55.
27 – *Ibid.*, p. 66-68.
28 – *Ibid.*, p. 69-74.
29 – *Ibid.*

The Dahomean project aimed to assist this country in West Africa to modernize its network of transport. Its centerpiece was a training program on a large scale or hundreds of inhabitants of the country would become familiar with the more sensitive aspects of the purchase of equipment and maintenance of roads. Although the project conquered the Dahomeans and the World Bank, it brought to LVLA a slight profit. The mistake of LVLA had been to conclude the contract in American dollars, which resulted in a considerable drop in fees taking into account the fluctuation of exchange rates. Nevertheless the success of the project was important for the firm[30]. In 1969, Yves Beauregard introduced Bernard Lamarre to the president of Niger. Thanks to this meeting, the contractor had an idea of the needs of the country and the Nigerien authorities decided to improve the national road network of their country. More specifically, the project aimed to stretch a road of 430 kilometers linking the towns of Gouré and N'guigmi in the Southeast. On his way back to Canada, Bernard Lamarre took contact with Paul Gérin-Lajoie, the president of the Canadian International Development Agency (CIDA), in order to probe its interest in the Nigerien project. As a matter of fact, the president of CIDA upheld the interests of the agency for this type of project, following the guidelines for data development program of the Canadian Prime Minister, Pierre Trudeau, francophone Africa had just to replace Asia in the concerns of the Canadian government. For their part, many companies with experience on the construction sector in Africa felt that the Route of the Unity and of the Canadian Friendship was a white elephant. On a technical level, they doubted on the ability of the team project to solve all the problems of that project like the needs for water and materials during the construction of a road located in the middle of the desert. Bernard Lamarre was nevertheless determined to complete the project. Drawing lessons from its Dahomean experience, LVLA could count on the CIDA to ensure the funding of the project, one of the most risky aspects in a developing country[31].

From the beginning of 1972, the project team landed in Niger. Only a handful of the members of the team were already out of the province of Quebec and they were all accommodated in a tiny base camp, in the middle of the desert. The difficulties of adapting to the scorching heat and the bare landscape formed therefore, the main obstacle the team faced. In addition, the conditions for the construction of a road-building project in the middle of the desert dragged along some serious problems to the stability of the generators of which vibrations pushed into the sandy and unstable soil. Facing the arid climate of this region of Africa, the North American graders, yet sophisticated, also had a few difficulties to operate in an optimal way[32]. These difficulties encountered by the firm in the achievement of the Nigerien project attempted to break off the international ambitions of LVLA in 1973. In the wake of the Nigerien project,

30 – SNC-Lavalin, *SNC-Lavalin. The first 100 years…, op. cit.*, p. 69-74.
31 – *Ibidem*.
32 – *Ibid*.

Lamarre Valois International built approximately 44 wells throughout the stub in construction in order to allow the water supply for the project team, but also for the Niger riparian. That gave an idea to Marcel Dufour, another associate of LVLA, who headed moreover the National Company of Drilling and Survey, a subsidiary of LVLA[33]. Early, in 1972, to carve out a share of the market for the drilling of wells in Africa, he attempted to make the acquisition, for the account of LVLA, of a small company of wells drilling in Ontario, the International Water Supply but he finally opted, in 1973, for the foundation of a drilling company of wells which was called Hydrogeo. After obtaining several small mandates, Hydrogeo won a major contract in Ivory Coast in June 1976. The country wanted to introduce 7,200 wells, mainly in rural areas. The CIDA which funded the project then signed with Hydrogeo to provide technical assistance to Forexi, the Ivorian society of State in charge of the improvement of water supply[34].

For its part, after its huge success with the dam of Manic-5, the SNC obtained in January 1965, the contract to design and supervise the construction of the arch dam of Idukki in the State of Kerala, India. It was the first important contract of the firm outside North America and the first arch dam in concrete that it designed by itself. The firm ran into a series of technical challenges on this project. For example, the region of Idukki had undergone so many earthquakes. Later during the same year, Camille Dagenais, Jack Hahn and John Turcke proposed to Emil Nenniger and Georges Chênevert to incorporate the company. Rather than dissolving their general partnership company, the two senior partners proposed to gather the new structure, the SNC inc. and the old general partnership company founded by them[35]. In April 1965, Camille Dagenais was appointed president of SNC inc[36].

Now having at his disposal, a board of directors that might allow him to define its own vision of the company, Camille Dagenais was willing to lift the last obstacle that prevented to reinvest the profits in the development of the company because of the general partnership agreement which still existed at the request of Nenniger and Chênevert. The June 2, 1966 however, Camille Dagenais after a long thinking, submitted to his board of directors a document of 32 pages entitled *Special Report of the President to the members of the Executive Committee*[37]. It was a set of rules grouped into four "creed," ten "policies" and a universal code of ethics. However, these new rules were the version formally spelled out of old principles developed by Arthur Surveyer. These rules included the need to find the balance between a maximum of profit and the best interests of clients, staff and vendors. They addressed the important points as the loyalty, integrity, and competence respect for the dignity of

33 – *Ibid*.
34 – *Ibid*.
35 – Lalande Suzanne, *SNC. Génie sans frontières*, Libre Expression, Montréal, 1991, p. 138-141.
36 – *Ibidem*.
37 – SNC-Lavalin, *SNC-Lavalin. The first 100 years..., op. cit.*, p. 81-83.

each individual member of the society[38]. They emphasized on the fact that the choice and the promotion of staff were strictly based on the performance and skills, and that SNC should always deliver products and services of the best quality. The document became a few years later, the "Bible of SNC". In four years, Camille Dagenais was considering to double the profits of the company by expanding its activities to the whole Canada. To conquer the domestic market was only a first step. His ultimate goal was clearly to make SNC the largest and most prosperous consulting engineering firm in the world. In order to get out of the dead end over the general partnership issue, Camille Dagenais proposed to let expire the partnership agreement in place without renewing it to the scheduled date. Then the participation of Emil Nenniger and Georges Chênevert had to be acquired by a new holding company and it should invite them to become consultants of that holding company[39]. Camille Dagenais realized another goal which was to restructure the company per area of expertise commercial, hydropower, industrial. Previously structured by disciplines (mechanical, electrical, framing), mode of operation that would be inappropriate to small firms of consulting engineering. According to the new structure, all those who worked in the same type of projects were having the same leader, so that, if the company knew the growth, each division could keep the eye on its own projects. The April 11, 1967, at the end of 10 months of negotiations, Emil Nenniger and Georges Chênevert agreed to end the contract of society. The general partnership company was dissolved Camille Dagenais could therefore create a holding company that he had imagined. In May 1967, the companies SNC Limited. made acquisition of shares of all the former associates and began to redistribute between the new employees shareholders. In seven years, the SNC had reached the maturity cash now in its ranks 650 employees[40].

The establishment of an unprecedented collaboration: the building site of the James Bay

Since the beginning of the year 1972, the prime minister of Quebec, Robert Bourassa made official what it described as the project of the century to talk about the hydropower development project of the James Bay. Indeed, the first phase of the project required the sending of 100,000 workers in the more remote areas of the province in order to add 5,000 megawatts to the electrical network. The capacity was expected to very soon reach 10,000 megawatts. Eight mega-dams, 700 kilometers of roads and more than 5,000 kilometers of transmission lines must also transformed the topography of the Quebec province[41]. SNC really wanted to get involved in the James Bay project in order

38 – *Ibidem*.
39 – SNC-Lavalin, *SNC-Lavalin. The first 100 years..., op. cit.*, p. 81-83.
40 – *Ibidem*.
41 – *Ibid.*, p. 92-100.

to refine its management skills in the context of a project on a never seen before scale. The president of Hydro-Quebec, Roland Giroux, would have preferred to join an international project management firm to retain the confidence of financial institutions. He insisted that the American company Bechtel, whose reputation was recognized internationally, participated in the project. At the headquarters of LVLA, Bernard Lamarre decided in spring 1972 to offer the services of his company to Roland Giroux who agreed to team up LVLA with Bechtel[42]. The reputation of Bechtel went beyond the borders of the world of consulting engineering and its achievements were famous, especially the Hoover Dam, Churchill Falls, the Bay Bridge to Oakland.

At this period, in the consulting engineering sector, that meant that LVLA was earning the jackpot in different ways[43], and especially, the project of the James Bay catapulted the company within an elite since it was the most ambitious project of the history of Quebec in tandem with one of the largest consulting engineering firms of the world. At the time of the conclusion of the negotiations for the contract of the James Bay, Bernard Lamarre premiered a portfolio company to oversee the six subsidiaries of LVLA. The name of the new entity was imposed by itself. It was the code of the telex corporation, in use for nearly a decade within the company, Lavalin, as Lamarre Valois International. Easy to pronounce in French as well as in English, it would help to identify the company abroad. The transformation of the company in a joint stock coincided with a reshuffle within the senior management. Bernard Lamarre marked its determination to develop the various divisions and subsidiaries of the company with autonomy while encouraging them to share their know-how in the realization of mandates entrusted to them within the new structure named Lavalin inc[44]. Meanwhile, SNC was surprised to miss the contract of the James Bay facing the joint-venture formed by Bechtel and Lavalin. Having achieved the Manic-5 dam and the project of Idukki, despite the delays, was a source of a great frustration when bosses of SNC saw the contract of the James Bay escape them. In fact, SNC had made the cost of the arm twisting games between Pierre Nadeau, the president of the Development Company of the James Bay (DCJB), who was in charge of all the development projects of the James Bay region, and Roland Giroux, the president of Hydro-Quebec. The senior management of SNC then took the decision to devote its efforts to raise awareness of the company[45]. At the end of the year 1973, Jacques Lefebvre, an expert of public relations was hired at the position of vice-president of Public Relations of SNC. He worked on the visual aspects of the company, changing its logo, in order to make it more visible. Then, he was interested in the annual

42 – Mc Cartney Laton, *Friends in High places. The Bechtel Story : The most secret corporation and how it engineered the World*, Ballantine Books, New York, 1989, 271 p.
43 – SNC-Lavalin, *SNC-Lavalin. The first 100 years…, op. cit.*, p. 92-100.
44 – *Ibidem*, p. 94.
45 – *Ibid.*, p. 102-103.

report of SNC and make it accessible for the future prospects[46]. Accompanied by dynamic graphics and text narratives, the new report gave the image of a company in full ascension addressing new markets with confidence, while experiencing expansion. In the spring of the same year, 50,000 copies of this annual report were also printed and distributed to large enterprises as well as to government agencies and financial institutions[47].

The constitution of the SNC-Lavalin Group to meet the challenges of the adaptation, and growth of the respective groups

The trajectories of SNC and Lavalin had enabled them to access the summit of the Quebec engineering. However, at the end of the thirty glorious years, there had been an intensification of risks as the construction trades and engineering change. The oil crises of 1973 and 1979 and the period of economic recession that was ensuing complicated the development of the two firms. Later, in the beginning of the 1990s, the two companies was forced to consider a merger of their flowchart in order to share a common destiny.

Toward a diversification of SNC and Lavalin activities

From the beginning of the 1980s, facing the poor economic conditions of this period, of SNC and Lavalin was having a similar strategy that consisted in the diversification of their activities. At SNC, constantly placed on the wire of the shaver, the company had been dependent on the cyclical nature of the engineering sector. The perfect way to pull through this situation would have been to acquire economically strong companies, with a stable growth and new technologies design likely had to be implemented in all the sectors of the company. At the shareholders' meeting of 1982, Camille Dagenais then aged of 61, officially passed the torch of the head of director to Jean-Paul Goudreau. At the time of his departure, Camille Dagenais was having an excellent balance sheet. SNC represented a turnover of $231 million CAD and had 4600 employees in 1982, when it represented only a turnover of $7.4 million CAD and had 650 people in 1967, when Camille Dagenais took the reins of the company[48]. Unfortunately for John Paul Goudreau, this succession was at a time when the economic

46 – *Ibid.*
47 – *Ibid.*
48 – *Ibid.*

conditions were the most unfavorable in Canada, because of the significant rise of the inflation rate caused itself by the staggering increase in oil prices linked to the oil crises of 1973 and 1979[49]. Despite the measures taken shortly after by the Canadian government, capital flows remained paralyzed, and the country sank into the stagflation. SNC found himself constraint, in this way, to cancel large projects such as the study of the megaproject of exploitation of Cold Lake oil sands that could had given him the control of the Imperial Oil Company. Fortunately, thanks to the acquisition of Valcartier Industries inc., the substantial income that the subsidiary brought supported the foundation of the group. The results of SNC were also subsidized by a non-negligible contribution of its subsidiary Canatom, specialized in the supply of nuclear energy, in which it held the third of the shares to the sides of Atomic Energy of Canada Limited (AECL) and Montreal Engineering (Monenco) from the foundation of this company in 1967. Canatom worked particularly on the two projects of nuclear plant in South Korea and New Brunswick. SNC also had the help of the Canadian International Development Agency (CIDA) and the Export Development Corporation (EDC), since then becoming Export Development Canada (EDC). The CIDA funded its expansion project of the Idukki hydroelectric power plant, in India, and the EES financed the purchase of equipment and materials to a value of nearly $100 million CAD from Canadian suppliers for the concentrator project copper of Tintaya coppero mine, in Peru[50].

At the end of the year 1984, SNC made its first steps on the concessions market by investing in mini-hydroelectric plants in the United States. The company bought some small installations in North-East of America in order to re-configure them and put them up for sale a few years later. However, in its strategy of diversification, the manufacturing sector remained the main target of the efforts of SNC. Shortly before its annual meeting for the year 1985, the company made the acquisition of Canadian activities of Ginge-Kerr (which later became Securiplex), a manufacturer of fire protection system. It also made the acquisition of 35 per cent of the shares of Disc Amérique, a project of construction for a factory to manufacture compact disk in Quebec, to the side of the French company plastic molding of the West. Finally, the same year, SNC made the acquisition of Canadian Arsenals, the main supplier of high-caliber ammunition in Canada employing 850 people. This acquisition, at the same time, propelled SNC in the manufacturing sector, allowing him to take the monopoly of the Canadian market for ammunition[51]. However, from 1987, began a long black series for the subsidiaries of SNC. First of all diversification, the industry of the CD came to an end when its subsidiary Disque Amérique went bankrupt, due to the absence of a coherent business strategy. The things became worse when one month later, the Department of National Defense quashed unilaterally half of the commands that he was committed

49 – *Ibid.*
50 – SNC-Lavalin, *SNC-Lavalin. The first 100 years…*, *op. cit.*, p. 128-129.
51 – *Ibidem.*

to go to the Canadian Arsenals[52]. Jean-Paul Goudreau decided therefore to impose a strict rationalization program in order to radically compress the expenditures and eliminate the non-profitable sectors of the group. This same year 1988, saw the arrival of a new member to the board of directors, Guy Saint-Pierre, a former minister of industry, trade and commerce in a former provincial liberal government and then exercising the functions of vice-president of a manufacturing business. John Paul Goudreau saw in him his heir. In January 1989, Guy Saint-Pierre took his duties as president of SNC and then in the spring he also became leader of the head of the firm, although Jean-Paul Goudreau was maintained for the post of president of the board of the business, in order to help Guy Saint-Pierre to restructure the company[53].

On his side, Lavalin who had also applied the same strategy as SNC during the recession of 1982, continued to diversify in order to avert the crisis. After he decided the reduction of 10 per cent of the staff in all sectors of the firm, Bernard Lamarre decided to make the acquisition of several large companies including the company James F. McLaren, specialized in municipal engineering, water treatment, and disposal of industrial nuclear waste, then the company King, Murphy & Associates, specialized in the pulp and paper industry. Of all these acquisitions, the most important of the period was however the Group Shawinigan, formed as a result of the nationalization of the Shawinigan Water & Power Company in 1963. Specialized in the management of hydropower and resources, the Shawinigan Group also held the third of the shares of Canatom as SNC and Monenco and had acquired therefore, a know-how in nuclear energy[54]. For the month of December 1983, Lavalin also made the acquisition of Lafarge Coppée[55], an industrial engineering firm with offices in Brussels, Paris and London. In March 1986, Lavalin embarked in the manufacture of petrochemical products by making the acquisition of Kemtec, a refinery, located in the east of Montreal. In the summer of 1986, Lavalin made the acquisition of 85 per cent of the Urban Transportation Development Corporation (UTDC), the Ontario Crown Corporation which operated plants in construction of trains and of heavy vehicles in Kingston and Thunder Bay[56].

The UTDC held an outstanding know-how because it was chosen to build the cars of the first phase of the "Skytrain" in Vancouver[57]. In fact, in response to studies conducted by Lavalin International which foreshadowed the enormous potential of the Asian market for public transport, Bernard Lamarre fed ambitious projects for the Asian countries which had not the means to provide conventional networks of underground metro because the systems on the surface or elevated tracks products by UTDC were cheaper. Lavalin International

52 – *Ibid*.
53 – SNC-Lavalin, *SNC-Lavalin. The first 100 years, ...op. cit*., p. 130.
54 – *Ibidem*, p. 134.
55 – Léon Dubois, *Lafarge Copée. 150 ans d'industrie*, Belfond, Paris, 1988, 321 p.
56 – *Ibidem*, p. 136-137.
57 – *Ibid*.

began to probe the potential customers in Indonesia, Malaysia, China and India. Later, to modernize Kemtec and find international contracts, Lavalin merged UTDC and Kemtec to form a single holding company which became Lavalin Industries and was registered on the Stock Exchange in April 1987. It was the second subsidiary of the group to enter to the Stock Exchange after the first call to the savings that had been done, a few years earlier, for the benefit of LavalinTech, its subsidiary in research and development[58]. At the end of the year, the UTDC began negotiations with the Turkish authorities for the construction of a transit system to Ankara. In January 1991, Lavalin nonetheless began a slow descent into the underworld. Indeed, with the outbreak of the gulf war, as the Lavalin subsidiary, Kemtec, was put to contribution in the war effort to supply naphtha to the American combat aircraft which used it as fuel. Suddenly, the paraxylene which the naphtha constituted the main component, saw its production costs exceeded very quickly the best price at which Kemtec would hope to sell it. In accordance with its contractual obligations, Kemtec was obliged to pay the monthly sum of 5 million to maintain its production. Similarly the gulf war shattering the entire Middle East, giving a hard blow to the negotiations that Lavalin had undertaken about the network of public transport in Ankara, Turkey. Similarly in Thailand, a military coup suspended the contract that Lavalin came to sign. The situation of Lavalin was compromised by this series of bad news, since Bernard Lamarre had centered the strategy of the group on the projects of the transport sector to replenish the safe deposit boxes of the company[59].

Always hoping to bail out, the end of the year 1989, Lavalin decided to act as an intermediary for the Aeroflot Russian aircraft manufacturer who wanted to buy 10 Airbus A-310 from the company PWZ Corporation of Calgary, to circumvent the embargo which had been imposed to Russia for several years. In 1990, Lavalin becoming agent at the end of this agreement bought the 10 planes. However, a year later, Aeroflot had still not reached the transaction up. In February 1991, Aeroflot decided to withdraw unilaterally from the agreement, victim of the ambitious economic reforms of Mikhail Gorbachev. Lavalin forfeited his deposit of $52 million CAD[60]. The Crédit Agricole, a Parisian banking institution which had financed the agreement, started a prosecution immediately against Lavalin to recover the $200 million as it was accused of breaching the contract. Even the National Bank of Canada, the only financial institution with which Lavalin was working with since its beginning, mobilized his lawyers against the firm. Lavalin had no more cash, swallowed up that it had been by the ambitious program of expansion launched by the firm since the beginning of the 1970s[61]. The indebtedness of Lavalin brought it to

58 – SNC-Lavalin, *SNC-Lavalin. The first 100 years…*, *op. cit.*, p. 137.
59 – *Ibidem*, p. 138.
60 – *Ibid.*
61 – *Ibid.*

bankruptcy. Only one solution was find, negotiate a merger with its largest competitor, SNC. The merger had to take place on August 12, 1991 in Montreal.

The merger of the two consulting engineering firms SNC and Lavalin

When Guy Saint-Pierre, the new president and chief operating officer of SNC took the reins of the company, he did not expect soon an improvement in the economic situation after the difficulties that SNC had known between 1987 and 1988. Yet the February 22, 1989, the results of the company that he analyzed were of very good prospects. Indeed, the company expected to generate a profit of $385.6 million CAD. The strategy of refocusing on the core business of the society was beginning to bear fruit. Major contracts came to be concluded especially, SNC was entrusted of the expansion projects of the Pechiney and Reynolds Aluminum factories just prior to the appointment of Guy Saint-Pierre. Made in Quebec, these projects were estimated at more than $500 million CAD each[62]. In addition, before his departure, Jean-Paul Goudreau had significantly reduced the overhead costs of the organization and had closed some offices. Guy Saint-Pierre inherited therefore of a leaner and effective organization. The senior management of SNC had agreed on the spring of 1989, to refocus the business market on Canada, to resume with the customers and to give priority to the basic sectors of SNC: aluminum, chemicals, oil, and energy[63].

At the annual meeting, in April 1990, Guy Saint-Pierre announced to the shareholders the spectacular recovery of the business with the best results in its history. The net profit was skyrocketed to $20.3 million CAD for the year 1989. In addition, this figure does not take into account the $7.8 million CAD mainly from the sale of its subsidiary Sandwell Swan Wooster in Vancouver. The company had operated a reversal of its situation in the previous year, during which it had cashed a loss of more than $32 million CAD. At the beginning of the year 1991, most companies in the sector of the consulting engineering were not more unaware of the magnitude of the quagmire in which Lavalin was, including SNC, its main competitor in Canada. The two companies were indulging in effect a fierce competition but also had the opportunity, more than once, to gather their forces in several joint ventures, as for example in 1979, when the two groups created a joint venture, SNC Newfoundland, charged with the search for projects in Newfoundland[64]. Thus, this joint subsidiary was granted several projects, including a feasibility study for the transportation component and distribution of the hydroelectric power project on the fall of the lower Churchill River. The two competitors were having a mutual esteem

62 – *Ibidem*, p. 140.
63 – *Ibid*.
64 – *Ibid*., p. 142.

and therefore a great mutual respect. The main fear of Guy Saint-Pierre was before anything that the problems of Lavalin enable a large foreign competitor coming in and taking of the company, which tolled for the load to the conquest of the market of the consulting engineering in Canada. He feared, in particular to see the Canada losing its two largest consulting engineering firms and therefore a know-how cultivated for several decade following a takeover of American firms such as Bechtel in the case of Lavalin or of Fluor in the case of SNC[65].

Guy Saint-Pierre put then in place an operation aimed to give a second life to Lavalin through any form of association with SNC. He confided, to Alain Perez, the new chairman of the Operations division, engineering-construction of SNC, the care of this operation, which was known as Operation Phoenix. He encouraged him to submit several scenarios of redemption of some sectors, such as the consulting engineering. After several weeks of fruitless negotiations between the representatives of the two firms, the representatives of Lavalin propose to sign an agreement in principle between the two groups. The project took the pace of a merger and not an acquisition because if it was clear that SNC tended a lifebuoy for Lavalin, the latter brought him in return a mine of competence and of projects. The new entity as a result was to have a scale such that it should exceed the simple addition of the components of Lavalin to those of SNC. One of the main objectives of SNC was to find a way to keep the contracts subsidiaries of Lavalin without having to assume the liability. SNC use a legal trick in order to create a series of companies "mirrors" which corresponded to the subsidiaries of origins and with the same name, to a detail near the date " 1991" added to the end of their name so that they are not confused with the entities with debts to the banks while being identical in all other respects, especially with regard to the ability to execute contracts. In this way, the only money on which banks could put the hand had to come from the customer accounts of Lavalin, that SNC undertook to collect in exchange for a commission of 20 per cent[66]. After a long period of negotiations, the banks allowed SNC to put the hand on the healthiest assets of Lavalin in leaving of side the debts, finally convinced that a part of these claims will never be recovered. The total cost of the acquisition was fixed at $67 million CAD, which included the cost of reorganization and the costs related to acquired rights and premiums to some 4000 employees of Lavalin[67]. The board of directors ratified the agreement and on August 12, 1991, before 1500 employees of SNC-Lavalin and gathered in the ballroom of the Hilton Bonaventure hotel in Montreal, was sealed the merger between SNC and Lavalin. There was no more than this major challenge to unite their respective flowcharts

65 – SNC-Lavalin, *SNC-Lavalin. The first 100 years…*, *op. cit.*, p. 144.
66 – *Ibidem*, p. 144-152.
67 – *Ibid.*

to succeed the integration of the two entities which had become the greater consulting-engineering firm of Canada[68].

Conclusion

From 1991 to nowadays, the alliance between the two entities, SNC and Lavalin, and which became therefore SNC Lavalin in 1991, appears as one of the best merger of the history of the consulting engineering sector in Canada. It gave birth to a giant and the new company became, undoubtedly, the best ambassador of the Canadian consulting engineering Worldwide. From 1991 to 2011, the new giant developed internationally. For example, in 1992, the company led the project of the Ankara Metro (Turkey) while it was launching, at the same time, the project of an Alumina Plant in Richards Bay (South Africa)[69]. In 1993, the firm had recovered due to two big projects: the Petresa Refinery (Quebec) and a Gold mine for Metall. Due to the international contracts, SNC Lavalin saw its net operating profit jumped to 74 % in 1993. In 1994, SNC Lavalin acquired an operations office in Chile as the kick-off of a new worldwide expansion policy. The company also started a diversification with some of the subsidiaries of Lavalin like Fenco, which was specialized in the Ship building. During this period, SNC Lavalin has also built five of the six larger Alumina Plants in the World. Quickly, SNC Lavalin opened eight or nine operations offices in Asia, Latin America and Europe. The company decided also to focus its development on the mining sector and decided to open an operations office dedicated to the exploitation of the Copper mines in Chile[70]. In 1995, the firm won for the "skytrain" project, a big contract for the public transportation at Kuala Lumpur (Malaysia) and, the same year, a project for the Great artificial river or Great Man-Made River in Libya with its technical challenges. The same year, the turnover of the company exceeded one billion dollars.

At the end of the 1990s, SNC Lavalin is confronted to accusations in the mining sectors and is forced to testify in Court in order to save his image. In the beginning of the 2000s, SNC Lavalin began the decade with a pretty good balance sheet, the company decided to start the decade by investing in the energy sector through the acquisition of AltaLink, an energy dealer in Alberta Province (Canada), by its Power operations division. In 2002, the company acquired Nepco, one of the subsidiary of Enron, specialized in the construction of thermal power plants, for 1,4 billion CAD. In 2011, SNC Lavalin has celebrated his 100th birthday anniversary and this was a special occasion to review the path followed by this major engineering firm from his foundation in 1911. For the observer, there is no doubt that the company has known the success above all because of its strong local attachment to Quebec and to Canada. The company has also successfully reinforced its presence in

68 – SNC-Lavalin, *SNC-Lavalin. The first 100 years…*, *op. cit.*, p. 152.
69 – *Ibidem*, p. 157.
70 – *Ibid.*, p. 157-174.

the other market places worldwide by merging with different companies to diversify its activities. Unfortunately, nowadays, the group is facing many accusations of corruption or collusion since 2011 and it has been blacklisted for a period of 10 years by the World Bank Group following these accusations and from this period. The less we can say is that the group is having a very tough time while at the same time it's reporting a low operating results due to the lack of confidence of the investors.