WHEN AN EDUCATIONAL IDEOLOGY TRAVELS: THE EXPERIENCE OF THE NEW MATH REFORM IN LUXEMBOURG

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Abstract: *Since 1958 a series of new reform programs, known as "New Math reform" tried to fundamentally deconstruct the mathematics education of schools in the United States. This reform aimed to promote the "problem solving" abilities in students and was a means to modernise not just the school math education but also the idea of why students should learn mathematics. Later, the reform project travelled to Europe through the support of OECD and some other international or European organisation. This paper briefly reviews the process of the adaptation of this reform project in Luxembourg during 1960s and 1970s. The aim is to look at how the ideological background about mathematics education, and in general education, mattered in the preceding of this school reform.*

INTRODUCTION

This paper is part of a research project on the process of the adaptation of a specific school reform in Luxembourg during the 1960s and 1970s. The reform movement, which was called "the New Math reform" started in the United States with a certain ideological background and expectations, and travelled through the Western countries with the support of the Organisation for European Economic Co-operation (OEEC) and its successor, the Organisation for Economic Co-operation and Development (OECD). As a consequence of the Cold War, this reform caused a huge excitement, during the two decades of the 1960s and 1970s, in most Western countries. The fact that the OEEC/OECD organised these conferences shows the politico-economic aspect of this reform. Tröhler (2015, p. 6) indicates that organisations like the OEEC were created to link the national and the international, to create a global sphere, and to form an institutional or organizational channel to transfer desired ideas, policies, and curricula. The main purpose of my research project is to reveal how the ideological background of the New Math reform was translated in the educational system of Luxembourg as a Western European country. After the end of the Second World War, Luxembourg was one of the first 18 co-founders of the OEEC, and its foreign politics showed support and affinity for the acts and movements conducted by the OEEC and other Western organisations. However, my research shows that despite this affinity at the level of foreign politics, the school system followed a different philosophy and policy for the translation of the ideology of the New Math reform. To achieve the purpose of the research, which is how the ideological background of the reform was translated, I start by studying how the reform proceeded in Luxembourg. My research studies the expectations of the school on different levels, school policy, and the relevant interactions in different contexts at the national and international

levels. Therefore, besides the main purpose, my research gives a historical example of how a reform project proceeded in this country, and what mattered more or less than other things. This will provide better insights into the idiosyncrasy of Luxembourg's school system, and its cultural logic concerning policy. I endeavour to give a sense of the issues about the connection between what was intended and what was practically implemented for the area of mathematics education in Luxembourg. In the following, I proceed in two main parts. In the first part, I review the aim and the process of modernisation of the school mathematics in Luxembourg. In the first part, I start by reviewing briefly what the stakeholders in Luxembourg aimed from the time they decided to reform. Then, the paper goes through more detailed story of how the reform advanced for the secondary, middle and primary school separately. This historical review gives an insight about the context of educational system in Luxembourg, and prepare the readers for the future discussion in the second part. In the second part of the paper, I will discuss more about the translation of the initial ideology of the New Math reform into the Luxembourgian school system.

THE AIM AND PROCESS OF MODERNISING THE SCHOOL MATHEMATICS IN LUXEMBOURG

In 1958, the Ministry of National Education of Luxembourg introduced an initial school reform plan in the Courrier de l'éducation Nationale signed by Pierre Frieden, the Prime Minister and the Minister of National Education of the time (Frieden, 1958). This reform plan expected to make a link between all levels of schooling and provide a hegemonic school system that would also make links between education and citizens' lives. However, despite this wanted hegemony, the approach had to be different for different levels. Schreiber (2014) shows in her dissertation that despite this ambitious initial plan, the reform project was actually proceeded and voted separately in three different levels: primary, middle and secondary levels (p. 282). Moreover, another departure was necessary based on school subjects. For the mathematics education, the National Commission of Mathematics Teachers started working on the reform of the school mathematics since 1961 (MEN1158_Item01, 1967). This Commission comprised the representatives of seven high schools of the state and about 60 mathematics teachers of secondary schools. The mission was to adapt the programs of different classes and to introduce more appropriate textbooks and enrich traditional subjects with fundamental concepts borrowed from modern mathematics. Since 1962, almost half of the teachers attended the courses organized in Arlon by the Belgian Centre for Mathematics Pedagogy (CBPM).

Secondary school

The reform for the secondary education In 1967, the Commission proposed introducing the different volumes of a French mathematics textbooks collection (eg Bréard) and adopting the corresponding French program, from the lower classes (MEN1158_Item01, 1967). This suggestion met with some difficulties because of some differences between the structures of the school systems in the two countries. For instance, one of these reasons was the number of mathematics courses per week.

Therefore, the commission was determined to postpone the introduction until the structural reform of secondary education in 1968 (ibid).

Before the structural reform of 1968, there were three tracks of education for the secondary level: classic education for boys, modern education for boys and education for 'young girls'[1]. The weekly hours for mathematics courses were different in each of these school tracks. The reform of 1968 had a capital favour of the mathematics education of the country by increasing the weekly hours of mathematics courses and stopping the differentiation between boys and girls in regard with mathematics education (Klopp, 1989, p. 254; MEN 11351970). In addition, within this reform the modern mathematics was introduced into the secondary education by using textbooks from the Bréard collection (MEN 1135, 1970), with some modification. The introduction of the modern mathematics through the Bréard textbooks created difficulties and unhappiness among teachers and students as can be seen in media, teachers reports to the ministry or published in the teachers' journals for instance in (Dieschbourg, 1968; Klopp, 1989). Also physics teachers complained because the new mathematics programme was not compatible with the physics programme. Especially for the first year of the secondary school, students didn't have the necessary calculus knowledge for their physics lessons (MEN1136_Item02, 1972). Nonetheless, this programme could breathe new life into the body of the mathematics education of the country. This happened both by increasing the hours and giving equal access of mathematics to girls and boys. The New Math became an excuse for demanding more hours of mathematics from the Ministry (MEN1135_Item01, 1968; Schreiber, 2014, p. 356).

Middle school

The reform for the middle school Middle schools in Luxembourg were created in 1965. It was one of the alternative options after the six years of the primary school. The middle school was based on providing a general education aimed at preparing boys and girls for some jobs in the lower and middle careers in the administrative and the private sectors (Memorial_A_n°60, 1965). The curriculum makers for this level had the chance that in the process of developing the curriculum, they could take into account the results achieved in the modernization of mathematics courses. Also as the teaching language of mathematics education in the middle school was French, there was no problem with choosing a Belgian textbook. The reform for the primary school from the beginning of the programme teachers were taught to use the concept of modern mathematics in the primary schools without mentioning notions and mathematical terminology. However, the complete adaptation of primary school mathematics was more complicated, as I will explain in the next part.

Primary school

For the first time, the New Math reform was introduced in 1970 in one primary school. That school was chosen as a pilot school to examine the New Math program provided by the Belgian Centre of Mathematics Pedagogy (CBPM in French). The

pilot study, in Luxembourg, was led by Robert Dieschbourg, a Luxembourgian teacher whom I introduced in my previous presentation (Dieschbourg, 1971). Dieschbourg was a key figure in the adaptation of the reform for the primary school due to his connection with the CBPM. During the 1970s, gradually more school joined to the program (ref). Also during this time, the official textbooks of Luxembourgian primary school had no trace of modern mathematics. However, some manuscript manuals were provided to be used voluntarily by teachers in the classroom. For instance, a series of books called Mathématique moderne, published in Belgium, were used in the Institut Pédagogique of Walferdange. This series contained six volumes of books for six different levels of primary school (Simons, Mouraux, & Van Cutsem, 1977), but they were not distributed among the pupils of the country. The report by the OECD about Luxembourg based on the information collected in 1959, states: "the ministry selects the class textbooks on the recommendation of a committee appointed for this purpose, and the same books are used in all classes of the same category" (OECD, 1961, pp. 183-184). This tradition was respected during the 1960s and 1970s (probably also after). Also, important exams, like the passage exams between different levels had to be based on the knowledge of the official textbooks and not based on what teachers might teach. This issue was also mentioned in a report about the progress and problems of the reform movement in Luxembourg (MEN 1158?). This is why I consider the appearance of the modern mathematics in the official textbook as the official introduction of the New Math reform in the Luxembourgian school system. Language was one of the issues that challenged the process of the reform for the primary school in two ways. As mentioned before, from the beginning, Luxembourg started the attempt for the reform through collaboration with French and Belgian mathematics communities (MEN1158_Item01, 1967). However, the teaching language of the primary education in Luxembourg is German, so the use of French or Belgian textbooks was not possible. The other language-related obstacle in the way of the New Math reform was the hours of language courses in the curriculum, which thus restricted the hours of mathematics education. While pupils in schools in Belgium or France had mathematics for five hours per week, in Luxembourg it was only three hours in 1967 (ibid). Therefore, it was not possible to adapt the exact programme of those countries. Also, it is not difficult to conclude that with only three hours of maths every week, it is not possible to go much further than simple calculation skills. As the official portal of the Luxembourgian government mentions on its webpage, the trilingualism is an important part of the national identity in Luxembourg (Portal_GDL). Therefore, the solution for the improvement of mathematics education could not restrict language education or the use of any languages. Another issue that was mentioned as an obstacle in the way of adapting the reform was the lack of "Luxembourgian" textbooks, which made even the realisation of the pilot classes difficult (MEN1158_Item01, 1967). However, I believe that the meaning of "Luxembourgian textbooks" or "manuels Luxembourgeois" was not only related to the language. In this era, there was an inclination for producing the textbooks for primary education in

Luxembourg by Luxembourgian authors with Luxembourgian examples and flavour. Before the 1960s, the textbooks for primary education were all German textbooks. This caused unhappiness among some people, and they were aiming to produce the textbooks and make a school of a "brand" of Luxembourg (Frieden, 1945, p. 35). The crucial importance of textbooks in Luxembourg is a vast matter, and is the subject of a future paper that I am working on.

IDEOLOGY VS. IDEOLOGY

In the previous part, I mostly reviewed the reform process in Luxembourg. I reviewed the process of the reform for the secondary and for the primary education in more details. I tried to show why I believe that the official reform for the primary education happened after 1979. In this last chapter, based on the information that I have given in the previous chapters, I would like to discuss more about the aim of my project. I discuss about how the original ideology of the New Math reform was translated in Luxembourg. I try to show how the ideology could affect the process of the reform.

The meaning of ideology in this paper

First, I need to make clear what I mean by the term ideology. As Eagleton (1991, p. 1) notes the term ideology has a whole range of useful meanings, not all are compatible with each other. Ideology in my work refers to a very general meaning of the term, which is a system of ideas and ideals that forms a basis for a theory. Accordingly, when I talk about the ideology of the New Math reform, I mean a system of ideas, beliefs and ideals that formed the basis of this reform movement that wanted to modernise the school mathematics. Furthermore, when I talk about the translation of that ideology in a new context, I aim to look at the ideas, beliefs and ideals of this reform movement were in the new context, and how these ideas and ideals showed themselves in the process of the reform.

The initial ideology of the New Math reform in the United States

The initial ideology of introducing the modern mathematics in general and especially in the primary schools was the belief that students who learn in this way "would learn how to acquire reliable knowledge" (Phillips, 2014, p. 19). As I also mentioned in the introduction, the institutions like OECD, CIAEM (Centre Internationale amelioration Education Mathématiques) and CBPM (Belgian Centre for Mathematics Pedagogy) tried to transfer the new ideals through organising conferences, workshops and teacher education. There were also teachers in Luxembourg like Robert Dieschbourg who believed in modern mathematics and its benefits for children's minds[2]. By looking at different texts he produced as letters, books, articles, etc. I would say that he acted like a representative of the CBPM in Luxembourg (although, CBPM did not have any official representative as far as I know). In the context of the school system in Luxembourg, with its unique language policy, the initial ideology of the reform was almost faded. In the arguments of the supporters of the reform, the main reason for modernising mathematics education was to bring Luxembourgian schools up to the level of other European countries (d'Letzebuerger-Land, 1959, p. 12). This

ideology of modernisation was a better incentive for the reform of the secondary school than for the primary school. Luxembourgian students who wanted to pursue their education in a university had to go to another country, as there was no university in the country. Therefore, it was very important to provide them with the same level of education that the students of neighbouring countries received. This ideal for the modernisation was not as effective for the primary level as it was for the secondary level. Pupils were not supposed to go to a neighbouring country for continuing their education after the primary school. Not all pupils were supposed to go to the secondary school after finishing the primary level. Even though the length of compulsory schooling was nine years, there were other options for the remaining three years, such as middle school or technical school. Therefore, besides the challenges like language education, lack of Luxembourgian textbooks, and the structure of Luxembourgian school system, the arguments based on the neighbour-level-modernisation ideal were not strong enough to overcome those challenges. When it came to the primary school, this ideal had to compromise with other ideals that were already running the school system, and still had power. I believe this was the reason that the modernisation process of the primary school mathematics lasted for such a long time.

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ENDNOTE

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[1] Lycée des jeunes filles