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The Differential and Integral Calculus as a Professional Knowledge in the Training of the Graduate in Mathematics of the Faculty of Philosophy of Bahia (1942-1968)[1]

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ABSTRACT

This article was carried out within the scope of the research project entitled "Weaving the historical process of teacher professionalization, in the scope of mathematics, in its different levels of formation in Bahia, from 1925 to the 1980s".[2] In it, we investigated historically the differential and integral calculus as a professional knowledge for the teaching of mathematics in basic school, in the formation of future mathematics teachers, in the period of 1942 – beginning of the operation of the mathematics course – until 1968, when that course was transferred to the Institute of Mathematics of the Federal University of Bahia, due to a university reform. In this intent, we made use, mainly, of the teaching programs of the chair of mathematical analysis, the current literature on the processes of professionalization of the mathematics teacher, as well as a theoretical-methodological debate involving the constitution of professional knowledge of teaching. With this investigation, we considered that the professional knowledge required in the mathematical analysis chair dealt with the *knowledge to be taught* that was intended for the teaching of mathematics in the secondary, which should be mastered by the training mathematics teachers of the Faculty of Philosophy. From this perspective, professional knowledge in this formation did not differ from that objectified and institutionalised to be taught in the mathematics discipline of secondary schools. In sum, the differential and integral calculus taught in the mathematics teacher training course in of the Faculty of Philosophy corresponded to the same calculation to be taught in the secondary.

Keywords: Differential and integral calculus; Professional Knowledge for Teaching; Faculty of Philosophy of Bahia; Story.

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O Cálculo Diferencial e Integral como um Saber Profissional na Formação do Licenciado em Matemática da Faculdade de Filosofia da Bahia (1942-1968)

RESUMO

Esse artigo foi realizado no âmbito do projeto de pesquisa intitulado "Tecendo o processo histórico de profissionalização docente, no âmbito da matemática, nos seus diferentes níveis de formação na Bahia, de 1925 a década de 1980". Nele, investigamos historicamente o cálculo diferencial e integral como um saber profissional para a docência da matemática na escola básica, na formação de futuros professores de matemática, no período de 1942 – início do funcionamento do curso de matemática – até 1968, quando esse curso foi transferido para o Instituto de Matemática da Universidade Federal da Bahia, devido a uma reforma universitária. Nesse intento, fizemos uso, prioritariamente, dos programas de ensino da cadeira de análise matemática, de uma literatura vigente sobre os processos de profissionalização do professor de matemática, bem como de um debate teórico-metodológico envolvendo a constituição dos saberes profissionais da docência. Por essa investigação, consideramos que os saberes profissionais requeridos na cadeira de análise matemática, lidavam com *saberes a ensinar* que eram objetivados para o ensino de matemática no secundário, os quais deveriam ser dominados pelos licenciandos em matemática da Faculdade de Filosofia. Sob essa perspectiva, o saber profissional, nessa formação, não se diferenciava daquele objetivado e institucionalizado para ser ministrado na disciplina de matemática das escolas secundárias. Em síntese, o cálculo diferencial e integral ensinado na licenciatura em matemática da Faculdade de Filosofia correspondia ao mesmo cálculo a ensinar no secundário.

Palavras-chave: Cálculo Diferencial e Integral. Saberes Profissionais Docentes. Faculdade de Filosofia da Bahia. História.

INTRODUCTION

In Brazil, since its imperial period, gradually, the basic elements for become a teacher have been transformed as the Brazilian population began to flourish as a society marked by a search for a nationality, with education as an essential factor for its civilisation, its progress and modernisation. A series of laws, reforms and educational norms are therefore instituted, in particular, to train the teacher in official institutions created by the governments of the Monarchy or the Republic for this specific purpose. In this context, the quest for the autonomy of the teacher who taught mathematics in secondary schools was also part. This scenario started to have a voice and a chorus from the creation of the first faculties of philosophy, with specific courses in mathematics in the 1930s, which did not occur simultaneously in the most diverse Brazilian locations and did not always follow the same model of professionalisation. This was the case, for example, in Bahia.

In fact, in Bahia, since 1896, with the creation of its Polytechnic School (PS) in the capital of Bahia, students, who normally showed interest in mathematical studies, were directed, as only option, to the engineering career, since before of the 1930s, in Brazil, there was no specific higher education school for mathematics education[3] (Dias, 2002a).

[3] É importante notar que a Escola Politécnica do Rio de Janeiro, fundada em 1874, manteve até 1896, de forma independente aos cursos profissionais de engenharia, os cursos de matemáticas e ciências, inclusive com concessão de títulos de bacharel e doutor em ciências físicas e matemáticas e em ciências físicas e naturais. No entanto, tais cursos científicos, após uma primeira

In short, mathematics and its teaching were one of the attributes of the engineering professional, whose practice was monopolised by this corporate group in the exercise of higher and secondary teaching, through political recognition and social legitimation

At that time, there was no proper jurisdiction for formal technical and autonomous education, officially regulated for exclusive teaching in secondary schools, in particular for teaching mathematics. Something that began to be constituted in Bahia, at least in a level comparable to the engineers of the PS, from the implantation, in 1942, of the course of mathematics in the Faculty of Philosophy (FP). This faculty, created the previous year, had as its main leader and founder Isaías Alves de Almeida (1888-1968), who was also its first director (1941-1958).

In this search for a professional jurisdiction, it seems that one of the elements that give a distinctive character to the professions refers to the progressive constitution of knowledge proper to the professional exercise. Thus, among other elements of a more general dimension, according to Larson (2013), common in different historical times, regardless of the specificity of the profession – creation of new spaces of formation and organization in associations of a body of professionals – we chose to focus our view on the professional knowledge linked to a formalized teaching, more precisely, to investigate the differential and integral calculus as a professional knowledge for the teaching of mathematics in the basic school, in the training of future mathematics teachers, in the period 1942 – beginning of the course operation – until 1968, when this course was transferred to the Institute of Mathematics of the Federal University of Bahia, due to a university reform.

THE CLAIM OF A PROFESSIONAL AUTONOMY FOR THE SECONDARY TEACHER: THE CASE OF THE FACULTY OF PHILOSOPHY OF BAHIA

At the time of the creation of the FP, the world lived to what today is still considered the greatest atrocity committed against humanity, namely, World War II[4] and Brazil, under the government of Getúlio Dorneles Vargas (1930-1945), ruled primarily by a nationalist and authoritarian policy, no longer maintained since the late 1930s a cordial relationship with Italy of Benito Mussolini (1883-1945). The growing uneasiness with its expansionist cultural policy to nationalise the children of Italians born on Brazilian soil prevailed (Boris, 1995; Santos, 2001; Tavares, 2001). Like other states of the federation, Bahia was under a federal audit. Its intervenor was Landulfo Alves de Almeida (1938-1942),[5] brother of Isaías Alves, who was appointed the secretary of education and health.

tentativa em 1890, foram extintos em 1896 pela própria Congregação da Escola Politécnica do Rio de Janeiro, ainda que sob protestos de alguns se seus membros. (Castro, 1992).

[4] More information, see: (Hobsbawm, 1995).

[5] Landulfo Alves (1893-1954) was trained in agronomy, with a specialization in zootechnics, and had experience in assisting his older brother, Isaías Alves, in the administration of two educational establishments – the Ipiranga Gymnasium, in the capital Salvador, and another in the city of Nazareth, interior of Bahia. Thus, he directed his government to two focuses: agriculture and education. In the educational sphere, among other actions, under the command of Isaías Alves, the Bahia Normal Institute

Although nominations of relatives and friends have become one of the main criticisms suffered by the government of Landulfo Alves (Rocha, 2011), the appointment of Isaías Alves, who remained in office until 1942, does not seem to have been a case of free favouritism. In 1938, he already had a vast experience in the educational field, among which we mention: Teacher at the *Ginásio Ipiranga* (he became its owner in 1911), the *Ginásio da Bahia* (1920-1931) and the *Escola Normal da Bahia*, where he taught classes in the discipline of educational psychology (1931-1958); author of the book *Teste Individual de Inteligência* (Individual Intelligence Test) (1926); specialization in the Teacher's College of the University of Columbia,[6] by which obtained the title of Master of Arts and Instructor in Psychology (1931), and member of the National Council of Education (1931-1958) (Dias, 2002a; Rocha 2010). However, it is undeniable that to these factors contributed to the fact that a politically very favourable situation was established, which allowed Isaías Alves to realise the dream he had since 1909, already teaching at the Ipiranga Gymnasium, which began in 1905. (Rocha, 2011). In that year, still as a law student and representative of the Law School of Bahia at the First Congress of Students in São Paulo, he defended the creation of universities to solve educational problems at all levels of education (Dias, 2008; 2010). Thus, still very young, according to Azevedo (1973), Isaías Alves became:

> [...] in favour of the growing increase in the preparation of primary school teachers and the need for a special and higher level of specialisation of the middle school teachers as an institution designed to shape the citizen and the candidate for higher education. (Azevedo, 1973, p.253)

It was, therefore, necessary to relegate "[...] the pride of self-learning and the certainty and self-sufficiency of dogmatism, two symbolic forms of resistance to true culture, creating processes similar to the sporulation of static knowledge, which does not transform to the influence of external agents". (Alves, 1952, p.5). From this point of view, there was a breach of a standard of exercise of teaching in the traditional faculties of medicine, law and engineering, even among the professors of mathematics at PS.

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was inaugurated, whose building was built during the constitutional government of Juracy Montenegro Magalhães, deposed on November 10, 1937, when the advent of the State New. In addition, all the normal teaching in Bahia was reformed, which began to be divided into secondary (five years) and pedagogical (two years). (Tavares, 2001).

[6] In this specialization, Isaías Alves followed three courses with Arthur Gates, which allowed him to have contact with the ideas of John Dewey, because in one of these courses, that is to say, Advanced Educational Psychology, Arthur Gates "[...] including Thorndike's theory in almost all its topics, establishes comparisons that include Thorndike's and Dewey's psychology. "(Rocha, 2011, p.67). He also took a course on Psychology of Primary Education taught by Edward Lee Thorndike himself, taking preponderant of his studies, taking special interest in the tests of intelligence. In this sense, he distinguished himself from Anísio Teixeira, who became a fervent defender of Dewey's ideas, aimed at the equality of conditions in education, linked to the realization of pedagogical experiments. Rocha (2011, p.59) considered that: "We can say that the first part of Anísio Teixeira's report is marked by Dewey's philosophy, which he intended to apply in Brazil, while Isaias Alves emphasized in the first chapter the psychological theories that sought to deepen in Columbia. The interests of the two authors were also different, since Anísio Teixeira went to Columbia [1928] as Director of Education and focused on the administrative aspects that involved American school education. Already Isaías Alves sought to specialize in school psychology, an area where he was already developing activities in Brazil [...]". (Warde, 2002; Rocha, 2011; Bertani, 2012; Lando, 2012).

Until then, the beginning of the 1940s, it was necessary to recognise the competence of the teacher in these faculties, the ability to teach classes using remarkable oratorical, which gained more importance for their eloquence, than the domain of scientific content and didactics (Machado Neto, 1973; Dias, 2002a). Thus, apart from the creation of a new specific higher-level space, in particular, to train teachers who would teach mathematics in secondary schools, it seems that it was at stake, as it were, to resize the teaching practice at the higher level and, thus, in a cascade effect, the secondary level. In this case, it was necessary to put in the foreground, referring in the researches of Larson (2013) and Nóvoa (1999), the production of new knowledge and new techniques as primordial elements for professional autonomy. Thus, under the desire to modify this framework, the FP was structured with the purpose of "[...] to train intellectuals for activities of high culture; prepare candidates for secondary, normal and technical teaching; to conduct research in the various sectors in which their teaching activities would be divided." (Calmon, 1980, p.13).

For this, Isaías Alves outlined two important aspects that seemed to be aligned, albeit in different dimensions, to his research in the field of educational psychology, especially the tests of intelligence and his defence of the nationalist discourse of Getúlio Vargas' *Estado Novo*. In its conception, the FP had to develop as its ultimate goal the philosophical spirit, as well as studies of classical and modern languages and literature, for the development not only of the form of thought but also to master the questions of the soul. On the other hand, he understood that this same faculty should, from its first steps, become a reference in scientific formation in order to be able to construct an active laboratory of pure and applied knowledge, following the most ingenious methods and techniques necessary for economic and social progress, associated with industrialisation. (Alves, 1952). For Isaías Alves (1952, p.6), "Here we describe the orbit of mathematical, physicochemical, and natural sciences whose purpose is to subordinate the cosmic world to the realm of man; increase the possibilities of comfort, for greater effort to humanise life [...]". However, Isaias Alves cannot concretise this last idea immediately, inasmuch as the FP, in the year 1942, among the sciences above, obtained authorisation of running course only for the mathematical sciences.[7]

THE MATHEMATICS COURSE OF THE FACULTY OF PHILOSOPHY: NEW ROADS ON TRACKS ALREADY BUILT

In the nationalistic and pedagogical plane of Isaías Alves, mathematical sciences and their teaching were necessary "[...] for the formation of a statistical mentality, through which economic problems can be comprehensively understood, and to try solutions with

[7] The other courses were: Philosophy, Mathematics, Geography and History, Social Sciences, Classical Literature, Neo-Latin letters, Anglo-Germanic Literature and Pedagogy (Calmon, 1980).

a lower probability of error, and a guarantee of safer results, within the social moment of each attempt." (Alves, 1952, p.6). Thus, he ruled:

> Mathematics has given you assurance of reasoning, with which you will serve the research of the secrets of nature and the gradual discipline of the forces of society. It will not make you pure automata of abstract reasoning. It will give you, in continuing the studies whose method you have learned, the total notion of the rationalized world, material energies and moral structures, upon which the complete domination of the cosmic environment depends and the perfect adaptation of the human microcosm, to the plane of personal happiness and to the reign of peace among the nations. (Alves, 1952, p.25)

Having said this, we consider that Isaías Alves justified the motivations for the constitution of a specific course of mathematics at the higher level for a teacher training that would teach mathematics in secondary schools. Thus, establishing competition with the engineers in the dispute of the vacancies to teach mathematics in these educational establishments of Bahia.

Thus, the change required by Isaías Alves, at least in the course of mathematics, in our understanding, was conservative. This is because, under his invitation, the disciplines of the curricular curriculum of this course, related to those taught in the formation of the engineer of the PS, were occupied by the own professors of that school, finally, by the same corporate group that had the monopoly, through social prestige and political, mathematical teaching in the higher and secondary teaching until that conjuncture of creation of the FP. In short: new paths were built along old paths. This choice of Isaias Alves was certainly influenced by the fact that the FP, private initiative, even if it had expressed interest, did not have the financial resources to import foreign teachers, as happened, for example, in the Faculty of Philosophy, Sciences and Letters (FPSL) of the *Universidade de São Paulo* (USP), in particular, in his mathematics course (Calmon, 1980). However, what seemed to be decisive for this position diametrically opposed to the Sao Paulo project, according to Dias (2002a), was the strong discourse of Isaías Alves in favour of a nationalist culture, with tendencies to preserve the local traditional culture, in its conception, was being undermined by so-called alien cultures. For Isaías Alves "Bahia may be the centre of resistance to the immoderate invasion of new standards of life to be imposed on the nationality of Alves." (Alves, 1952, p.17).

It was, in fact, a different context from that inaugurated in 1934 at USP in the context of its FPSL, starting with its activities, which were born integrated into a public university, something that only happened in Bahia in 1946, with the creation of its first university, the *Universidade da Bahia*, renamed in 1965 to the current *Federal Universidade da Bahia* (UFBA). Therefore, one of the main actions of the Brazilian government to organise and structure USP was to form its first teaching staff, notably by foreign professors. (Documentos históricos, 1971; Universidade de São Paulo, 1937, 1953).

From this point of view, in particular, the Mathematics course of the FPSL was established, having as central nucleus of its foreign faculty teachers, coming from Italy – the analyst Luigi Fantappié (1934) and geometer Giacomo Albanese (1936), both trained in mathematics courses and already with a solid and experienced professional career (Lima, E., 2012). The prevailing view was that it was a necessary measure which, according to Dantes (1988, p.273), was intended "to meet the needs of a medium in which the scientific community was still very restricted, but also meant a disruption to the education system that existed in the country. ". It corroborates with this affirmation, the following passage of Anísio Teixeira, that unlike Isaias Alves, believed that:

> The first steps of a new Brazilian educational policy, first and indispensable, are to seek, outside Brazil, elements for the renewal of our culture and our techniques. Referral of meritorious students abroad and contract of foreign teachers for new schools and new colleges. (Teixeira, as cited in Calmon, 1980, p.10)

Based on this brief analysis, based on Garnica's (2013) research,[8] it is possible to consider that it was not a homogeneous standardised professional teaching jurisdiction and hierarchical stages in the most diverse corners of Brazil, in its most varied contexts of its immense territory. In this sense, Garnica (2013) argued that there was, and still is, a multiplicity of forms, mechanisms and instances that legitimised and equipped this teacher in the exercise of teaching.

In fact, concomitantly with the actions of the faculties of philosophy, there were alternative strategies for conferring records to the teacher who already taught mathematics at a secondary level, mainly in the interior of Bahia, but who did not have a degree. One of these strategies was the Campaign for Improvement and Diffusion of Secondary Education (CADES),[9] created in 1953, in the government of Getúlio Dorneles Vargas. From this point of view, the following statement by Larson (2013) resonates, paraphrasing David Sciulli: "I do not believe that there can be a general theory of professions for all places and all times".[10] (Larson, 2013, p.xxii).

However, among this plurality of processes of teacher professionalisation, in this article, we chose to focus our attention on the knowledge for teaching. Moreover, also, in that knowledge that was systematised, formalised, in a given period, notably, in investigating differential and integral calculus as a professional knowledge for teaching mathematics in basic school, in the training of future mathematics teachers (1942-1968).

[8] This researcher, together with other members of the Research Group "Oral History and Mathematical Education" (GHOEM), has been developing, since 2000, the project *Mapeamento da Formação e Atuação de Professores de Matemática no Brasil* (Mapping of Training and Performance of Mathematics Teachers in Brazil).
[9] More information, see: (Oliveira & Pietropaolo, 2008; Baraldi & Gaertner, 2010).
[10] "I do not believe there can be a general theory of professions everywhere and at all times.". (our translation).

THE KNOWLEDGE FOR DIFFERENTIAL AND COMPREHENSIVE CALCULATION IN THE MATHEMATICS COURSE OF THE FACULTY OF PHILOSOPHY

The teaching of differential and integral calculus, in the mathematics course of the FP, started in the 1943 school year, came under the responsibility of the mathematical analysis chair, approved with the other chairs that made up the course curriculum, by the National Education Council , in 1942, having Manuel Bergström Lourenço Filho (1897-1970) as rapporteur for the case and author of the opinion. Such a chair, in accordance with the precepts of Isaías Alves, was taught until 1968 by Professor Luiz de Moura Bastos (1903-1988) – graduated in engineering from the Polytechnic School in 1926 – already with a vast experience as a professor of mathematics at the Ginásio da Bahia. Throughout this period, the program of this discipline, at least formally, did not change, remaining exactly the same as that approved in 1943, that is, having the same topics, contents and sequence of that adopted in the chair of mathematical analysis of the *Faculdade Nacional de Filosofia* (FNFI) of the University of Brazil (Faculdade Nacional de Filosofia, 1940; Revista da Faculdade de Filosofia da Universidade da Bahia, 1952; Dias, 2008).

At the time of the creation of the FP, Decree 1,190 of 4 April 1939, was in force, which organized the FNFI of the University of Brazil as the official model of all educational establishments similar to it, beginning in the 1940 school year, the curriculum and teaching programs (Decreto-Lei n. 1.190, 1939). Thus, in the program approved for the chair of mathematical analysis of the FP, an introductory part was included, involving a revision of theories of the real numbers, the complex numbers and of deepening on the theory of the determinants and the linear forms and equations. In the following, there is an extensive list of contents, analytically detailed, which are: elements of set theory (ordinary space); successions and numerical series; limits and continuity (functions of a real variable); derivative and primitive; Taylor's formula and applications; singular points and variation of the functions of a real variable; integral of Riemann; series of functions; functions of more than one variable; integrals dependent on one parameter; continuous and curvilinear integral lines; areas, volumes and multiple integrals; curved surfaces and differential equations (Faculdade de Filosofia, 1943, Universidade da Bahia, 1954). In turn, the program summarised the exposure of these contents, so there were no other information and/or guidelines on how they could be worked on in the training of the FP training mathematics teachers who would work in secondary schools.

However, based on Hofstetter and Schneuwly's (2017) research, the contents of the program were not imprisoned in the context in which it was possibly taught, i.e. in the FP mathematics course. It was not, therefore, knowledge, but teaching knowledge, inasmuch as it was formalised and institutionalised by the Decree above 1,190, sanctioned in the year 1939. Indeed, in this program, knowledge about teachers' actions, said as objectified – formalized knowledge – were established, which could be postulated from the identification of their properties in a given historical period, that is, as a set, historically constructed, of coherent, depersonalized, theorized, reproducible statements and legitimized by a scientific and/or professional community.

Thus, from this characterisation of objectified knowledge, the mere listing of contents encompassed only one of the dimensions of one of the two types of knowledge of a different nature explained by Hofstetter and Schneuwly (2017), that is, the *knowledge to be taught* – object of the teaching and teacher education. This is because such knowledge is more than a list of contents or disciplinary knowledge, indebted to university disciplines, aimed at building a hegemony of a culture for the development of mathematics itself. They can also "[...] the result of complex processes that fundamentally transform knowledge in order to make it teachable. This process may even lead to the creation of knowledge proper to educational institutions, necessary for them to assume their functions". (Hofstetter & Schneuwly, 2017, p.133).

In contrast, despite the *knowledge to teach* and the *knowledge for teaching*[11] are theoretically constructed in a manner articulated by Hofstetter and Schneuwly (2017), for this example of the program of the mathematical analysis program of the mathematics course of the FP, such knowledge did not appear, at least from 1943 to 1968, under this articulation. Thus, it is not something that is given a priori; it is fundamental to take into account the historical period analysed.

In any case, there is no denying the character of innovation in relation to the tradition that prevailed in Bahia, which Isaías Alves sought in 1909, in disciplining and prestige "[...] the profession of Master of Sciences and Humanities [...]" (Alves, 1952, p.38). A new space of teacher training was created that would teach mathematics in Bahian high schools, as well as, at least officially, institutionalised specific objective knowledge that should be part of this formation, following what was established in Decree 1,190 of 1939.

However, in practice, according to Dias (2002a), it was not uncommon for professors of the FP mathematics course, mostly engineers, to overturn the programs adopted by teaching classes in the chairs that were under their assignments, from their own professional identity. This seems to have been the case of the engineer Luiz de Moura Bastos during the period in which he conducted the mathematical analysis chair. Synthetically, according to the memories of Arlete Cerqueira Lima, born in 1951, despite some exceptions, "[...] the course of Mathematics was melancholic: it lacked theoretical foundation, the Integral Calculus was restricted to a variable [...]" (Lima, A., 1985, p.41). An understanding that was also ratified by Eunice Guimarães, when she stated that:

> The math course ... One thing I was very surprised about was that Professor Moura Bastos gave a cute little class, but a colleague of mine from the 3rd scientist said that he was practically repeating what he gave in the 3rd year of science. This I did not forget, she came and said, it is not possible, she took the notebooks of the 3rd

[11] The *knowledge for teaching* is translated as the teacher's work tools, for teaching and for training, which do not refer exclusively to teaching methodologies. In addition, they also correspond to educational studies in the educational sciences (Borer, 2017), and also relate to "[...] knowledge about 'the object' of teaching and training work, [...]] on teaching practices [...] and on the institution that defines their field of professional activity [...]" (Hofstetter & Schneuwly, 2017, p.133-134).

> scientific year, that [sic] part of the 3rd year scientific limit and derivatives, and it was the same thing! It was almost the same thing. (Eunice Guimarães)[12]

In this context, it seems unlikely that this was due to lack of mastery of the program adopted by the FP. In our view, there was a conscious choice of Luiz de Moura Bastos. In fact, at the same time as his engineer career, he also worked as a professor of mathematics at the Bahia Gymnasium since 1939, having participated in at least the first two national congresses of mathematics teaching in the school environment in the 1950s. In general, there were discussions on questions relating to teaching and learning of mathematics, from which new proposals for the restructuring of teaching programs, new methodologies and measures not only for the training and training of teachers, but also to improve and produce didactic materials (Congresso Nacional de Ensino da Matemática no Curso Secundário, 1957; Congresso Nacional de Ensino da Matemática, 1959).

During the first congress, held in 1955 in the Bahia capital, directed to secondary education, Luiz de Moura Bastos made his point of view in relation to mathematics teaching when changes were discussed in the program for the collegial course, in particular for the teaching of logarithm, proposed by Osvaldo Sangiorgi (1921-2017), only as an operation. Luiz de Moura Bastos disagreed with the following words:

> I object here; I think they are those applications for the practical life, because we do not have logarithms in concrete life but practical life. We have to prepare the student for life so that he can have his economic independence, he can progress, finally, to satisfy all his needs, and he will need this knowledge to solve his problems. Therefore, he felt that it should be logarithms and their applications [...]. (Bastos as cited in Congresso Nacional de Ensino da Matemática no Curso Secundário, 1957, 342)

His argument was, in our view, more tied to the interests of engineering schools, which claimed a secondary curriculum that could meet their needs, subordinated to the immediate demands of society at that time. A conception, according to Dias (2002a), very widespread by the professors of the EP, inasmuch as basic mathematics was sufficient, practical and pragmatic.

Under these elements, we consider that Luiz de Moura Bastos, in the chair of mathematical analysis, dealt with the *knowledge to teach* that were objectified for the teaching of mathematics in the secondary, which, in its view, should be dominated by the FP's licentiate in mathematics. In this perspective, the professional knowledge in this formation did not differ from those objectified and institutionalised to be taught in the secondary school mathematics discipline, as observed by Eunice Guimarães. Thus, in a broader context, the FP, according to Calmon (1980), constituted before a university

[12] Interview granted to Laís Viena de Souza in Salvador, on September 06. 2002.

in Bahia had no conditions "... to change the functioning of traditional schools ..." , was satisfied, among the purposes established, "[...] with the principal: to train teachers for secondary education ..." (Calmon, 1980, p.16).

It was, in fact, a reinforcement of what we have already pointed out, of a scientific project with very specific characterisations that distanced itself, from its policy of preserving a genuinely nationalist culture, from that outlined and practised in the FPSL of USP. This faculty, although it was also conceived from a nationalist discourse, followed the bias that it was necessary to renew the Brazilian culture from a strong dialogue with foreign teachers, with the intention of reaching a Eurocentric scientific standard.

In particular, this was the reality lived in the subsection of the mathematical sciences of that faculty. Thus, contrary to what was propagated in the media and to what was set out in its regulations, the FFCL was directed, according to SILVA (2000), to train scientists and not to train and improve secondary and higher education teachers. Brazil. From this point of view, the mathematics course of the FPSL, the knowledge to teach required, was in the service, in the period in common with the FP, for the construction of a hegemonic culture about the very development of mathematics.

FINAL CONSIDERATIONS

The formation of the teacher who would teach mathematics at the secondary level of the FF of Bahia, supporting us in the researches of Dias (2002a) and Garnica (2013), came to have, more and more, own rituals with permanence and changes, which contributed to the constitution of an autonomous professional field, although heterogeneous. Thus, with no intention of demarcating a homogeneous and universal identity, being a teacher, parameterising in the ideas of Dias (2002b), began to transcend the idea of *bossa*, related to a mere natural aptitude, for the construction of a professional jurisdiction. Something paramount in the context of teacher professionalisation processes, socially institutionalised, between disputes, conflicts and preservation of its monopoly, by public educational policies of a given epoch.

One of the centres of this preservation, in the context of the FF mathematics course, resided in the constitution of the professional knowledge that should be part of the training of future mathematics teachers who would teach at the secondary level. The example of the program of the mathematical analysis chair reflected this spirit well, at the moment when its professor, Luiz de Moura Bastos, notes, engineer, subverted the official orientation of the decree 1,190 / 1939 and conducted his classes in accordance with his professional identity. The curious thing is that its subversion led its course precisely to the knowledge to teach objectified in the scope of teaching mathematics to secondary school. On the other hand, this knowledge to teach in the secondary, based on Borer (2017), present in the formation of the licensee, seem to reflect the didactics of Luiz de Moura Bastos, his experience as a teacher in secondary school, your personal practice. In these terms, such knowledge did not "[...] object of formalisation at the theoretical

level [...]" (Borer, 2017, p.193), therefore, knowledge. In short, Luiz de Moura Bastos, in our interpretation, formed the teacher with professional knowledge that, for him, needed to be mastered in teaching practice. Thus, the differential and integral calculus taught in the FF mathematics degree corresponded to the same calculation to be taught in the secondary. This was extended until 1968, when this chapter of the professionalisation of the teacher who taught mathematics in the secondary schools of Bahia was closed, by transferring the course of mathematics to the Institute of Mathematics of UFBA, brought about by a university reform.

REFERENCES

Alves, I. (1952). Três momentos na vida de faculdade: I. Missão nacional e humana da Faculdade de Filosofia; II. Cultura, responsabilidade e ação; III. Humanismo e abnegação. In *Arquivos da Universidade da Bahia.* Faculdade de Filosofia. Salvador, v.1, 1942-1952, p.3-48.

Azevedo, T. (1973). Discurso no 30º aniversário da Faculdade de Filosofia. *Revista Universitas*. Salvador, (13), 251- 260.

Baraldi, I. M. & Gaertner, R. (2010, April). Contribuições da CADES para a Educação (Matemática) Secundária no Brasil: uma descrição da produção bibliográfica (1953-1971). *BOLEMA: Boletim de Educação Matemática. Instituto de Geociências e Ciências Exatas*. Rio Claro, 23 (35A), 159-183.

Bertani, J. A. (2012*). Um Estudo Histórico Comparativo entre a Bahia e Portugal sobre a Formação de Docente em Matemática, 1941-1968* (214f). Tese de doutorado, Universidade Federal da Bahia/Universidade Estadual de Feira de Santana, Programa de Pós-Graduação em Ensino, Filosofia e História das Ciências, Salvador.

Borer, V. L. (2017). Os saberes: uma questão crucial para a institucionalização da formação de professores. In Hofstetter, R & Valente, W. R. (Orgs.). *Saberes em (trans)formação: tema central da formação de professores*. (pp.173-199). São Paulo: Livraria da Física.

Boris, F. (1995). *História do Brasil*. (2 ed). São Paulo: Editora da Universidade de São Paulo/ Fundação para o Desenvolvimento da Educação.

Calmon, J. (1980, July). Os 35 anos (1941-1976) da Faculdade de Filosofia. *Revista das Ciências Humanas*. Salvador, 1(1), 7-18.

Castro, F. O. (1992). *A matemática no Brasil.* Campinas: UNICAMP.

Congresso Nacional de Ensino da Matemática, 1955. (1957). *Anais*, 1. Salvador, Faculdade de Filosofia da Universidade da Bahia.

Congresso Nacional de Ensino da Matemática, 1957. (1959). *Anais*, 2. Porto Alegre, Faculdade de Filosofia da Universidade do Rio Grande do Sul.

Dantes, M. A. M. (1988, May/Aug.). Fases da implantação da ciência no Brasil. *Quipu*. México, 5 (2), 265-275.

Decreto-Lei n. 1.190, de 4 de abril de 1939. (1939, 6 April). Dá organização à Faculdade Nacional de Filosofia. Recuperado em 20 novembro, 2018, de http://www2.camara.leg.br/legin/fed/declei/1930-1939/decreto-lei-1190-4-abril-1939-349241-publicacaooriginal-1-pe.html.

Dias, A. L. M. (2002a). *Engenheiros, mulheres, matemáticos: Interesses e disputas na profissionalização da matemática na Bahia, 1896-1968* (320f). Tese de doutorado, Universidade de São Paulo, Programa de Pós-graduação em História Social, São Paulo.
Dias, A. L. M. (2002b, Jan./Dec.). Da bossa das matemáticas à educação matemática: disputas por uma jurisdição profissional. *Revista História & Educação Matemática*. Rio Claro, 2 (2), 191-226.
Dias, A. L. M. (2008, Dec.). Profissionalização dos professores de matemática na Bahia: as contribuições de Isaías Alves e de Martha Dantas. *Publ. UEPG Ci. Hum., Ci. Soc. Apl., Ling., Letras e Artes*, Ponta Grossa, 16 (2), 243-260.
Documentos Históricos. (1971). *Ata da Congregação da Faculdade de Filosofia da Bahia, 1946*. Universidade Federal da Bahia. Salvador: Departamento Cultural da UFBA.
Faculdade de Filosofia. (1943). *Programa da IX Cadeira de Análise Matemática*. Curso de Matemática. Salvador.
Faculdade Nacional de Filosofia. (1940). *Programas para os cursos de física e matemática*. Universidade do Brasil. Rio de Janeiro: Imprensa Nacional.
Garnica, A. V. M. (2013, abril). Cartografias Contemporâneas: mapa e mapeamento como metáforas para a pesquisa sobre a formação de professores de Matemática. *ALEXANDRIA: Revista de Educação em Ciência e Tecnologia*. Florianópolis, 6 (1), 35-60, abr. 2013. Recuperado em 01 novembro, 2018, de https://periodicos.ufsc.br/index.php/alexandria/article/view/37927.
Hobsbawm, E. (1995). *A era dos extremos: o breve século XX (1914-1991)*. (2 ed. 1 reimp.). Santarrita, M (Trad.). São Paulo: Companhia das Letras.
Hofstetter, R. & Schneuwly, B. (2017). Saberes: um tema central para as profissões do ensino e da formação. In Hofstetter, R & Valente, W. R. (Orgs.). *Saberes em (trans) formação: tema central da formação de professores*. (pp.113-172). São Paulo: Livraria da Física.
Lando, J. C. (2012). *Práticas, inovações, experimentações e competências pedagógicas das professoras de matemática no Colégio de Aplicação da Universidade da Bahia, 1949-1976* (307f). Tese de doutorado, Universidade Federal da Bahia/Universidade Estadual de Feira de Santana, Programa de Pós-Graduação em Ensino, Filosofia e História das Ciências, Salvador.
Larson, M. S. (2013). (Ed. Rev.). *The rise of professionalism: monopolies of competence and sheltered markets*. New Brunswick, New Jersey: Transaction Publishers.
Lima, A. C. (1985, julho). Depoimento. *Cadernos do IFUFBA*, Salvador, 1(3), 36-53.
Lima, E. B. (2012). *Matemática e matemáticos na Universidade de São Paulo: italianos, brasileiros e bourbakistas, 1934-1958* (260f). Tese de doutorado, Universidade Federal da Bahia/Universidade Estadual de Feira de Santana, Programa de Pós-Graduação em Ensino, Filosofia e História das Ciências, Salvador.
Machado Neto, A. L. (1973). A Bahia intelectual. *Revista Universitas*, Salvador, (13), 261- 305.
Nóvoa, A. (1999). O passado e o presente dos professores. In Nóvoa, A. (Org.). (2a ed.). *Profissão professor*. (pp.13-34). Porto: Porto Editora.

Oliveira, M. C. A. & Pietropaolo, R. C. (2008, Sep./Dec.). Traços de 'Modernidade' nos artigos de Matemática da revista Escola Secundária. *Rev. Diálogo Educ.*, Curitiba, 8 (25), 715-726.
Revista da Faculdade de Filosofia da Universidade da Bahia,1942-1952. (1952). In *Arquivos da Universidade da Bahia*. Faculdade de Filosofia. Salvador, 1, 243-260.
Rocha, A. C. S. M. (2010). Isaías Alves através de seu arquivo pessoal: possibilidades de leitura. *Revista Mosaico*, Rio de Janeiro, 2 (3), 76-93, 2010. Recuperado em 14 novembro, 2018, de http://bibliotecadigital.fgv.br/ojs/index.php/mosaico/article/view/62789/61924.
Rocha, A. C. S. M. (2011). *O que fazer com os rudes?: Isaías Alves e as divergências sobre o papel da inteligência na organização escolar, 1930-1942* (163f). Dissertação de mestrado, Centro de Pesquisa e Documentação de História Contemporânea do Brasil, Fundação Getúlio Vargas, Programa de Pós-Graduação em História, Política e Bens Culturais). Recuperado em 14 novembro, 2018, de http://bibliotecadigital.fgv.br/dspace/bitstream/handle/10438/8177/CPDOC2011%20Ana%20Rocha.pdf?sequence=1&isAllowed=y.
Santos, V. T. (2001). *Os seguidores do Duce: os italianos fascistas no Estado de São Paulo. Inventário Deops: módulo v – Italianos*. São Paulo: Arquivo do Estado, Imprensa Oficial.
Silva, C. M. S. (2000). A Faculdade de Filosofia, Ciências e Letras da USP e a formação de professores de matemática. In *Anais*, 23 Reunião Anual da ANPED. (pp.1-19). Caxambu: ANPEd, 2000. Recuperado em 05 setembro, 2011, de http://23reuniao.anped.org.br/textos/1925p_poster.PDF.
Tavares, L. H. D. (2001). *História da Bahia*. São Paulo: UNESP, 2001.
Universidade da Bahia (1954). *Programa da II Cadeira de Análise Matemática*. Faculdade de Filosofia. Curso de Matemática.
Universidade de São Paulo. (1937). *Anuário da Faculdade de Filosofia, Ciências e Letras, 1934-1935*.
Universidade de São Paulo. (1953). *Anuário da Faculdade de Filosofia, Ciências e Letras,1939-1949, 1*.
Warde, M. J. (2002). Estudantes brasileiros no Teachers College da Universidade de Columbia: do aprendizado da comparação. In *Anais*, 2 Congresso Brasileiro de História da Educação. Natal (RN). Recuperado em 13 novembro, 2018, de http://www.sbhe.org.br/novo/congressos/cbhe2/pdfs/Tema1/0114.pdf.