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Isaias Alves and the approximations between educational psychology and mathematics education¹

Rafaela Silva Rabelo²

Abstract

Based on the travel journal written by the Bahian educator Isaias Alves during his trip to the United States, this article aims to explore the approximations between educational psychology and mathematics education in the 1930s and how the former field promoted the circulation of theories and authors in the latter field, particularly with regard to the exchange between Brazil and the United States. In terms of theoretical-methodological approach, some of the salient concepts are appropriation, circulation (of ideas/objects/subjects), and authorized discourse, based on the works of authors such as Roger Chartier (1990, 2002, 2009), Serge Gruzinski (2001a, 2001b), and Michel de Certeau (2012). In addition to his travel report, this study also draws on other books and articles published by Alves, the curricula of the Institutes of Education of Rio de Janeiro and São Paulo, teaching manuals, and newspapers available in the Digital Newspaper Collection of the National Library. Among other findings, it is observed that Isaias Alves's travel report lent visibility to the discussions and publications of the American psychologist Edward Lee Thorndike that focused on mathematics education. It is also observed that the dialogue established between educational psychology and mathematics education was strongly linked to discussions about tests and that the manner in which Isaias Alves read and portrayed mathematics education was from the perspective of psychology.

Keywords

Isaias Alves – Educational psychology – Mathematics education – Edward Lee Thorndike – Circulation.

Beginning the journey

Isaias Alves returned to Brazil in May 1931 after completing his master's degree at the Teachers College, Columbia University (TC/CU), in New York. Several months later, he delivered to the Minister of Education and Health the report of his trip, which was published in book form in 1933. In the first chapter, Alves describes some of the classes he attended at the TC/CU, predominantly focusing on educational psychology, including considerations of the teaching of mathematics. In this last regard, could this report have influenced discussions

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about training mathematics teachers in Brazil? Put differently, what role did mathematics education play in the work performed by Alves, whose recently completed master's degree and professional work were in the field of educational psychology?

Taking Isaias Alves's report on his travel to the United States as its starting point, the present article proposes to identify the approximations between educational psychology and the teaching of mathematics and how the former promoted the circulation of theories and scholars in the latter, particularly with regard to the exchange between Brazil and the United States. Beginning with Alves's journey, the article develops the discussion in three segments: 1) it analyzes the contents of the travel report, specifically with regard to references to mathematics; 2) it discusses Alves's publications prior to his visit to the United States; and 3) it traces the circulation of his report and of elements stemming from his study at the TC/CU after his return from New York. In this sense, this article shows that even before his trip, Alves was already in contact with the bibliography in vogue in the United States and that, after his return, the new references that he had acquired were put into circulation in the field of mathematics education. In terms of theoretical-methodological approach, some of the salient concepts are appropriation, circulation (of ideas/objects/subjects), and authorized discourse, based on the works of authors such as Roger Chartier (1990, 2002, 2009), Serge Gruzinski (2001a, 2001b), and Michel de Certeau (2012).

The posts that he held, the social networks that he established, and the books and articles that he published throughout his career justify the choice of Isaias Alves as the central thread of an analysis that seeks to explain the relationship between educational psychology and mathematics education in the first half of the 20th century in Brazil, specifically in the 1930s. One of the Brazilian educators included in the *Dictionary of Educators in Brazil* (BOAVENTURA, 2002), Isaias Alves held various posts and worked in various institutions throughout his professional career. There are several controversial aspects to his career, such as his political positions in support of the Brazilian pro-fascist movement and the New State and his disagreements with renowned educators such as Anísio Teixeira and Lourenço Filho. Nevertheless, he was instrumental in the creation of the School of Philosophy in Bahia in the 1940s.

Isaias Alves de Almeida (1888–1968) was born in Santo Antônio de Jesus, in the State of Bahia. In 1903, he moved to the city of Salvador, where he attended high school at the Colégio Carneiro Ribeiro. He graduated from the School of Law in the same city in 1910. He began teaching at a young age in 1905, when he took a position as a teacher at the school Ginásio Ypiranga. In 1911, he became the principal of that school. He passed an exam to become a secondary school teacher, defending the thesis “On English Phonetics,” and he taught at the Ginásio da Bahia until 1931. Between June 1930 and May 1931, Alves attended the TC/CU. In 1931, he was assigned to teach Educational Psychology at the Bahia Normal School. In the same year, he became Superintendent of Public Education for the State of Bahia. He was appointed to the National Education Council (NEC), a position that he occupied from 1931 to 1958. From 1931 to 1932, he was Deputy Superintendent of Public Education for the Federal District, a post that he held at the invitation of Anísio Teixeira, then Superintendent of Public Education. Between 1932 and 1934, he headed the Office of Testing and Measurement of the Institute of Education of Rio de Janeiro. From 1934 to 1938, he performed technical duties in the National Department of Education. Between 1938 and 1942, Isaias Alves served as

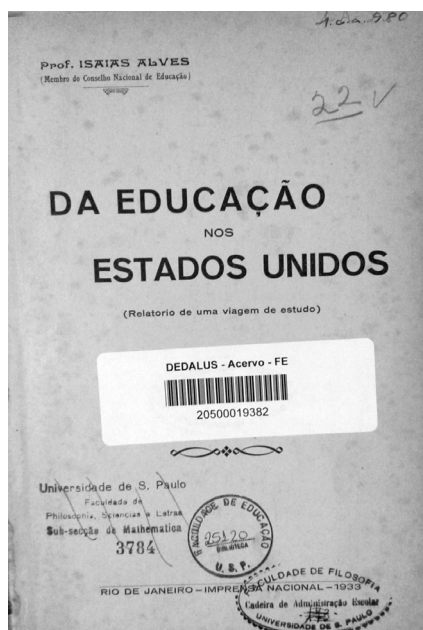
Secretary of Education and Health of Bahia, during the time when his brother, Landulfo Alves, was the presidentially appointed head of the state government. In 1941, he was elected to the Academy of Letters of Bahia. In the same year, he founded the School of Philosophy of Bahia, in which he was tenured until his retirement in 1958.³

As Boaventura (2002) states, there is indeed much to explore about Isaias Alves's career in different areas. Following this observation by Boaventura, it is true that several studies, such as those by Walger (2006), Rocha (2011), and Quadros (2014), have focused on Isaias Alves or tangentially touched on his work. However, no studies to date have addressed his contributions in the field of mathematics education, which is the aim of this article.

The report on travel to the United States

Originally written in 1931 and published in 1933 by the National Press in Rio de Janeiro, the book *On Education in the United States* presents the travel report of Isaias Alves as an accounting of his studies for a master's degree at the TC/CU under the sponsorship of the Ministry of Justice and the Interior of the State of Bahia. Featured on the cover, just below Alves's name, is the information that he is a member of the National Education Council (Figure 1). The mention of his position on the NEC is an obvious way of lending authority to the person of Isaias Alves and thereby legitimating the book's contents. Alves held other posts simultaneously, but this choice served to highlight his connection with the NEC.

Figure 1 – Cover page of the report



Source: Alves (1933). Collection of the library of the School of Education/University of São Paulo (FE/USP).

3- The biographical information about Isaias Alves is drawn from Boaventura (2002), Pinto (1988), Quadros (2014), Rocha (2011), and Walger (2006). Access to newspapers in the Brazilian National Library's Digital Newspaper Collection helped confirm some dates not noted in the literature and resolve some discrepancies in different accounts.

In the report's introduction, Alves relates that the study trip occurred between June 1930 and May 1931 and that he arrived back in Bahia on June 19, 1931, having earned a Master of Arts degree as an Instructor of Psychology. The records of the TC/CU confirm this account.⁴ According to the *Teachers College Bulletin* (TEACHERS COLLEGE, 1930), the Instructor of Psychology diploma was meant for those who wanted to teach psychology in departments of education at universities, teacher preparation colleges or normal schools. The supervising faculty members for the 1930-1931 academic year were Arthur I. Gates and Ralph Beckett Spence.

The date that appears on the presentation of the report is September 15, 1931. Thus, Alves submitted his report to the Minister of Education and Health approximately three months after his return from the United States.

Following an introduction written by the author, the report contains 12 chapters and a summary that concludes the work, running to 201 pages. The first three chapters cover the courses that Alves enrolled in at TC/CU. The first chapter discusses the courses related to educational psychology. The second and third chapters address the courses given by Professors George S. Counts and Lester Wilson concerning the characteristics of and discussions related to education in the United States. The following chapters address the different aspects of American education observed by Alves.

The courses relating to educational psychology listed and described in Chapter 1 are:

- Educational Psychology (Professor Goodwin Watson);
- Advanced Educational Psychology (Professor Arthur Gates);
- Mental and Educational Tests (Professor Rudolph Pintner);
- Measurements in Elementary Education (Professor William McCall);
- Professional Course for Instructors of Psychology (Professor Arthur Gates);
- Psychology of Primary Education Subjects (Professor Edward L. Thorndike); and
- Diagnosis and Treatment of Abnormalities in Studies of Primary Education (Arthur Gates).

It is interesting to note the presence of Gates in three of the seven courses in which Alves enrolled. Arthur I. Gates (1890-1972) published several books and articles, primarily on educational psychology, learning difficulties, reading, tests, and measurements. Together with Thorndike, Gates wrote *Elementary Principles of Education*, published in Brazil under the title *Princípios elementares de educação* in 1936.

Although Thorndike taught only one of the courses in which Alves enrolled, he is a constant reference point in the other courses, according to the Bahian educator himself. An American psychologist who was considered one of the pioneers of educational psychology, Thorndike exerted a strong influence through the position that he held at the TC/CU⁵ and his renown throughout North American circles. Typically classified as a connectionist psychologist, Thorndike primarily focused on tests of intelligence and the learning process, paying particular attention to the teaching of English and mathematics using methodologies grounded in psychology. One of his most important works, cited by

4- The lists of foreign students who attended the TC/CU from the 1920s to the 1960s were consulted in the *Teachers College International Students from 1920s-1970s* collection in the archives of the Gottesman Libraries at the TC/CU.

5- On Thorndike's prominent position at the TC/CU and biographical information, see Cremin et al. (1954) and Clifford (1984).

Isaias in the travel report, is the three-volume *Educational Psychology*, published between 1913 and 1914.

Specifically mapping the references to mathematics in Alves's report, they appear in *Mental and Educational Tests*, taught by Pintner, and *Diagnosis and Treatment of Abnormalities in Studies of Primary Education*, taught by Gates. In the former, Alves refers to various tests, including arithmetic tests. In the latter, he notes the application of mental and scholastic tests in New York schools in experiments conducted by Professor Gates, specifying the arithmetic tests of Ruch-Knight-Greene-Studebaker, Clifford Wood, Woody-McCall, May-McCall, and Walter S. Monroe. Therefore, the discussions about mathematics appear related to the tests or, at least, that is the aspect that Alves highlights.

In the course taught by Thorndike,⁶ *Psychology of Primary Education Subjects*, Alves highlights three themes – teaching of arithmetic, reading and geography – and concentrates most of his attention on the first two. The other subjects receive only passing mention in the first paragraph about the course, in which Alves says “Professor Edward Thorndike presented the latest results on the psychology of arithmetic, reading, spelling, writing, geography, and history, according to the results of extensive experiments with thousands of students”.(ALVES, 1933, p. 24, emphasis added).

Thus, all discussion focuses on teaching with psychological bases that are validated through experiments. The discussion about the teaching of arithmetic begins:

In arithmetic, once again, the *use of inappropriate language* makes many problems more difficult in that they employ *words that are unfamiliar to children*. This is a situation I have observed in many word problems on tests over many years. Arithmetic teachers and examiners forget that the reasoning of a child is very simple, and they compound the difficulty of the math problem with *verbal complication*. (ALVES, 1933, p. 24, emphasis added).

It is interesting to note the relationship between language and mathematical problem-solving that Alves establishes. It makes sense that this reflection should arise in the course taught by Thorndike because one of the points of interest in his research was the teaching of the mother tongue and the acquisition of vocabulary based on the student's level of development. Thorndike published several dictionaries and articles on this subject, including *The Teacher's Word Book* in 1921 and the *Thorndike-Century Junior Dictionary* in 1935. Specifically with regard to math, Thorndike drew attention to the importance of choosing the vocabulary used in word problems, which he discusses in the manuals *The New Methods in Arithmetic* (1921) and *The Psychology of Arithmetic* (1922).

Alves continues his discussion of the inappropriate use of problems that “do not represent real-life situations” (ALVES, 1933, p. 24), and he even refers to a book that he found upon his return to Brazil,⁷ citing one of the problems contained in it, which he considers needlessly difficult. What is remarkable in Alves's discussion of arithmetic

6- Walger (2006) states that Thorndike was Alves's advisor and clarifies that this information was obtained from conversation with Professor Boaventura. However, the text written by Boaventura (2002) does not indicate this fact, nor do the authors consulted refer to this claim.

7- Alves does not specify the book.

teaching is his emphasis on the use of word problems, a discussion that Thorndike addresses in his books (THORNDIKE, 1921, 1922).

Slightly further on, Alves adds another observation from the course, stating that

[...] arithmetic is merely a technique or tool for everyday use and *has no benefit for intellectual training, as was believed in the days of the psychology of mental faculties*. It should therefore be taught in such a way as to enable students to compute quickly and accurately. (ALVES, 1933, p. 25, emphasis added).

In the passage above, Alves alludes to the discussion about the theory of mental discipline, of which Thorndike was critical. Thereafter, he quotes from Thorndike but without citing the source:

The simplest arithmetic demands of life certainly do not include matters like cube roots or true discounts, which nobody uses, nor calculating the surface areas or volumes of pyramids and cones and other very specialized calculations. Nor do I see the usefulness of subjects like interest on insurance policies or discounts, which are matters for stockbrokers, cashiers or wealthy people. (THORNDIKE *apud* ALVES, 1933, p. 25).

Because the previous citation is in quotes, it is most likely free translation in Portuguese from one of Thorndike's textbooks used in the course. Soon after Thorndike's remarks, Alves (1933, p. 25) continues with the following thought:

One can see how *far removed from everyday practice* are some arithmetic courses and curricula, as are many of the collections congested with verbose word problems with pretensions to originality. In future work, I hope to analyze the current arithmetic texts used in primary and secondary education in light of educational psychology and sociology, and it seems the Brazilian books are at least as liable as the American ones criticized by Thorndike. (emphasis added).

This reflection makes clear the dialogue Alves seeks to establish between the discussions of the course he attended and the Brazilian reality, which is actually a recurrent practice in his report. Furthermore, he highlights the importance of relating content to real-life situations, criticizing how "far removed from everyday practice" some Brazilian curricula and textbooks were. Studies of his life do not indicate whether Alves conducted his intended analysis of Brazilian arithmetic textbooks, nor were any works published by him on the subject found.

Closing his discussion of the teaching of arithmetic, Alves (1933, p. 26) concludes that "a study of Thorndike's works on math, especially his books *The Psychology of Arithmetic*, *The Psychology of Algebra*, and *The New Methods in Arithmetic*, would be of the utmost importance to Brazilian education." It is important to underscore that Alves makes no mention of Thorndike's publications on other subjects, such as his studies about the teaching of the mother tongue.

With respect to the overall structure of Alves's report (1933), Rocha (2011) compares it to the report written by Anísio Teixeira,⁸ highlighting the differences between the two. In this regard, I concur with Rocha's analysis (2011) that although the two authors attended the same institution at practically the same time,⁹ the experiences and perceptions described in their reports are very different. To Rocha's analysis, I would add that what Teixeira and Alves took away from reading even the same authors and texts sometimes varies: whereas Teixeira devotes most of the text in his travel report to discussing the philosophy of Dewey, Alves hints at his criticism of the American philosopher and the progressive school, a position that he would state more explicitly in his later publications.

I will highlight a few of the many aspects that should be considered when analyzing Alves's report. First, his writing meets the formal requirement of providing an accounting of the studies financed by the government of Bahia; thus, he writes for a specific audience, which certainly determines the form in which the report is presented and his choices of what to report and what to omit. As an official report, it can also be viewed as a persuasive appeal concerning elements to be incorporated in Brazilian education.

It is significant that Alves devotes the first chapter to describing the courses that he took in the Department of Educational Psychology. Simultaneously as he highlights the studies he undertook in his master's degree, he also validates and attributes authority to his education by citing the professors at the TC/CU (who were international references in the field of educational psychology at the time) and discussing the most "modern" practices in the field of education with regard to the psychological approach and the adoption of tests.

It should also be noted that every report is selective, intentionally or not, due to different choices about what to include. Thus, Alves's description of the courses in which he was enrolled emphasizes the aspects that he considers most relevant, omits others, and reveals his interpretations, thoughts, and preconceived notions. Thus, his emphasis on the discussion about teaching arithmetic in the class taught by Thorndike, in addition to his concern with listing the books that should be used, indicates the issues that concerned Alves at the time the report was written.

Previous publications and contact with American works

Isaias Alves's trip to the United States was not his first contact with American authors or with the professors who taught the courses that he would take at the TC/CU. Proof is found in the publications that preceded his trip. In his 1930 publication *Os testes e a reorganização escolar*, Alves lists a series of American and British works, saying that he had learned of these texts in 1924 through Medeiros and Albuquerque's book *Tests*¹⁰, published that year, whereupon he had "immediately sent sufficient funds to London and New York to purchase a collection of works" (ALVES, 1930, p. 241). The bibliography

8- The report of Anísio Teixeira's first trip to America was published in 1928 under the title *Aspectos americanos da educação*.

9- Anísio Teixeira attended the master's degree program at the TC/CU from 1928 to 1929. In his first trip to America in 1927, he attended some summer courses at the same institution (NUNES, 2007).

10- For this work, I use the third edition of *Tests*, published in 1925.

presented by Alves is basically divided into three parts: foreign publications (American and British, totalling 30 titles); collections of tests (*Complete Outfit of Test Material* from the World Book Company, Public School Publishing Co., of Bloomington, Illinois, and collections of tests from the Bureau of Publications of Teachers College); and Brazilian publications on tests (totalling 12, of which *O movimento dos testes* by C. A. Baker and *Testes para medida do desenvolvimento da inteligência* by Lourenço Filho stand out), in addition to references to scientific proceedings and journals.

Of the 30 foreign titles listed by Alves, 21 are found in Medeiros and Albuquerque's bibliography: *Mental and Scholastic Tests* by Cyril Burt; *Mental Tests, Group Test of Intelligence*, and *The New Examiner* by Philip Boswood Ballard; *The Measurement of Intelligence* and *The intelligence of School Children* by Lewis M. Terman; *Intelligence Tests and School Reorganization* by Terman, Dickson, Sutherland, Franzen, Tupper, and Fernald; *Army Mental Tests* by Clarence S. Yoakun and Robert M. Yerkes; *How to Measure in Education* and *How to Experiment in Education* by William A. McCall; *An Introduction to the Theory of Educational Measurement* by Walter Scott Monroe; *Measurement in Higher Education* by Ben D. Wood; *An Introduction to the Theory of Mental and Social Measurements* and *The Teacher's Word Book* by Edward Thorndike; *Educational Measurement* by Daniel Starch; *The Will Temperament and its Testing* by June E. Downey; *Tests for Vocational Guidance of Children Thirteen to Sixteen* by Herbert A. Toops; *A Handbook of Mental Tests* by F. Kuhlmann; *Classes for Gifted Children, Manual of Mental and Physical Tests* by Guy Montrose Whipple; and *Introduction to the Use of Standard Tests* by Sidney L. Pressey and Luella Cole Pressey.

Even in his book *Teste individual de inteligência* (ALVES, 1928), also published after contact with Medeiros and Albuquerque's book, Alves already makes reference to some American and British authors.

Although subsequent to the publication of Medeiros e Albuquerque's *Tests*, it is important to emphasize Anísio Teixeira's two trips to America and his contact with the American literature that was then in vogue, such as Dewey, Thorndike and Kilpatrick, because it is possible that Alves may have had contact with the works of these authors at this time via Teixeira.

Among the authors whom Alves cites in *Teste individual de inteligência* and *Os testes de reorganização escolar* are professors with whom he would study at the Teachers College (Thorndike, Gates, Pintner, McCall), and Thorndike and McCall already appear in Medeiros and Albuquerque's publication, which confirms the circulation of these authors' works in Brazil since at least 1924. Thus, even before his trip to America, Alves was already familiar with the discussions of several authors whose works he would study while pursuing his master's degree.

However, Medeiros and Albuquerque's work should not be considered Alves's first contact with the international literature on educational psychology. There are several connections, but one stands out: his brother's trip to the United States. According to Rocha (2011), Isaias's brother, Landulfo Alves, received a grant from the government of Bahia to study agriculture in Texas in 1920, during which time he corresponded with Isaias about the American education system, indicating the latter's intention of going to America. In one of the letters, Landulfo makes the following observations:

Your idea of visiting the United States to study the educational system used here must be carried out, as I believe you will see much and find much that can be easily applied to our context. [...] I am certain, however, that if you want to move to southern Brazil, your trip to this country should precede this move. You would, I am sure, have an entirely new plan. The practical spirit that Americans imprint on the education of youth is an extremely important point for our educators. No other country can serve as our guide so well as the United States¹¹ (ALVES apud ROCHA, 2011, p. 38).

Based on correspondence between the brothers, Rocha (2011) concludes that Isaias kept himself current with Landulfo's help through the study material that his brother sent him.

A point worth noting is that although Alves may already have been familiar with some of Thorndike's works before his trip to the United States, his first specific reference to the books on teaching mathematics appears in his travel report. Based on this fact and on the manner in which he refers to these books in his report, I conclude that his first contact with these works occurred during his master's degree studies at the TC/CU.

Traces of circulation and appropriation

Assuming that Alves's travel report gave visibility to some American works, specifically Thorndike's publications on teaching mathematics, I seek to identify the presence of this report in library and archive collections and to track references to Thorndike in curricula, articles, and manuals that are somehow related to Alves. However, there is evidence that points to the dissemination of Alves's studies at the TC/CU even before the publication of his report.

In February 1932, Alves gave lectures in a summer school course at the Rio de Janeiro Normal School sponsored by the Superintendency of Public Education of the Federal District. It should be remembered that Alves had taken the post of Technical Assistant Superintendent in that agency in 1931, shortly after his return from the United States, a position that he held until 1932. The summer school course was widely reported in the press. Alves was responsible for the following lectures: "Psychology of Primary School Subjects" and "Mental and Scholastic Tests." The first title matches the title of the course taught by Thorndike that Alves attended during his studies at the TC/CU. According to reports in the *Diário de Notícias* column (01/20/1932, p. 6), the first lecture covered "Laws of learning in the teaching of arithmetic, reading, history, geography, etc.," which resembles the description of the course taught by Thorndike.

A short overview of the topics that would be covered in the lecture appeared as thus in the *Diário de Notícias*:

[...] Dr. Isaias Alves offered us the following information about his first lecture:
I – Group work: plan to follow.

11- Letter from Landulfo to Isaias Alves (Forth Worth, Texas, June 12, 1920). Fragment from Rocha (2011, p. 38).

II – General Psychology – Experimental Psychology – Educational Psychology – The Role of Educational Psychology. Its divisions – Knowledge of the child – Mental growth and individual differences.

III – Psychology of primary school subjects – Laws governing teaching and learning; Law of association; Law of satisfaction; Law of repetition; Risks of neglecting any of the three.

IV – Law of use or repetition; Law of frequency; Law of disuse.

Repetition in education should be:

- a) reciting multiplication tables and grammar rules;
- b) intensive – rote repetition; automatic calculation;
- c) distributed according to the difficulty of the subject matter – excessive effort and consequent giving up;
- d) motivated by the teacher's daily schedule and by knowledge of the objective to be attained;
- e) applied to useful situations – Certain descriptions, store accounts, and shopping for home

V – Law of association – Connect new information to prior knowledge.

Increase in the amount of material understood in the period of attention.

Decrease in the number of repetitions or the time required to learn.

Transfer of skill.

Economics of learning by association: a) gradually increasing the difficulty of the assignment; b) favorable mental attitude; c) linking ideas to appropriate objects and acts; d) coordinating ideas with useful acts; e) explanations of complete and current descriptions; f) use of the project method.

VI – Law of satisfaction or effect: a) satisfaction – forming the habit; b) annoyance. Elimination of useless movements in habit formation – animals and people.

Little experimental evidence for the Law of satisfaction.

Usefulness of the law in learning activities.

- a) it leads to success; b) it satisfies natural urges; c) it satisfies acquired interests.

Application of the laws of learning to school life.

Dr. Isaias Alves said that this first lesson is an overview of topics that will be applied to specific cases in subsequent lessons. (Diário de Notícias, 01/31/1932, p. 5).

Several of the items that appear in the summary published in the newspaper are related to Thorndike's connectionist psychology, beginning with the laws listed that guide the discussions proposed by Alves for the conference, such as the law of use, the law of association, and the law of effect. Moreover, gradually increasing the difficulty of exercises, making arithmetic problems applicable to real-life situations, transferring skills, and drawing association among ideas were topics addressed by Thorndike and even discussed in his textbooks *The Psychology of Arithmetic* (1922) and *The New Methods in Arithmetic* (1921). There are strong indications that Alves based his summer school lectures on the course that he had taken from Thorndike.

An article published in the journal *Bulletin of Public Education* of Rio de Janeiro in 1932 provides further evidence that the discussions and references that Alves encountered during his master's degree studies were beginning to circulate. In his article titled "Educational Psychology," Alves briefly summarizes the courses in which he was

enrolled at the TC/CU, including the course taught by Thorndike, citing the American psychologist's books on teaching mathematics. The article is an abbreviated version of his travel report, with some identical passages.

Taking the collections of the University of São Paulo libraries as an example, a search for physical copies of Alves's travel report turned up the following: three copies in the School of Education (two in the circulating collection and one in the Paulo Bourroul Collection),¹² one in the law school, and two in the School of Medicine. Physical copies were analyzed in search of traces that would indicate how and when they had been acquired by the collections. The copies in the law school and medical school libraries¹³ provided no evidence regarding the nature of their acquisition.

Stamps found in the copies belonging to the library of the School of Education indicate that one came from the collection of the São Paulo Regional Center for Educational Research (CRPE-SP) and the other from the School of Philosophy, Sciences, and Literature (FFCL). An analysis of various books in the collection of the USP School of Education library indicates that when the São Paulo Regional Center for Educational Research was closed in the early 1970s, the books from its collection were transferred to the USP School of Education library. Because the CRPE-SP was created in the 1950s, it can be claimed that the book was originally acquired between the 1950s and the 1970s.

The stamps on the other copy belonging to the School of Education seem to indicate that it first belonged to the collection of the Mathematics sub-section and was later transferred to the School Administration library collection (Figure 2). It is difficult to pinpoint the date of acquisition because the Mathematics sub-section and the School Administration department date back to the 1930s and the FFCL was divided into new institutes and colleges in the late 1960s.

Figure 2 – Stamps on the copy belonging to the School of Education/University of São Paulo (FE/USP)



Source: Alves (1933). Collection of the library of the School of Education/University of São Paulo (FE/USP).

12- The Paulo Bourroul Collection is part of the collection of the Caetano de Campos School, which was donated to the School of Education/University of São Paulo library by the Secretary of Culture, Science, and Technology of the State of São Paulo in the 1970s.

13- Only one of the copies belonging to the School of Medicine was located.

The copy belonging to the Paulo Bourroul Collection bears three stamps on its faceplate: “Ambassador J. C. Macedo Soares Library/Department of Education,” “Main Pedagogical Library/Department of Education,” and “Department of Education/Office of the Director/ July 33.” The Main Pedagogical Library was created in 1930 by Decree nº 4,795 of December 17, 1930 (DOSP 12/18/30). The library was named after Ambassador José Carlos de Macedo Soares by Decree nº 13,966 of May 3, 1944. These first two stamps provide approximate dates, but the third stamp (Figure 3) leaves no doubt: the book was logged in the collection in July 1933.

Figure 3 – Stamp in the copy belonging to the Paulo Bourroul Collection



Source: Alves (1933). Paul Bourroul Collection, library of the School of Education/University of São Paulo.

Although the library collection of the Institute of Education of Rio de Janeiro (IERJ) has copies of books by Alves, it has no copies of his travel report, at least until 1934, according to the library's catalogue. According to an inventory performed by Vidal (2001), the library has more than one copy of the following titles by Isaias Alves: *Os testes e a reorganização escolar* (four copies) and *Problemas de educação* (two copies).

It is interesting to note that despite the absence of Alves's travel report in the library collection of IERJ, an examination of the course curricula shows that Alves appears only in the arithmetic course, with a reference to his work *Testes e escalas*. Both the presence of Alves in the arithmetic curriculum and his absence in other curricula (especially educational psychology) are noteworthy. With regard to arithmetic, however, one must consider the predominance of works about testing and remember that testing is one of the topics covered in the program.

Although the IERJ arithmetic program uses only one book written by Alves, it contains other works that Alves knew and cited in his publications. For example, the arithmetic curriculum contains three titles by Thorndike: *The New Methods in Arithmetic*, *Thorndike's Arithmetic*, and *The Psychology of Arithmetic*. It also contains another work

with which Alves was familiar: *How to Measure in Education*, written by McCall, who was Alves's professor at the TC/CU. The arithmetic curriculum is dated 1935, and it was most likely intended for implementation in 1936. It is interesting to note that the curriculum for educational psychology contains *Elementary Principles of Education* by Thorndike and Gates.

Between 1933 and 1937, the curricula of the Institute of Education of São Paulo include works by Thorndike and Gates associated with educational psychology, which most likely relates to the fact that this subject was taught by Professor Noemy Rudolfer. In fact, Noemy Rudolfer was at the TC/CU simultaneously as Alves and was even noted in his travel report. Did Alves and Rudolfer already know each before their trip to the TC/CU? It is possible to affirm that Rudolfer at least knew about Alves's work, given that she had acquired a copy of his book *Teste individual de inteligência* (ALVES, 1928) in 1929, a copy that now belongs to the library of the Institute of Psychology of the USP.¹⁴

The first mention of one of Thorndike's books related to teaching mathematics in the IESP curriculum appears in 1936, with the recently translated *A nova metodologia da aritmética* (THORNDIKE, 1936) in the course on primary school methodology. The translation appears in the same curriculum again in 1937, this time alongside *The Psychology of Arithmetic*.

The first appearance of the translation *A nova metodologia da aritmética* in the 1936 curriculum raises another question: of all of Thorndike's books on the teaching of mathematics, what prompted the translation of this title? Thorndike and Gates's book *Elementary Principles of Education* was translated the same year, appearing in Brazil under the title *Princípios elementares de educação* (THORNDIKE & GATES, 1936). The latter was published in São Paulo in a translation by Haydee Bueno de Camargo, then a professor at the Institute of Education of São Paulo, a set of circumstances that may help explain the choice of this title. On the other hand, the manual *A nova metodologia da aritmética* was published in Rio Grande do Sul (by Livraria do Globo) and translated by a professor at the Porto Alegre Normal School (Anadyr Coelho), which leaves room for questions about the process that led to the publication of that manual.

The report that Alves published in 1933 is not the first or only reference to Thorndike's work on the teaching of mathematics. Everardo Backheuser cites *The New Methods in Arithmetic* in his textbook *A aritmética da Escola Nova*, also published in 1933. It is interesting to note that in his bibliography, Backheuser also cites two of Alves's works: *Problemas de educação* (1931) and a text published in the journal *Boletim de Educação Pública* in 1932 titled "Testes de aritmética." Alves authored two articles in this issue of the journal. The first, "Psychologia educacional," addresses the courses in which he enrolled in the US, as noted above. The second is the article "Tests of the Federal District – Report of the first collective testing of Reading and Arithmetics in the public schools of 28 school districts and in some private schools: A – READING TEST and B – ARITHMETIC TEST" ["Os Testes do Distrito Federal – Relatório da primeira aplicação de testes colectivos de Leitura e Arithmetica nas escolas publicas dos 28 districtos escolares e em alguns estabelecimentos

14- The copy contains the Noemy Rudolfer's signature and the date of acquisition.

autonomos: A – TESTE DE LEITURA e B – TESTE DE ARITHMETICA”]. Backheuser refers to the second article, specifically noting the part related to the arithmetic tests. Regardless, it can be said that Backheuser was familiar with some of the discussions in Alves’s travel report through the journal, including references to Thorndike’s books. Thus, it is possible that Backheuser heard of Thorndike’s work through Isaias Alves.

Additionally, in 1933, Mario Casasanta publishes an article (CASASANTA, 1933) in the *Revista do Ensino* of Belo Horizonte in which he discusses problem-solving based on Thorndike, though he does not cite any work specifically. The *Revista do Ensino*, published in Belo Horizonte, also contains the oldest references to Thorndike’s scholarship on mathematics found: a 1930 article that notes Thorndike’s arithmetic¹⁵ and a 1929 article that cites *The Psychology of Arithmetic* (MURGEL, 1929). It is likely that these references in the *Revista do Ensino* stemmed from the recent return to Minas Gerais of a group of teachers who had been studying at the TC/CU,¹⁶ as noted in research conducted by Araújo (2010), Fonseca (2010), Maciel (2001), and Reis (2014). One of the teachers, Alda Lodi, devoted herself to the methodology of teaching arithmetic during her studies in New York, becoming responsible for teaching that subject at the Belo Horizonte Teachers College upon her return to Brazil. At the invitation of the Brazilian Education Association (ABE), in 1929, the same professor gave lectures in Rio de Janeiro about the studies that she had undertaken at the TC/CU (*O Jornal*, 12/29/1929, p. 3; *Correio da Manhã*, 12/29/1929, p. 5; *Jornal do Brasil*, 12/31/1929, p. 13); the topic of her lecture was “the methodology of mathematics.” It is likely that she referred to Thorndike’s studies and/or publications during these lectures.

Therefore, Alves was not the first to come into contact with the discussions about the teaching of mathematics promoted by Thorndike, but to the extent that studies indicate, Alves was the first to attend a course taught by him, which also may have lent weight and given greater visibility to the references to the psychologist’s books that appeared in Alves’s travel report.¹⁷

Rocha (2011) also notes the presence of Alves in different locations in the early 1930s, such as the 5th National Conference on Education, held in 1932 in Niterói, in which Alves reported on the subject of homogenization of school classes. Although little data concerning Alves’s presence at events such as those organized by the ABE were found, this is another possible way by which the Bahian educator introduced the discussions and authors he had experienced in America into circulation.

Some considerations

Could Isaias Alves’s report have been responsible for the introduction of Thorndike’s books into the curricula of the Institutes of Education of Rio de Janeiro and São Paulo? It is difficult to say with any certainty. Perhaps Alda Lodi and/or Everardo Backheuser

15- This is the text “Instruções sobre o ensino de arithmetica (Do programma das escolas normaes),” no attributed authorship, published in number 42 of the journal. Available at: < <https://repositorio.ufsc.br/xmlui/handle/123456789/128281> >. Accessed on July 12, 2015.

16- A group of four teachers was sent by the government of the State of Minas Gerais to America in 1927 to study at the TC/CU. The teachers returned in 1929, and some of them took positions at the newly established Teachers College of Belo Horizonte.

17- According to Warde (2002), Isaias Alves was the only Brazilian to attend a class taught by Thorndike.

played a more important role in this regard. However, even if his role was not decisive, Alves at least gave visibility to the American psychologist's work on mathematics, as he did with other authors whose courses he had taken at the TC/CU.

The presence of copies of Alves's report in the University of São Paulo library collections is a strong indicator of the fields in which it circulated. Moreover, the fact that one of the copies had been allocated to the Mathematics sub-section in the FFCL is also significant, perhaps implying that this book was viewed as an important reference in the area of mathematics, most likely due to the references to Thorndike and his publications on teaching mathematics. On the other hand, the manner in which the stamp is scratched out and the fact that the stamp of the School Administration department appears next to it may indicate that the book was mistakenly catalogued initially and later transferred to another collection. Only the libraries' acquisition registries could settle the question of the book's original cataloguing, origin, and acquisition date; unfortunately, these were not located.

Alves's travel report marks a particular period in American education with which Brazilian educators sought to align themselves, a period that was closely associated with psychological theories grounded in experimentation. It is no coincidence that Alves places so much emphasis on discussions about mathematics; after all, they were performed from a psychological perspective in a course taught by Thorndike and based on the results of his studies, which resulted in a series of publications.

In the travel report, all references to mathematics (specifically to arithmetic) are related to tests or discussions undertaken by Thorndike in the field of teaching methodology for primary school subjects. However, why does Alves refer only to Thorndike and simultaneously ignore other authors in vogue who discussed methods of teaching arithmetic, such as F. M. McMurry, G. T. Buswell, H. B. Howell, and D. E. Smith? In Smith's case, it is worth noting that he was a professor at the TC/CU in the field of mathematics who had published extensively on mathematics teaching and was considered an expert on the subject in the United States and other countries.¹⁸ To answer this question, it is important to remember that Alves was associated with the educational psychology program at the TC/CU and therefore took courses offered by that department, resulting in a focus determined by the psychological approach. In this sense, the discussion about teaching methods was framed in terms of psychology, and the main authority at the TC/CU was Thorndike, who enjoyed renown throughout the United States.

Beyond the report on his trip to America and its mentions of Thorndike's work on mathematics, Alves exemplifies the space that educational psychology would come to occupy in training Brazilian primary teachers in the first decades of the 20th century and, consequently, in training mathematics teachers. The report shows one of these facets, the discussion of specific content from a psychological perspective. However, as citations of Alves's own works in education curricula and arithmetic teaching manuals suggest, this dialogue between educational psychology and mathematics education took the form, primarily but not exclusively, of the widespread adoption of tests. In conclusion, educational psychology was the "lens" through which Isaias Alves read and represented the teaching of mathematics.

18- D. E. Smith is widely cited in British manuals on teaching mathematics in the 1920s and 1930s. The copies present in the collection of the Institute of Education/University College London were consulted.

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