

# The reception of Experimental Psychology in Portugal in the early decades of the 20th century: The creation of the first Portuguese Laboratory of Experimental Psychology as a privileged analyzer\*

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## Abstract

On the aftermath of the creation of the Laboratory of Experimental Psychology at Leipzig (1879), a wave of laboratory openings spread out across Europe and the United States, taking on different forms and enduring different fates in different countries. As much as the shared scientific ideal embodied in the Laboratory movement, these national/regional differences played a role in the dissemination of Psychology as a research field and as a profession worldwide. The present paper attempts to briefly outline the reception of experimental psychology in Portugal in the early decades of the 20th century. Although primarily addressing the creation of the first Portuguese Laboratory of Experimental Psychology at the University of Coimbra around 1912, for the sake of perspective it calls on a broader time span, largely drawing on Sílvio Lima's (1949) characterization of Portuguese Psychology from the mid-19th to the mid-20th century.

*Keywords:* Psychology in Portugal, Laboratory Movement, Experimental Psychology.

## Resumen

Tras la creación del Laboratorio de Psicología Experimental en Leipzig (1879), una ola de aperturas de laboratorios se extendió por toda Europa y los Estados Unidos, tomando diferentes formas y caminos en diferentes países. Tanto el ideal científico común encarnado por el movimiento de los laboratorios, así como estas diferencias nacionales/regionales, jugaron un papel en la difusión de la psicología como campo de investigación y como profesión en todo el mundo. El presente trabajo intenta esbozar brevemente la recepción de la psicología experimental en Portugal en las primeras décadas del siglo 20. Si bien aborda principalmente la creación del

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primer Laboratorio Portugués de Psicología Experimental de la Universidad de Coímbra en 1912, para una mejor perspectiva considera un período más amplio, aprovechándose en gran medida de la caracterización hecha por Sílvio de Lima (1949) sobre la Psicología portuguesa entre la mitad del siglo XIX y la mitad del siglo XX.

*Palabras clave:* Psicología en Portugal, Movimiento de los Laboratorios, Psicología Experimental.

## THE DEVELOPMENT OF SCIENTIFIC PSYCHOLOGY IN PORTUGAL: GENERAL CONSIDERATIONS: THE 1911 AND 1977 UPSURGES

Even a quick glance at the development of scientific psychology in Portugal will reveal two major surges, separated apart by roughly 60 years. The first occurred under the impulse of the 1911 reform of the Portuguese universities, in the aftermath of the Republican Revolution (1910). This reform enforced both the teaching of psychology and pedagogy (namely of the experimental sort) and the establishment of a Laboratory of Psychology at each of the newly created Faculties of Letters of the Universities of Coimbra and Lisbon. As will be detailed later, scientific psychology did make its entrance in the Portuguese universities by external political *fiat*, and with a subordinate status as regards the ultimate goal of the Republic: the forging of a *new man*, based on a scientifically oriented pedagogy.

The second upsurge, shortly following the 1974 democratic Revolution, was fuelled by the creation in 1977 of a Diploma in Psychology at the classic public universities (Lisbon, Coimbra, and Porto). This five-year license entitled to pursue the profession of psychologist and was to give way in 1980 to the creation of three Faculties of Psychology and Educational Sciences. From then on, the development of psychology in Portugal fairly corresponds to the «normal» progression of an academically and socially accepted discipline—displaying, on the one hand, ever growing numbers of students, training institutions, academic/applied subfields, research/professional organizations, international links and psychology journals, plus, on the other hand, perplexities and regulatory needs brought about by these fast expanding dynamics (see Almeida, 1993; Gonçalves & Almeida, 1995; Fagulha & Dana, 1997; Neto, 2000).

Quite naturally, the history in the making of this period is by and large a chronicle of progression, drawing on sector-specific overviews (e.g., Gonçalves, 1990; Montenegro, 1992; Lourenço, 1994; Cruz & Almeida, 1987; Jesus, 2003; Braga, 2005; Diniz, Almeida, & Pais, 2007; Gonçalves, 2010), attempts at unravelling organizing trends (e.g., Socksa, Vala, Bairrão, 1981; Machado, Lourenço, Pinheiro & Silva, 2004; Alferes, Bidarra, Lopes, & Mónico, 2009), and argued proposals for significant milestones (Gonçalves & Almeida, 1995; Azambuja, Nogueira, & Saavedra, 2007; Gonçalves,

2009). As mainly the oeuvre of psychologists for psychologists, it embodies a prevailing «internalist» perspective, featuring as its subject the historical development of the «autonomy» of Psychology (not without a Hegelian echo). One contention we make in this paper is that, if for no other reason, considering the reception of scientific psychology in Portugal would justify as a remedial to overly «self-contained» perspectives on the nature and determinants of the field.

## PSYCHOLOGY AND DEMOCRACY: AN INHERENT OR A CONTINGENT RELATIONSHIP?

It has often been written that the development of psychology in Portugal was delayed by the authoritarian regime extending from 1926 to 1974 (e.g., Vala, 1992; Neto, 2000; Alferes et al., 2009). One tacit implication is that Psychology is inherently troublesome for dictatorships and congenial to the democratic regime (which appears to be a core theme of the «internalist» view that Portuguese psychologists entertain of their field).

Reserving the possibility that things may have been different for other «social/human sciences» (but see Almeida, 1968, for a hint at the complexities of the issue, even for sociology), there is scant evidence to support that. Taking, for instance, the development of psychology in Germany during the National Socialist period (1935-1945), Sprung & Sprung (2001) sum up: «many psychologists suffered during the Nazi era, but psychology itself profited... The Nazis had nothing against psychology. On the contrary, they supported it when it seemed to be in their interests» (p. 371). Actually, as the authors further notice, the degree of «certified psychologist» was first instituted in Germany in 1941 (on this, see also Geuter, 1992). Equally talking examples of an affluent psychology under non-democratic regimes might of course be found, keeping to an international perspective.

Convergent indications arise from the history of psychology in Portugal in-between 1911 and 1974, which overarches a «democratic» period until 1926, and an «authoritarian» period after that. This discontinuity in regime didn't change much to the key vectors of the reception of scientific psychology, and it actually accommodated new «relevant manifestations» of psychology as a field of activity: «it is in the period immediately preceding Salazar's regime and in the first decades under his government that relevant manifestations in the realm of Psychology take place» (Borges, 1985, p. 3, our translation). Among such manifestations prior to 1974 one might recall: (1) the creation in 1960 of the *Portuguese Society of Psychology*, which published, after 1967, the *Portuguese Journal of Psychology*; (2) the creation in 1962, by the «Religious Congregations of Portugal», of the *High Institute of Applied Psychology* (ISPA), the first Portuguese school of psychologists; (3) the enlargement of the range of institutions including the teaching of

psychology under a specific/applied view (e.g., *Faculties of Medicine*, the *High Institute of Social Sciences and Ultramarine Politics*, the *High School of Scientific Organization of Work*, the *Institute of Social Studies*, the *High Institute of Military Studies*; see Almeida, 1968; Bairráo, 1968); (4) the creation in 1972 of the *National Union of Psychologists*; (5) the creation in 1973 of the *Portuguese Society of Psychoanalysis*.

As an addendum, even if no autonomous teaching of psychology existed at the Portuguese Universities until 1977, there is a record of a few near-misses to that. According to Gomes (1994, p. 358), bills have been drafted for a License in Psychology and Pedagogy at the occasion of both the 1957 and 1968 reforms of the Faculties of Letters (concerning this latter reform, Marques, 1994, also refers to the project of a License in Psychology which was removed from the law-draft just before publication). In none of these cases the reasons for the near-miss appear to have been political. Rather, they may be conjectured to have been financial and foremost related to the prevailing «architecture» of the Portuguese university (see Gomes, 1994; Fernandes, 1967; 1970; 1971).

All in all things appear well in keeping with the diagnosis issued in 1994 by Correia Jesuino (1994, p. 229, our translation):

Psychologists like to endorse that myth, but it is not evident that psychology is especially bothersome to totalitarian regimes. The causes for the late development [of Psychology in Portugal] seem rather to lie in the particular economical conditions and the structural inertia of the university.

## ZOOMING IN: THE PROXIMAL CONTEXT OF THE CREATION OF PSYCHOLOGY LABORATORIES IN PORTUGAL

### *Silvio Lima's synopsis*

In a short essay entitled *Psychology in Portugal*, Sílvio Lima (1949) proposes a three-period structure for the development of modern psychology until around 1950, which has been consensually accepted since (Bairráo, 1968; Borges, 1986; Abreu, 1990, Neto, 2000). We will draw on his characterization to portray the surrounding scientific/epistemological/ institutional/practical context in which the first Laboratories of Psychology were created in Portugal.

### *First period (mid-19<sup>th</sup> century to First World War)*

It is defined by: (1) the endeavouring of a scientific-natural psychology and (2) the chief role of medical sciences in that process. Among the leading figures there

were Miguel Bombarda (1851-1910) and Júlio de Matos (1856-1922). Both were republican «alienists» with a decisive role in the establishment of Psychiatry in Portugal (Pereira & Pita, 2002), advocated a materialist approach to mental life (based upon physiology, clinical observation and comparative zoology), and argued for determinism in psychology (Luz, 2004). While the reduction of the «psyche» to biology was not complete in Júlio de Matos, the naturalization of psychology in Bombarda took the more radical form of a «monist materialism», based on a *doctrine of the neuron* that he explicitly referred to the work of Ramón y Cajal (also a major influence to the latter psycho-chirurgical viewpoints of Egas Moniz: Cunha-Oliveira & Cunha-Oliveira 2002). In *Neurons and Psychological Life* (1895) he goes on accordingly to recognize the composition and dynamics of the neuron as the «missing link» allowing tracing back human behaviour to nature.

Bombarda was also the most visible promoter in Portugal of a notion of «social medicine» in which the physician addressed, rather than the individual suffering, the infirmities of the entire society (*Biology in the Social Life*, 1900). This conception was to weigh heavily on the development of hygienist practices, expressing in numerous theses presented at the Medical Chirurgical School of Lisbon (Garnel, 2002).

### *Second Period (1914-1941)*

It involves a combination of «critical-experimentalism» and «medical-pedagogism» (Lima, 1949, p. 279), meaning, respectively: (1) the foremost importance taken by the laboratory and its instrumentation, and (2) a widespread concern with learning differences/disabilities which set the tone for most research. As leading personalities, Lima cites Aurélio da Costa Ferreira, Faria de Vasconcelos, Alves dos Santos (the founder of the Laboratory of Experimental Psychology at Coimbra, in 1912) and Matos Romão (the founder of the Laboratory of Experimental Psychology at Lisbon, in 1930).

*Costa Ferreira (1879-1922)* was a physician devoted to the Republican cause, with a keen interest in the «special education and instruction» of disabled/abnormal children. Nominated in 1911 as director of the *Casa Pia de Lisboa* (a social care institution for the orphans), he viewed it as a pedagogical laboratory for establishing the scientific bases of (re)education. There, he created the Medical-Pedagogical Institute in 1915 and the Institute for the Reeducation of the Mutilates in 1917 (addressing issues of professional selection, professional orientation, and scientific organization of labor). He conducted laboratory experiments on topics such as stammering, and comparative group experiments aimed at evaluating the effects of particular pedagogical methods (e.g., upon attention and mental fatigue: see Ferreira, 2003). He taught Pedagogy and Experimental Psychology at the Normal School of Lisbon since 1915. Sílvio Lima depicts him as a hybrid of Binet and Pestalozzi, and as the «founder of the



National Medical-Pedagogy». He died in the very same day in which a proposal was made (sponsored by Alves dos Santos) for his appointment as Professor at the Faculty of Letters of Coimbra (1922).

*Faria de Vasconcelos (1880-1939)* got an international renown as the founder, in 1912, of the *École Nouvelle de Bierges-les-Wavre*, in Belgium, highly prized by Adolphe Ferrière. He obtained a PhD degree in Social Sciences in Brussels. During 1914, he taught Educational Sciences at the Institute Jean-Jacques Rousseau, in Geneva, and worked as an assistant at the Laboratory of Experimental Psychology directed by Claparède. After several pedagogical experiences in Cuba and in Bolivia, he returned to Portugal in 1920. He wrote actively on matters of «national education», inspiring the 1923 reform proposed by the Minister Camoesas (never implemented). In 1925, he became the director of the then founded *Institute of Professional Orientation (IPO)*, a milestone in the development of applied psychology in Portugal, particularly as regards the practice of professional selection and orientation (Pinho, 1986; Abreu, 2003). He taught Psychology at the Faculty of Letters and the Superior Normal School of the University of Lisbon from 1922 until his death, having published his *Lessons of General Psychology* in 1924.

*Matos Romão (1882-1960)* had a background formation in Natural Philosophy and Medicine, was an admirer of Wundt, and went through a training period in the Laboratory of Henri Piéron, in Paris. He was a teacher at the Faculty of Letters of the University of Lisbon since 1912, in charge (among other courses) of Experimental Psychology and Child Psychology. In 1930 he created a Laboratory of Experimental Psychology at that same Faculty, which he directed until his retreat in 1952. He is best recalled by his long-lasting involvement in teachers' formation, and an inflexible defence of psychophysical and statistical methods (Miranda, 2003).

*Alves dos Santos (1866-1924)*, the founder of the First Laboratory of Experimental Psychology in Portugal, was purposely left to the end. Theologian by formation, he was a teacher at the Faculty of Theology of the University of Coimbra from 1901 to 1911 (the year in which the Republic extinguished the Faculty of Theology, not just for pedagogical reasons, but as part of the laicization of the regime). His involvement with the topic of education may have started with the functions he exerted as a school inspector (1901-1906 and 1909). In 1908 he founded the National College of Coimbra, resting on «the most recent progresses of scientific psychology and pedagogy» (quoted in Diniz, 2004). In 1910, he published: *Our primary school: What it has been, what it must be*, reflecting his adhesion to a pedagogical model not far-off from Dewey's perspectives or those of the *École Nouvelle*. A line of continuity, resting on his psychopedagogical concerns, can thus be established with several of his publications subsequent to the implantation of the Republic, such as *The primary teaching in Portugal* (1913) or *The New Education (the basis): Vol. 1. The child's body* (1919).

If one loses sight of his continued interest for the «educational sciences» (widely shared, during the constitutional monarchy, by both monarchics and republicans: Diniz, 2004), the resulting impression is of baffling discontinuity: formally a theologian before 1911 he reappears as an experimental psychologist in 1912; monarchic (with a parliamentary seat) in 1909, he reappears in 1910 as a republican (with political functions in the new regime); an eager opponent of evolutionism in 1901, we resurfaces as its advocate in his *Elements of Philosophy of Science* (1915). These noticeable twists have attracted upon him a few bitter judgments (see Carvalho, 2011), which might partly dissipate if he is primarily viewed as a pedagogue (rather than an ex-theologian, or a newcomer psychologist) who came to consider pedology as the required basis of education. In 1912, upon his return from a mission abroad, the Laboratory of Experimental Psychology of the Faculty of Letters was created and started operating under his direction. Until 1924, the year of his death, he will perform there, largely in connection with his teaching of General Psychology and Experimental Psychology, observations and experiments on memory, attention, mental work, suggestibility, the measure of intelligence (Binet-Simon scale) and anthropometric measurements by the auxanological method (Santos, 1923). His major efforts in between 1912 and 1919 were actually devoted to setting up the anthropometric canons of the growth of Portuguese children (a Portuguese *somatic pedology*: Santos, 1919).

Among the cited personalities, and through his seeming «contradictions», Alves dos Santos is perhaps the one allowing to better grasp the framing of Experimental Psychology in these first decades: (1) priority of the educational problem, dramatized by the Republic as that of producing a *new man* and *regenerating citizenship*; (2) demand, as an upshot of positivism, scientism and empiriocriticism, of a scientific basis for education, as the only proper and acceptable; (3) an ensuing call on experimental psychology as an ancillary science to the consecution of these goals. «The Portuguese psychology has always had, from its inception, a pragmatic character, driven by a pedagogical-sociological goal; trough its inquiries and experimentations, it has always aimed at the mental and ethical formation and reformation of Man» (Lima, 1949, 283).

### *The third period (1941- )*

It corresponds to the development, firstly in the field of neuropsychiatry, of a more individual, clinical, phenomenological, hermeneutical approach, which was to take expression, after 1941, in the reorganization of the *Institute Aurélio da Costa Ferreira* (former *Medical-Pedagogical Institute*) by Vitor Fontes, and of the *Institute of Professional Orientation* by Oliveira Guimarães (Lima, 1949, 281-282; see also Abreu, 2003).

In Lima's view, this corresponds to a new (and corrective) phase succeeding to the prior heavily laboratorial one (p. 281), but he is not explicit on whether both

psychologies might/should coexist, or on the conceivable fate of the former. He may have answered implicitly, anyway: himself a former student of Alves dos Santos, having produced at the age of 24 the first doctoral dissertation in experimental psychology in Portugal (1928), he won't be back to doing experimental-laboratorial psychology again. Might this be his way of expressing a fundamental problem with the laboratory objectives? Were it case, a more colourful personal tone might be added to the following statement by him: «One might say that the Portuguese psychologist abhors the purely theoretical, logical-speculative labour of the laboratory, dissociated from the problems of the real, concrete life» (Silva, 1949, p. 283).

#### THE LEGAL REFORM OF THE UNIVERSITIES IN 1911 AND ITS IMPLICATIONS: A LABORATORY OF PSYCHOLOGY BY THE FORCE OF LAW

The most direct determinant of the creation of Laboratories of Psychology in Portugal was the reform of the universities by the new republican government, in 1911. We will only pinpoint a few relevant aspects (see Abreu, 1990; 1991; Gomes, 1994). (1) It created the Universities of Lisbon and Porto, in addition to the one at Coimbra. (2) It established Faculties of Letters at both the Universities of Lisbon and Coimbra (the one at Coimbra replacing the former Faculty of Theology). (3) Attached to the Faculties of Letters and of Sciences, it created Superior Normal Schools, with the goal of preparing teachers for the primary and secondary schools. (4) It introduced in the Faculties of Letters the courses of *Experimental Psychology* (group of philosophy) and of «Philosophy 1» (common to all groups), later renamed as *General Psychology*. (5) It introduced the course of *Child Psychology* in the Superior Normal Schools. (6) It established the mandatory character of practical exercises of *Experimental Psychology* (for students of philosophy at the Faculty of Letters), and of *Experimental Pedagogy* and *Child Psychology*, for those of the Superior Normal School. (7) It required the existence at each Faculty of Letters of a *Laboratory of Psychology*, as support to the philosophical and to the pedagogical studies. (8) It established further that the teacher in charge of *Child Psychology* (at the Normal School) would be the one in charge of *Experimental Psychology* (at the Faculty of Letters), or else a teacher or assistant of the Faculty of Medicine.

The ensemble of these points unmistakably documents the setting up of Experimental Psychology at the universities as an adjuvant of teachers' formation (Gomes, 1997; Diniz, 2004). It was nevertheless within this negative framework that claims for an autonomous teaching of Psychology at the Universities were later to emerge and be explicitly articulated (e.g., Curvelo, 1945; Fernandes, 1970; see Bairráo, 1968). Some features of the reform may have contributed to that, such as the possibility opened for license and doctoral dissertations on topics of Psychology. Two significant cases in point were those of Serras Pereira, who presented in 1923 the first Portuguese doctoral



dissertation in psychology to the Faculty of Letters of Coimbra (Gomes, 1994), and of Sílvio Lima, who in 1928 presented to this same Faculty the first Portuguese doctoral dissertation in experimental psychology, sponsored by E. Claparède and P. Bovet: *The problem of recognition: A psychological theoretical-experimental study* (1929; see Abreu, 1979; Silva, 1979; Pinto, 1992, 1993). Especially after 1957, in which a *Seminar* was created to that effect, more and more students of Philosophy came to produce license dissertations in Psychology, progressively shaping a sense of academic identity (Sá, 1971; Gomes, 1994). «Despite its modesty, it was this teaching [of psychology and pedagogy at the Faculties of Letters] that created the atmosphere and contributed to forming the academic staff that made possible the creation ..., at the three classic universities, of Faculties of Psychology and Educational Sciences» (Gomes, 1994, p. 370)

As for the Laboratories of Psychology, they took their part in this overall movement. Why was the law abided to as of 1912 at Coimbra, and a Laboratory of Psychology not created at Lisbon before 1930? Similarly, during the short-lived existence of the Faculty of Letters at the University of Porto between 1919 and 1929, the issue of a Laboratory was brought about by Newton de Macedo, but never taken to the stage of implementation (Pina, 1996, p. 123; a Laboratory of Experimental Psychology was eventually created in 1964 after the re-foundation of the Faculty of Letters in 1961).

Differences in personal initiative might be evoked at this point. However, another possibility exists, which highlights a more symbolic facet of the Laboratory (Capshew, 1992). The circumstances in which the republican reform broke the monopoly of the University of Coimbra and extinguished the Faculty of Theology, amidst harsh criticism to their scholastic and Jesuitical character, may have originated a particular strive for legitimacy, of which the setting up of the Laboratory become a part. The hypothesis is rendered more plausible in view of the events staged by the minister Leonardo Coimbra in 1919, who attempted the transference of the Faculty of Letters—on grounds of the «scholastic», «bookish» teaching delivered there—from Coimbra to the University of Porto. While the Faculty of Letters was under attack, and an anonymous booklet taking its defence was circulated, which emphasized the practically oriented, undogmatic teaching of Psychology and the initiation to the scientific processes provided at the Laboratory of Psychology (Carvalho, 2008).

## THE LABORATORY OF EXPERIMENTAL PSYCHOLOGY OF THE FACULTY OF LETTERS OF COIMBRA: CREATION AND «STYLE» OF WORK

### *Creation: the mission abroad of Alves dos Santos*

To comply with the 1911 legislation, the School Council of the Faculty of Letters of Coimbra charged Alves dos Santos of a scientific mission abroad to «study the

organization and functioning of psychology laboratories and acquiring the essential apparatus and instruments for the installation at Coimbra of one such laboratory» (Santos, 1923). With a recommendation letter of the Dean Mendes dos Remédios to the Dean of the University of Genève, he left Coimbra in early August 1912, with the intention of spending a fair share of time studying under the guidance of E. Claparède. On his way to Genève, he visited schools in Marseille and the *Laboratory of Psychology and Pedagogy* at Lyon, where he took contact with the work of P. Nayrac on the psychometrics of attention (a topic he will later elect for study at Coimbra). Arrived at Geneva before classes were started, he was permitted to receive training at the Laboratory of Psychology during the last weeks of September, under the guidance of two of Claparède's assistants. He was then introduced to the methods and techniques of threshold determination (esthesiometry and algometry), reaction time measurement, memory measurement, sphygmography and plethysmography, assessment of visual, weight and volume illusions (Santos, 1913). He used his spare time to visit primary and secondary schools as part of a plan to publish a report on the organization of public teaching at Switzerland (Santos, 1913).

From around mid October to mid November he took a surprising number of courses both at the university and at the newly created Institute Jean Jacques Rousseau, among which the 10-lessons course of *Psychology and Pedology* by E. Claparède, and the 7-lessons course on *Children's Somatic Evolution* by P. Godin (with whom he learned the auxanological method). Claparède and P. Godin exerted a perdurable influence on him. He credits the first with having largely dissipated his perplexities regarding the legitimacy of «psychometry» –the verification of the *psychophysical laws* that he could do himself at the Laboratory of Geneva played a critical role on this, as he writes (1913, p. 15), suggesting a solution by «practice and example» rather than of the intellectual sort. The work of P. Godin will inspire his latter efforts at setting up a Portuguese Somatic Pedology, which will get the best of his attention upon his return to Portugal.

While at Geneva, he prepared the purchase of the instruments/equipments with which to furnish the future Laboratory at Coimbra. To that end, he consulted with J. Ioteiko, the founder, in that same year, of the *International Faculty of Pedology* at Brussels, and with Claparède, having contacted on their advice several equipment manufacturers (e.g., Drost, Zimmerman, Peyer & Favre).

After leaving Geneva on the 19<sup>th</sup> November, he spent 12 days in Paris, during which he visited, among others, the *Laboratory of Psychophysiological Psychology*, guided by Henri Piéron (from whom he received information on the functioning of some apparatus), and the *Laboratory of Normal Pedagogy* of the primary school of Grange-aux-Belles, founded by Binet. It was during this stay that he bought the selected laboratory equipments at the Maison Boulitte and a collection of books on experimental psychology and laboratorial techniques.

As regards the equipment, he provides a list of 28 items (Santos, 1913; Santos, 1923), which comprised everything needed to implement the graphical method of Marey (e.g., kymograph, tambours, rubber tubes and other auxiliary devices), time markers, enabling for the study of «psychocronometry» (e.g., d'Arsonval's chronoscope, Jacquet's chronograph), psychophysiological instruments (e.g., Marey's sphygmograph and pneumograph, Hallion-Comte's pletismograph), apparatus for the study of muscular work, effort and fatigue (e.g., Mosso's ergograph, Chéron-Verdin's dynamograph) and sensorial psychophysical studies (e.g., Toulouse and Vaschide's myoesthesiometer, Michotte's esthesiometer). The books comprised manuals of Experimental Psychology (e.g., by Judd, Titchener, Toulouse, Vaschide & Piéron), books on specific methods and techniques (e.g., on the graphical method, by Marey; on the chronometer of d'Arsonval, by P. Phillipe), and more general books on the topics of experimental psychology, pedagogy and measurement (e.g., by Binet, De la Vaissière, Sante de Sanctis, Claparède, etc.; see Santos, 1913, 1923).

At the beginning of December 1912, he was back at Coimbra to start installing the new Laboratory of Experimental Psychology, which began operating around February 1913, provisionally located at the Institute of Coimbra.

### *The Laboratory's functioning: which «style» of laboratorial work?*

In 1914, the Laboratory was changed from its temporary location at the Institute of Coimbra to the building of the Faculty of Letters (still under construction), where it was met with logistic difficulties «partially» overcome in 1916. Alves dos Santos complains about the lack of a dark chamber and an insonorized room, which he had envisioned in his original plan, and of the lack of an electric board allowing varying the current intensity, as required by certain instruments (Santos, 1923, pp. 44-45). He is fully aware of the affiliation of the Laboratory to an «overwhelming movement» (p. 62) which spreads worldwide (for illustration, he convokes Piéron, Claparède, Marbe, Külpe, Müller, Wundt, Sanford, Pavlov, Michotte, Simarro, Witmer, etc.), and he explicitly defines psychology, as envisioned in the laboratory, as «the natural science of the processes of mind» (p. 38). To the original set of equipments he had meanwhile joined the Hipp's chronoscope (which could go to the thousand of a second) and some instruments for sensory psychophysics, as well as «tests for the study of attention, intelligence, suggestibility, etc.» (p. 51). He conceives of the activity of the Laboratory under the overall label of «psychometry», which he divides, following Claparède (1907; 1908), in *psychophysics*, *psychocronometry* and *psychodynamics* (psychophysiology). To that, like Claparède, he adds psychostatistics, described as the application of statistical methods in quantitative psychology (Santos, 1923, pp. 21-23).

Work at the laboratory was to a large extent didactic, aimed at documenting principles, methods and results to the students of General Psychology, Experimental Psychology, Pedagogy and Child Psychology (see Gomes, 1990, pp. 26-27). But, either Alves dos Santos himself or students under his guidance also ran experiments seeking to highlight, in his own words, «some of the problems pertaining to the *cerebral mechanism*, and to the *dynamics of mind*» (p. 65). A few of these experiments, deemed as more important, were reported in *Experimental Psychology and Pedology; works, observations and experiments conducted at the laboratory* (Santos, 1923). All of them are from Alves dos Santos, who deferred the publication of those from students to a later volume (p. 66), and thus best illustrate the «style» of experimental work conducted at the laboratory. As a final observation, they do not involve the anthropometric measures of the growth of children, or *somatic pedology*, which were published in distinct books (Santos, 1917; 1919).

These experiments concern: (1) the psychometrics of attention; (2) the scientific study of mental work, using Kraepelin's sheets; (3) tactile discrimination; (4) the time of association of ideas; (5) mnemometry; (6) studies of child suggestibility. Particular aspects of these experiments, namely the systematic appeal to the «auto-analysis» of participants, were previously discussed in Abreu (1990; 1991), and the experiments on mnemometry have already been the subject of a critical analysis in Pinto (1992).

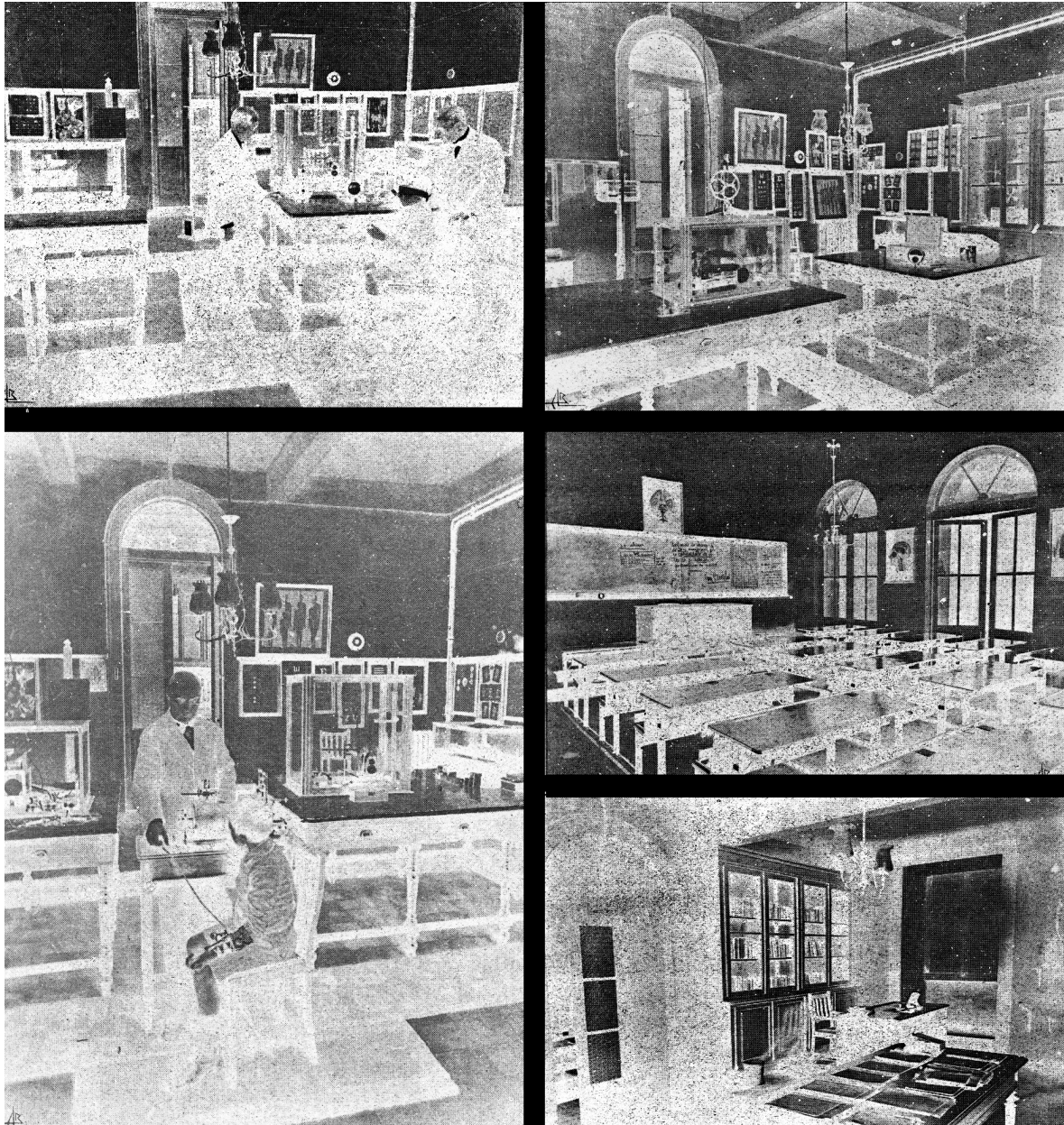
Our point here is to briefly highlight a particular dissociation between the *naturalization means* (apparatus and techniques) afforded by the Laboratory and the *goals* set by Alves dos Santos to his experiments, which would seemingly call on different means (a proper *psychotechnology*). We will take to that effect his psychocronometric research, aimed at studying attention on a subject with an «unstable, almost unbalanced character» (Santos, 1923, p. 79). The measures used were reaction times to contact and to contact with an interspersed sound, in conditions with and without delay. The analysis of Alves dos Santos is mostly concerned with the amplitude of variations in reaction time observed across trials, and ends up with a discussion of the best summary index for the results—concluding, just as it had started, by asserting the «dispersive spirit» of the participant, taken as a hallmark of his «psychic structure» (Santos, 1923, p. 95).

Three noteworthy features of this approach, common to all other reported experiments, are: (1) the neglect of processes and mechanisms (with a rather partial exception, more apparent than real, in his studies on mnemometry), (2) a foremost concern with the characterization of overall character—»psychic structure» or «psychic physiognomy» (p. 190), dominated by considerations of «nervous equilibrium», and (3) the lack of a palpable supplement (added value) regarding what might be obtained by educators from «didascalical» evaluation (p. 76). One reason lying behind this is a disconnection between the «laboratory objectives» and his own practical objectives as a republican pedagogue (with a foremost concern in educating for character and self-government).



FIGURE 1

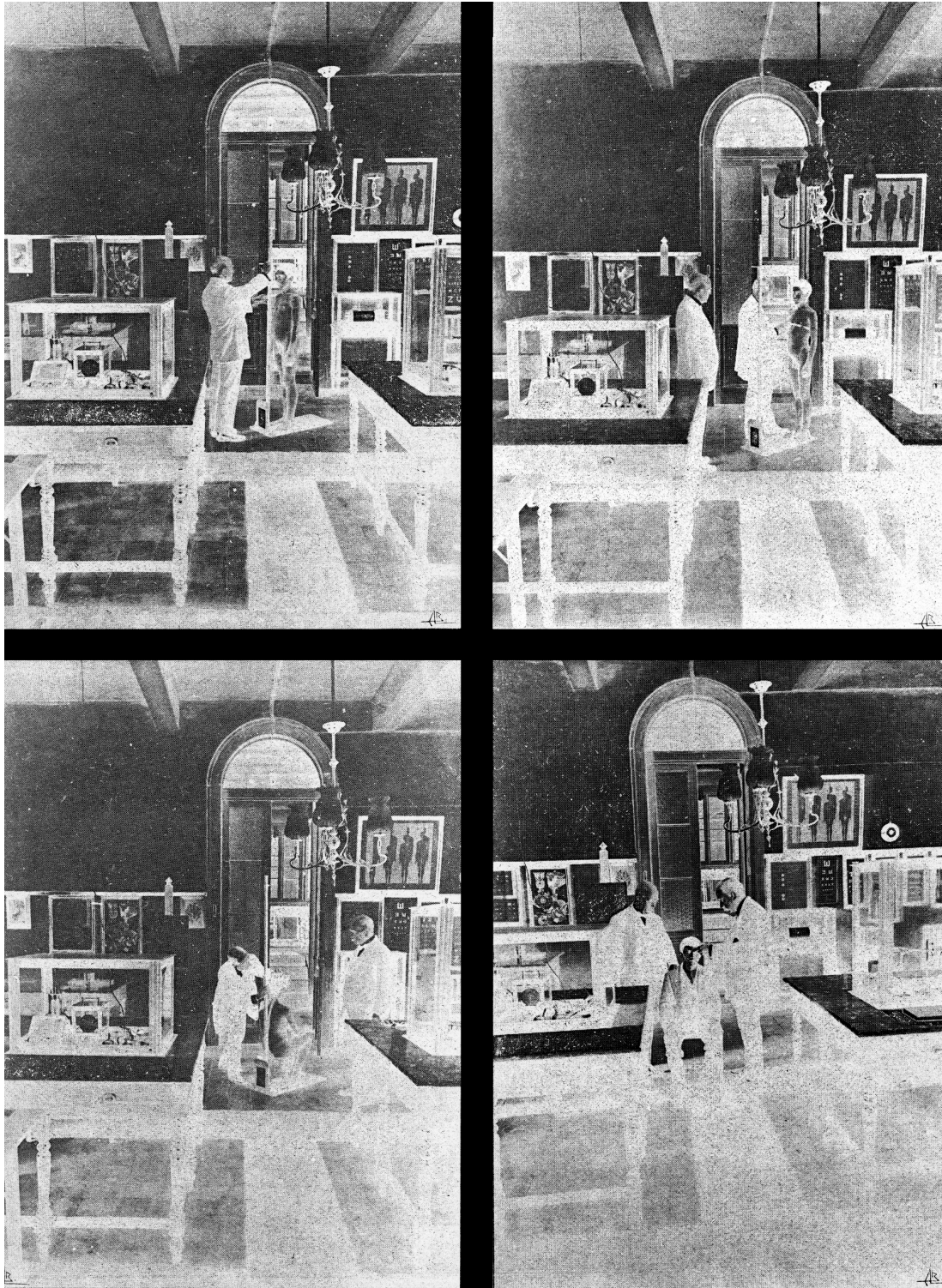
The Laboratory of Experimental Psychology at the Faculty of Letters of Coimbra



*Right panels, from top to bottom: main room; conference room; director's office (also Library and Archive). Left panels, from top to bottom: reaction time experiments with the chronoscope of d'Arsonval (Alves dos Santos standing on the right); radial sphygmography performed by Alves dos Santos using the Marey's sphygmograph and kymograph (recording tambour).*



FIGURE 2  
Child auxanometric studies at the Laboratory of Experimental Psychology



*Top panels, from left to right: height to the vertex (standing up) and thoracic perimeter. Bottom panels, from left to right: length of the bust and cranial diameter.*



Contrary to Binet, who turned away from the laboratory to arrive at a new practical measure (a psychotechnology) of complex individual differences (Zazzo, 2000), he kept a reference to the standard laboratory instruments and tasks, while adopting a crude «psychotecnic» viewpoint as regards the variations in «character». This dissociation between *naturalization techniques* and *psychological technology* is probably a general and fundamental one (Abreu & Oliveira, 1999), at the core of the distinction between basic and applied psychologists. What seems particular to the situation in which Alves dos Santos has come to find himself is that those same circumstances preventing him from fulfilling his role as an applied psychopedagogue, also prevented him from taking advantage of the naturalization techniques of the Laboratory to implement basic analytical research.

## CONCLUSION

Unlike in Germany, where Experimental Psychology was born within the borders of the University (Danziger, 1990), or in France, where it grew up outside those borders (Nicola & Ferrand, 2002) and found it difficult to penetrate them, Experimental Psychology, including the Laboratory as its chief symbol, was enforced at the Portuguese universities by an external decision of the new Republican regime. With this enforcement also came the subordination of Experimental Psychology to the educational tasks of the Republic (forging of a new Portuguese character and citizenship), and its ancillary status as regards Pedagogy and Pedology. In the plan of Alves dos Santos, the Laboratory of Experimental Psychology at Coimbra was first to take care of Mental Pedology, while Somatic Pedology ran in parallel, resting on the auxanological method, these two facets converging into a National Pedological Science. In this, he overlooked an important dissociation between «laboratory objectives» and the «practical goals» of applied psychology (Danziger, 1990). Contrary to Binet (Zazzo, 2000), he kept to the use of standard laboratory tasks as a basis for vague evaluations of «character» («nervous equilibrium» and «strength of will»), of doubtful added value for teachers, which cut him off from a link with concrete pedagogical problems (Fernandes, 1979, p. 39). On the other hand, the strict subordination of the Laboratory to sociological-pedagogical goals (even if of a mostly general sort, as the formation of «character» and the promotion of «regulated autonomy», central in the republican education) made no room for any *supplement* enabling basic research problems (see Lima, 1949, p. 283). The early Laboratory of Experimental Psychology at Coimbra had no immediate continuators after the death of Alves dos Santos in 1924. It remains as a pioneering initiative, certainly deserving of a place in the History of Psychology, but which was not directly instrumental in supporting the development of experimental psychology in Portugal.

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