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"Every man in his due place": the biotypological solution to the conflict between productivity and health (Argentina, 1930-1955)

"Todo hombre en su justo lugar": la "solución" biotipológica al conflicto entre productividad y salud (Argentina, 1930-1955)

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ABSTRACT One of the ideas in the name of which the connection between wage labor and health/illness is rationalized in the present asserts that there is a beneficial relationship between organizational efficiency and worker health. In contrast to its apparent originality, this articulation is not new at all. Between 1930 and 1955 in Argentina, a group of physicians upheld that if biotypology programs were implemented in the workplace, it would be possible to improve performance and reduce costs associated with labor accidents and occupational illness, while at the same time looking after and improving the lives of workers. This article analyzes the topics and strategies that formed the occupational biotypology program (such as vocational guidance, personnel selection and human motor surveillance), as well as the objections to the program formulated at the time, as a way to contribute to more contemporary critiques of the rationalities that in the present seek to placate the conflict between company productivity and worker health.
KEY WORDS History; Biotypology; Occupational Health; Efficiency, Organizational; Argentina.

RESUMEN Una de las ideas en nombre de las cuales se aspira a gobernar, en el presente, la tensión entre el trabajo asalariado y la salud/enfermedad, afirma que existe una relación "virtuosa" entre la productividad organizacional y la salud de los trabajadores. Contra toda apariencia de originalidad, tal articulación no es totalmente novedosa. Ya entre 1930 y 1955 en la Argentina, una serie de médicos sostenían que, de aplicarse en los lugares de trabajo el programa de la biotipología, se conseguiría aumentar el rendimiento y disminuir los costos ligados a los accidentes y enfermedades laborales y, simultáneamente, cuidar y mejorar la vida de los trabajadores. En este artículo se analizan los temas y estrategias que configuraban el programa de la biotipología del trabajo en el país (como la selección y orientación profesional y la vigilancia del motor humano), así como las objeciones que en su momento se plantearon contra él, como forma de contribuir a la crítica de las racionalidades que, en la actualidad, apuestan a suturar el conflicto entre la productividad empresarial y la salud de los trabajadores.
PALABRAS CLAVES Historia; Biotipología; Salud Laboral; Productividad Organizacional, Argentina.

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INTRODUCTION: HISTORICAL ANSWERS TO PERSISTING QUESTIONS

In these last years, Argentine historiography has begun to study of the development of eugenic knowledge and institutions in the country. Several studies have focused on the analysis of mechanisms by which ideas circulated, the contact between the intellectual and political elite of Argentina and the European elite, the translation of such theories into public policies and State apparatuses, and so on (b). One of the topics that has been prioritized in these studies is biotypology (7-12). Developed in Italy after the First World War by Nicola Pende, an endocrinologist educated in the Lombrosian school but highly influenced by Thomistic thought, biotypology was conceived of as the discipline by which it was possible to bring to the Latin world – Italy, Spain and also Argentina – the practical implementation of the Eugenics developed by Francis Galton (7).

This discipline aimed at classifying taxonomically each individual, in order to determine the "constitution" or "biotype" considered to be the synthesis of the morphological type or external shape, temperament (mood and bodily functioning), personal character (affection and volatility), intelligence and individual heredity (13). It was believed that this knowledge would allow for the discovery of not only particular aptitudes but also "diatheses," the hidden morbid predisposition each body inexorably held.

By 1923 in Argentina, the medical corporation had already demanded the implementation of the program designed by Nicola Pende (9), however the exchange among the vernacular elites and their European counterparts intensified after the coup d´état in 1930. This can be partly explained by the fact that José Félix Uriburu, the military leader of the coup, sympathized with Italian Fascism, whose political project provided for the installation a structure of corporative representation (14). In the year of the coup, Nicola Pende visited the country invited by the professors of Clinical Medicine at the Universidad Nacional de Buenos Aires. At the same time, Argentine physicians Octavio López and Arturo Rossi (c) departed for Italy commissioned by Uriburu in order to learn more about the functioning of the Biotypologic Orthogenetic Institute (*Istituto Biotipologico Ortogenetico*) located in Genoa (d). That "journey of initiation" would result in the creation, in 1932, of the Argentine Association of Biotypology, Eugenics and Social Medicine (*Asociación Argentina de Biotipología, Eugenesia y Medicina Social*), a private organization funded by the State in which both liberalist and catholic groups converged – a confluence made possible by the relativization of the Darwinian fundaments of Eugenics that characterized Pende's school (10).

The failure of Uriburu's corporatist project did not mean the end of the biotypological program. On the contrary, both the neo-conservative government of Argentina's Infamous Decade and Peron's government supported – albeit with important nuances – some of its projects and ideas. The Association received assistance from the conservative governor (and hygienist physician) Manuel Fresco and the national president Roberto M. Ortiz. In 1933, Arturo Rossi founded the first Biotypological Polytechnic School, where, among other disciplines, occupational medicine was taught. Similarly, the first Congress of Sociology and Occupational Medicine, organized by the Biotypological Polytechnic School in 1939, received the endorsement of the Executive Power. In 1943 biotypology became an official course of study and, the following year, the school became the National Institute of Biotypology and Related Subjects (*Instituto Nacional de Biotipología y Materias Afines*), an organization under the jurisdiction of the Office of Health Policies and Culture (*Dirección de Política y Cultura Sanitaria*) of the National Public Health Secretariat.

The eugenic discourse was not outside the scope of the Peronist health policy. The most important intellectual authority in this policy, neurosurgeon Ramón Carrillo (Public Health Secretary between 1946 and 1949 and later Health Minister until his resignation in 1954), included Nicola Pende and Alexis Carrel (9,17) among his academic points of reference. During those years, the activities of the National Institute of Biotypology were prioritized within the government. Carrillo's aspiration was to transform the Institute into a sort of "Argentine Institute of Man" which would reproduce the experience of a similar institute in Vichy France (e).

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This article analyzes the discursive production of physicians such as Arturo Rossi and Donato Boccia (f), responsible for developing work biotypology in Argentina, as well as some of the reactions their proposals provoked within the medical corporation. This article utilizes archival sources and enters into dialogue with historiography, but its true focus is on a number of problems relevant in the present. Although connected to concerns regarding the "future of human nature" (19), the questions guiding this study center on the ways used to manage the conflict between capitalist demands of productivity and the protection of worker health.

We know that, faced with the danger of "otherness" – be that other an immigrant or a *descamisado* [poor Argentine worker] migrating from the country to the city – biotypology was organized as a strategy of social defense (10,17). That reactive role, added to the effective answer that biotypology seemed to offer to the population "crisis," the seduction that the technocratic modernity of Fascism seemed to exert on the local elites (20 p.274-275), as well as the affinity between the precautionary paradigm it embodied and the preventive *ethos* typical of social medicine, allow us to understand why, even when the corporatist project had failed, biotypology was still in force during, at least, the first two Peronist governments.

Without disregarding its importance in relation to the problems of otherness and the quantity and quality of the population, biotypology is presented in this article as yet another effort to combine the demand for the greatest possible work productivity with the imperative of maintaining and improving the population's health. This imperative was supported, at the beginning of the twentieth century, in numerous areas (the Social Doctrine of the Catholic Church, liberal social reformism, socialism, the science of work, social medicine, etc.).

This article is organized as follows: in Section I the mission of biotypology in relation to labor is introduced in general terms. Sections II and III analyze in detail the functions of professional orientation and selection and the prevention of accidents and work-related diseases. Section IV discusses the concept of "worker" that emerges from the biotypological program, indicating its coexistence with the "human engine" metaphor (21), and offers a brief conclusion.

I. THE MISSION OF BIOTYPOLOGY REGARDING LABOR

The interest of Argentine supporters of biotypology in the working population and, in more general terms, in the organization of industrial labor, formed part of the very foundation of the Argentine Association of Biotypology, as one of its original sections was occupational medicine. Historically, workers – along with schoolchildren, women, criminals, soldiers and young people – were one of the preferred populations to which social hygiene policies, eugenic intervention and experiments with different identification technologies were directed.

Donato Boccia began teaching the discipline at the Polytechnic Biotypological School in 1934. Theoretical-practical courses were taught at the school to train "biotypologists" (basically, school teachers, social workers, hygiene agents) to work in different environments such as factories, schools, and hospitals. Although it was organized as a "versatile" science, in which biology, hygiene, biosocial prophylaxis, political sociology and social biology intertwined (22 p.2), the foundation of biotypology was constitutional medicine (23). This aspiration of colonizing medical thought explains Boccia's reproach, in 1949, of the medical community for the lack of physicians with biotypological and psychotechnical knowledge working in factories, capable of leading the "army of human solidarity" trained at the Biotypological School to perform tasks related to the selection, surveillance and tutelage of workers (24 p.676). His hope that, through Carrillo's intervention, the National Institute of Biotypology and Related Subjects would fill this hole in the technical training of physicians was never realized. During Carrillo's administration a transformation in the contents of the training courses was carried out in order to introduce give the work of biotypologists a more practical inclination (25). By 1950, when it was clear that the professional aspirations of biotypologists overlapped with the incumbencies of doctors, the Executive Power solved the conflict by regulating the activity of the biotypologists, stipulating that they could work without being supervised by physicians only when they examined healthy people (10,17).

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Whereas social hygiene at the beginning of the twentieth century sought to limit freedoms in the name of public health, occupational medicine, as it was conceived of by the biotypologists, was filled with holistic slogans and metaphors (g). Since its foundation, the Argentine Association of Biotypology had aspired to become a sort of "guiding mind" for the physical and psychic harmony of man and urged citizens to subordinate their selfish interests to the common good (28). In this sense, Boccia (29) defined capital and labor as forces that produced wealth for the national community and for social happiness. He advocated harmony between both factors (rejecting explicitly the doctrine of historical materialism) and insisted on the principle of solidarity as what linked the different components of the social organism. Inspired by the ideas of the Jesuit priest Agustín Gemelli (h), his understanding was that worker protection should not overlook the worker's necessary inclusion in a series of more general groups: the family, the nation, religion, the office, etc.

Through the mediation of the State, called upon to "empower" biotypologists, biotypology was presented as a technique adequate for defending society against the numerous dangers which threatened to dissolve it (unhealthy immigration, Communism, worker dissatisfaction) and to prevent – by counteracting and moderating – society's inevitable tendency toward biological decline and cultural and national decadence (i).

This vocation to organize and defend society "from the top" through a supposedly scientific strategy would be particularly criticized by the "heterodox" physician (27) Bartolomé Bosio, who highlighted the absence of workers at the first Congress of Sociology and Occupational Medicine (31 p.1337). In that forum, Rossi introduced the ambitious proposal for establishing in Buenos Aires a National Institute of Biotypology and Occupational Medicine, similar to the institute in operation in Italy. Although that project was never carried out, during the congress a number of proposals regarding the management of working populations were presented that would be later incorporated by the Peronist government. These proposals included the production of biotypological profiles of workers, professional selection and orientation, factory cafeterias, the creation of an occupational hospital, among others.

With respect to the discussions that took place during this congress, Bosio (31,32) observed that the project of modeling the production "biologically" was to be implemented in a society already organized according to capitalism and did not seek to transcend class determination. This project was not about affecting the freedom of the bourgeoisie, but rather aligning social forces for a more general enterprise greater than these forces: This enterprise was, of course, the "Nation," but at the same time the "national economy," to which biotypology offered its own productivist utopia.

From this perspective, the interest in workers can be explained by the fact that they made up (along with other populations) the "human capital" of the Nation, the biological-economic-social asset which was the primary resource of the national economy, the State military power, the balance and progress of society and culture. The actions related to prevention and assessment were justified on the grounds of "political arithmetic" (33), that is, because they were fundamental to the position Argentina occupied in competition with other nations of the world.

This "holistic" notion of human capital – as opposed to the "individualistic" meaning the term would acquire in neoliberalism (j) – held together many of the projects which, during the 1930s, 1940s and 1950s, were concerned with the quantity and quality of workers and their productivity. The demonstration of the social value of human capital allowed the protection of workers to be organized without sentimentalism. Following this line of thought, and under the influence of insurance medicine and social medicine, arguments related to the calculation of the costs of accidents, occupational illnesses and absenteeism would start hold weight in Argentina. In 1933, the director of Military Health pointed out that each healthy individual had a "cost value" (the person's past) and a "production value" (the person's future) given by the capacity to produce and to reproduce (34). Some years later, Boccia (29 p.971-974) highlighted the convenience of protecting labor for economic reasons (by virtue of its productivity), moral reasons (as a way of elevating the cultural and moral level of the masses), social reasons (because as vital elements of the social machinery, workers were indispensable to the conservation and progress of society) and also

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political reasons: this was a way to fight the social restlessness, discontent and misery mobilized by the "the propaganda seeking to undermine discipline" and to assure the harmony between capital and labor that so benefited the community and the State. A similar idea inspired the thoughts of the Peronist Health Minister:

> We want the citizens' health to be cared for so that human beings can achieve their full capacity, for their own benefit, the benefit of their family, and the benefit of the Nation [...] in order to maintain and increase the production power of our country, which is, ultimately, to make its freedom and sovereignty strong and invulnerable. (35 p.99) [Own translation]

The agenda of biotypology with regards to labor was ambitious. Founded on a productivist paradigm that included Taylorism, Fascism and Soviet Communism (21), it aimed to overcome, using the weapons of science, the limitations, resistances and imbalances that bodies had historically generated in detriment to the utopia of infinite performance. To that end, it had a labor rationalization program that, although different from Taylorism, shared with it four principles: it presented itself not as mere collection of individual cases but as a scientific doctrine; it presumed harmony instead of discord; it presumed cooperation instead of individualism; and against any type of traditionalism it was committed to the maximization of performance. However, it differed from the excessive mechanism found in the method created by Taylor which neglected the study of the worker from a biological point of view. Labor management based only on timekeeping disregarded the normal rhythm of human activity and the psychobiological limits set by the human body in opposition to any type of effort at standardization. This method was particularly unsuitable to the mentality of the "Latin" worker who, possessing "marked individuality in the productive process and marked creative tendencies" (15 p.470), could not be treated like a machine. Biotypology offered, as an alternative, the principle of "improved use of productive energy within the physiological limits of human activity and in harmony with the constitutional weaknesses and capacities of each individual" (29 p.148).

We have thus outlined the work biotypology program, which we will analyze in greater detail in sections II and III. Biotypology would therefore "select" the bodies fit for carrying out specific functions, an end achieved by way of medical examinations and anthropometric and psychological tests. Such selection would require a previous task of a clearly pedagogical nature: professional "orientation" for children and adolescents using the acclaimed psychotechnics. At the same time, the determination of biotypes allowed for the monitoring of the "human engine" and the prevention of accidents and professional diseases.

II. PROFESSIONAL SELECTION AND ORIENTATION

Within Fascist corporatism, biotypology intended to identify – with the tools of biology – the aptitudes that separated people and the determinisms that governed their behavior. The goal was to assign each person the place or function within the organic structure of the society that biologically corresponded to them and, thus, to achieve their maximum performance level and to maintain social order (10 p.255).

The fit between work roles and bodies could not depend on the spontaneity of desire and/or the social laws of imitation, but rather had to be ordered scientifically in order to avoid the accumulation within the community of an "amorphous mass" of inept, disappointed and dissatisfied people who produced little and represented a burden to the financial and energetic budget of the Nation (29 p.149).

In order to accomplish this purpose, biotypology utilized a program that began with professional "orientation," a practice prior to the labor selection process directed at children and adolescents that aimed to give them advice regarding their future careers. This orientation sought to deal with the problem of "aptitude," which would be solved by detecting "natural aptitudes" for potential labor training. In contrast to "acquired" aptitudes, "natural" aptitudes were characterized by the precociousness and spontaneity of their manifestation, their persistence and resistance in unfavorable conditions, the ease with which they

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were learned and the yield of their performance. They could "sprout," "be identified" and "be stabilized" as long as they were recognized, respected and cultivated in a timely manner. However, if major obstacles were placed in their path or if they had simply been neglected during the period in which they appeared, there was a risk they could languish: for this reason it was of great importance to establish such aptitude research – and the "orientation" it implied – during school age (36 p.246).

In this way, biotypology reinforced hierarchies: "there are individuals with very little or no aptitudes who will only be suitable to work as unskilled laborers; others have multiple aptitudes" (15 p.482). However, biotypology also promised to overcome the "apparent" difficulties of any type of work by finding and training the individual who was biologically determined to that type of task.

The moment of "selection" controlled whether the candidate for the position really possessed the required physical and psychical qualities. That control depended on the determination of the "SARS" of each worker, or the four qualities which should be studied for each position: Speed, Ability, Resistance and Strength. Although this analysis had been developed within the field of the European science of work (21), it was incorporated into biotypology based on the supposition that the four qualities necessary in the workplace were intimately connected to Pende's four biotypes.

The determination of the "SARS" was carried out using a biotypological profile that, in order to be completed, required a medical review of the candidate, experimental trials to measure physical strength and psychological tests. Donato Boccia produced a "biotypological profile of the worker"– the same that the Institute of Biotypology had been using to classify workers – that looked into (among other aspects): all "hereditary" elements; past history of illnesses and predisposition to diseases; the "morphological biotype"; "instinctive" activities in relation to nutrition (measured by whether meals taken were regular, frugal or abundant, among other dimensions) and in relation to property (if the worker was prodigal, thrifty, generous, etc.); "tendencies" (to seek knowledge, to be active, to gamble); social and ethical conduct; the degree of humor and willpower; intelligence; and a survey regarding current employment.

This profile, included in the book by Boccia (36) that received the Juan D. Perón Award in 1947-1948, was related to the Peronist project of submitting workers to periodic medical exams and establishing a health record or card. In 1950, the Institute of Biotypology began carrying out psychotechnical and biotypological tests on all new staff incorporated into the Ministry of Public Health (17 p.327) and in 1951, the Office of Biotypology for the Working Woman (*Dirección de Biotipología de la Mujer que Trabaja*) was created under the direction of Dr. Miguel Goldstein (17 p.334).

Before Peronism, but also within the State, the Public Health Service in Buenos Aires constituted in 1940 its own Office of Prophylaxis and Worker Orientation (*Dirección de Profilaxis y Orientación del Trabajo*) whose purpose was to issue health certificates to the employees and workers of the city and to keep a central record of employers and employees (37). In 1944, Decree No. 14538 of the National Executive Power (dated June 3) stipulated that workers should be examined "from a biotypological perspective" before they started working in factories as apprentices, and that minors who wanted to obtain a work permit had to undergo psychophysical and psychotechnical tests (36).

This project of identifying, registering and classifying workers incorporated several institutions, types of knowledge and techniques that by far preexisted the "profiles" implemented by the Association of Biotypology to categorize individuals of different populations. The "orthogenic school record" was implemented in different groups of schoolchildren who were voluntarily sent by their schools to the Association to be "registered." Moreover, in 1935, Arturo Rossi was able to get the General Office of Schools in the province of Buenos Aires to adopt this record and the National Council of Education to officially incorporate the proposal (10 p.172).

Therefore, the worker profile is not the sole result of biotypological knowledge, but rather the continuation of a series of previous identification, registration and classification technologies, which include: "dactyloscopy," created towards the end of the nineteenth century by Juan Vucetich to identify criminals and later used to create records of immigrants, beggars, vagabonds and prostitutes; the methods of detection and classification of different student groups implemented by Víctor Mercante during the first decade of the twentieth century

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at the Universidad de La Plata (10); the anthropometric tests carried out by Alfredo Palacios (38) on workers from factories along the Matanza-Riachuelo River in the city of Buenos Aires whose results, published in his thesis in 1922, led to the demand for an eight-hour work day (8); the proposals to implement health records for identifying and monitoring the health of schoolchildren, babies being breastfed, tuberculosis patients, and army, police and firefighting personnel, which had been carried out without interruption since 1910 (k); or the imposition of the ambitious "universal health record," which would de started prenatally and extend into adulthood (39), among others. In terms of workers, there had been suggestions regarding the implementation of health certificates for domestic service employees (40), a "worker card" (41) or a "physical fitness record" (42) in order to avoid frauds from being committed that would be prejudicial to employers. In practice, some factories had started to compile "files." For example, the physician of the workshops of the Municipality of Buenos Aires congratulated himself on the "great utility for the moral classification of productivity" that the "files" he had compiled in 1939 to record the health information (medical examinations, disabilities) and vicissitudes in the work life of the 1200 workers employed provided, as with just "a quick look at the record" it was possible to determine the performance of each worker (43 p.470).

As has been previously stated, professional orientation and selection depended not only on medical examinations but also on psychological tests. The tests were developed in accordance with "psychotechnics," a discipline started at the beginning of the twentieth century in Europe, derived from "experimental psychology" as well as "applied psychology," which aimed at studying physical and intellectual fatigue and later work performance directly. Tests measuring intelligence, attention and other cognitive dimensions in human beings were tried out in the workplace, both in Europe (France, Belgium, and Germany) and in the United States. During the First World War, psychotechnics was applied in the military field, and after the war ended it was again applied in an industrial context and was extended to other populations such as schoolchildren, automobile drivers, and young people (l).

For professionals trained at Pende's school it was impossible to use psychotechnics without a biotypological base (29 p.156), as biotypolgy studied the individual as a whole while psychotechnics focused on a specialized part (the psyche) of that whole. The "psychotechnical" program that nourished biotypology was created by the priest Agostino Gemelli. As can be seen in one of Boccia's works (36), this program went far beyond a psychic evaluation of the individual to include a series of topics which, on the one hand, had to do with the organization of an industrial society, such as the division of labor and the increase in production, and, on the other hand, with "ergonomics" or work standards, such as the delineation of the most appropriate movements for the worker and the coordination of the work rhythm with biological demands, among other aspects.

In Argentina, psychic evaluation tests as well as professional selection and orientation practices (and institutions) preceded the biotypology proposals of the 1930s, and were influenced mainly by European and American experimental psychology (m). Nevertheless, from that decade onward the interchanges between these developments and biotypology-inspired occupational medicine were constant. The head of the Professional Orientation and Selection section of the Biotypological Institute, Ángel Olives (44), saw psychotechnics as a problem of "experimental psychology" and he considered Hugo Munsterberg (a German-American psychologist who was a pioneer in the implementation of tests in the manufacturing industry) one of his intellectual points of reference. Boccia incorpoated some of the advances in both industrial and applied psychology in his 1947 (36) and 1953 (45) works. He made particular reference to the work carried out by Juan Kaplan (n), a physician who had developed and promoted psychotechnics in the country since the 1940s, even after the Peronist governments. He was also a consultant at the Institute of Psychotechnics and Professional Orientation of the Social Museum (*Instituto de Psicotécnica y Orientación Profesional del Museo Social*) and the creator of his own professional selection and orientation method (which was used in public as well as private institutions). His research was based on developments within differential and applied psychology, and especially a specific branch of the latter: industrial psychology. But, at the same time, Kaplan (46) maintained, along with the biotypologists, the existence of individual differences in constitution, character and

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temperament. He also considered Agostino Gemelli to be one of his intellectual references.

In the public sphere in 1944, the National Office Professional Orientation and Training (*Direccción Nacional de Aprendizaje y Orientacion Profesional*) was founded. Starting in 1947, this office began to apply the psychotechnical methods of the Institute of the Social Museum in order to orient minors apprenticing in industrial trades. The plan of the Public Health Secretariat involved the foundation of psychotechnical cabinets in School Health (*Sanidad Escolar*) and the Office of Labor Hygiene (*Dirección de Higiene del Trabajo*) (37).

From a biotypological point of view, the selection procedures were of undeniable benefit to the employers, since properly selected workers had better performance (36 p.268). However, as Bosio (31,32) highlighted, these type of strategies were geared only toward the working class and were not meant to shake the foundations of the capitalist social order. Never had biotypologists intended to assign the "right place" to "a wealthy stockbreeder's son" nor to "an important industrial shareholder." In order to justify the compulsive assignment of workers to a particular position, biotypologists appealed to the welfare of the community. Nevertheless, their proposals quickly revealed their authoritarian nature when it came to affecting the freedoms of the bourgeoisie. Even Boccia himself (36 p.270) acknowledged the difficulty of applying this method for reasons related to the cost of the research, the time the research required, and the impossibility of transforming an office into a laboratory.

Regardless of these obstacles, as we shall explore in the following section, professional selection and orientation practices were valued by biotypologists because, in addition to guaranteeing employers effective worker performance, they contributed to the prevention of accidents and diseases.

III. THE CONSTANT TUNING OF THE "HUMAN ENGINE" AND THE PREVENTION OF ACCIDENTS AND DISEASES

During most of the twentieth century, the great attraction that health records held for a distinguished group of physicians, pedagogues, psychologists, and other professionals was connected to the establishment of surveillance mechanisms that would allow permanent control over the "biological potential" of the Nation. Inheriting the concern of the Italian criminological school for the search for the "born criminal" and inspired by the Catholic idea of generalized guilt, biotypology defined itself as a "clinical specialty for the healthy" aimed at testing normality (10 p.243).

As part of this project, the contribution of biotypology was twofold. On the one hand, it promised to monitor workers so as to help them use their aptitudes and capacities in a rational way, to strengthen weak organs, to rectify latent alterations that fatigue and the work environment could have produced; in short, to apply itself to "the tuning up of the human engine" that each worker represented (15 p.472). On the other hand, this permanent monitoring placed healthy individuals in a sort of area of suspicion from which it was impossible to escape. Nourished by psychotechnics, psychosomatic medicine and other fields of knowledge, biotypology intended to distinguish "the perfect state of health state from the imperfect state, the true strengths from the false" to identify all the latent imbalances that, although compatible with a relative degree of health, placed individuals in "the confines of disease" (22 p.2).

In that sense, the vocation of biotypology to monitor the "healthy" and its mandate to detect hidden and latent morbidity were particularly aligned with the task of biological "restoration" which Carrillo (47 p.489) considered necessary within health policy in order to mitigate the consequences of long years of "negligence and lack of biological prevision," during which the human capital left by "our strong and healthy predecessors" had deteriorated. Occupational health was therefore contemplated at a crossroads between productivity and decline. Like the biotypologists, Carrillo (48 p.22) considered that health policy should "improve the biological efficiency of the worker." But, at the same time, Peronism's fight against the "evil" of absenteeism was seen as part of a more general struggle against the biological decadence, devitalization and depreciation of the population. Within this mindset, absenteeism was considered as a sort of "breeding ground" for pathologies that incubated slowly and gave proof of,

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as objective evidence, the progressively degenerative process which affected the human species. In this way, through the "comprehensive radiology" method (used by the physician Edmundo Ingber, one of Carrillo's collaborators), it was discovered that sickness absenteeism, although related to psychological and social causes, had a deeper origin than it appeared "*prima facie*" (47 p.489).

For biotypology-inspired occupational medicine, integral knowledge of the subject was fundamental, not so much to find objective proof of biological decadence but rather to anticipate accidents and diseases.

Effective accident prevention depended on the early detection, through a number of tests and examinations, of the "diathesis" or "predisposition" that made certain workers more likely to have accidents, disorders, or diseases than others. While diatheses were the result of inherited factors transmitted by parents, a certain biotypological "interventionism" was justified because, according to Pende, environmental factors also exerted influence (albeit accessory) at a hereditary level.

In this way, an explanation was offered regarding accidents and diseases that was extremely convenient to employers. Biotypology ascribed to the industrial environment the role of "revealing or precipitating" factor of abnormal states latent to a greater or lesser degree:

> The organism does not blindly receive the disease as a passive host, but rather causes the disease, producing the disease with its own intrinsic deficiencies. (29 p.141) [Own translation]

> All workers, due to their physical and psychical conditions, have their own way of reacting to different sensations, as the individual constitution or biotype [...] predisposes them differentially to work-related accidents. (29 p.354) [Own translation]

Following Gemelli, Boccia was convinced that, beyond the influence of exogenous or environmental factors, accidents were due to internal or subjective causes. From that perspective, the subjective factors which intervened in causing accidents were not articulated in terms of actions, behaviors or conduct, but rather in terms of identity. "Accidentability" was considered a feature of identification that allowed for the classification of individuals. If the inquiry into the worker's biotype showed that the worker was "normally constituted," both at the somatic and psychic levels, the accident was attributable to the environment. But there also was a second group of individuals, whose diversions from physiological or psychical normality predisposed them to suffer accidents.

This idea of a certain "predisposition to work-related accidents" was not exclusive to biotypology. On the contrary, it had also been developed within applied psychology, the field that inspired Juan Kaplan's research. In fact, the definition of the notion of "predisposition to work-related accidents" that appeared in Boccia's works is identical to the one Kaplan (46) includes in many of his articles: the set of circumstances that, within a group of individuals in equal work conditions, make it so that some individuals suffer a higher number of accidents, due to organic or functional deficiencies of a physical or psychical nature.

In this way, biotypology showed yet another facet of its ability to function as an authentic technique for predicting performance: not only was it useful for anticipating performance, selecting workers shown to be stronger and more resistant in different potentially harmful situations, but it also allowed for the prediction of behaviors which could lead to accidents, inasmuch that "accidentability" was part of the worker's personality. What model, then, did biotypologists use to think about workers?

IV. THE CONCEPTION OF THE WORKER: BETWEEN "PERSONALITY" AND THE "HUMAN ENGINE"

In opposition to Cartesian dualism which had failed to decipher the laws linking *soma* and *psique*, biotypology defended the fundamental unity of man. A set of examinations and tests guaranteed the objectification of the human in terms of "constitution," "individuality," and "personality" (23 p.12). Precisely, the innovation of Pende's method had consisted of reinstating in the medical field the "synthetic" perspective that characterized the constitutionalist school, in opposition to the "local" and reductionist view of "medical

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classicism" (23 p.12). When biotypologists referred to "personality," they sought to incorporate into the field of medicine all those dimensions – emotional, psychical, social and spiritual – that the predominant medical model ignored. In disagreement with biologicist reductionism, not only did they confer to the human being an inner world and even an inexplicable spiritual base, they also upheld the "inseparable" nature of the psychical and physical personality. Based in their conviction of man's integral unity, they structured their aim to find the repercussions, the impacts, of the *mal de vivre* in the body and, conversely, the key to irregular and defective behavior, in the mysteries of diathesis. This meant that all medicine was, to some extent, "psychosomatic," inasmuch as it was attentive to the reciprocal influence of the psychical and the physical aspects.

The inclusion of this "psy-" dimension established a new agenda for occupational medicine that implied detecting in the factory work environment the "emotional" factors capable of producing psychosomatic syndromes. This conception generated a series of tensions with the biologicism prevailing in the medical field. In order to justify including such concerns within his courses, Boccia had to make it clear that even though he was a general practitioner, his academic training was connected to the biotypological school. For this Italian physician, the inclusion of the psychic dimension had to similarly be reflected in the policies of work-oriented healthcare; in short, it had to be seen in the organization of new mechanisms of control of the labor force, such as "factory cafeterias, breaks, seaside or mountain camps," sports clubs and "after-work" organizations, which would fill in the pauses in the workday and the days of rest, devoted to the recreation of the spirit and the reinforcement of energies (45 p.14).

In this way, biotypology (along with psychosomatic medicine, the other constitutionalist schools, medical humanism, etc.) was introduced as another expression of interwar medical Holism (26), in this case characterized by: understanding the human being in a systemic way, emphasizing the interconnections among the "facets" of each biotype; installing the idea of "personality" and of the human being considered integrally as the object of medical study; combining knowledge and medical practice as an act of "synthesis"; and upholding an interdisciplinary vision of sickness and health.

In spite of its holistic point of view, the writings of the biotypologists were unable to avoid the "human engine" metaphor and the dynamic language of "energy" inspired by the thought of the European science of work; nor could they escape the social utopias and political ideologies of the beginning of the twentieth century. In different ways, communism, Taylorism and fascism conceived the human body as a productive force and a political instrument whose energies could be subjected to some type of scientifically designed management.

Therefore, in Donato Boccia's writings, the holistic conception coexisted with a physicalist-materialist conception (equally idealistic in its promise of optimizing productivity) that inscribed human labor within the general laws of thermodynamics. According to Rabinbach (21 p.3), "modern productivism" – that is, the belief that human society and nature are connected by the primacy and identity of all productive activities, including the activities of workers, machines or natural forces – was conceptually founded in the scientific revolution which, in the nineteenth century, was synonymous with the discovery of the laws of thermodynamics (o).

In his courses, Boccia defined the human organism as an "engine" that, just like the mechanical device, transformed energy, that is, produced work. Occupational medicine was introduced as a sort of mechanism contributing to the first law of thermodynamics, as it promised to take precautions to conserve the "productive energy" of human beings (29 p.29). However, biotypological medicine (like the European science of work with which it interacted and from which it was nourished) would also be captured by an oppositional metaphor of inevitable decline, dissolution and exhaustion of the energy which, in relation to human labor, was expressed as "fatigue." Boccia was not only familiar with but also utilized in his writings and courses about occupational medicine Palacios's "beautiful experiences" (38). The possibility of recording, using the ergograph created by Mosso (p), "one of the most intimate and characteristic aspects of an individual, that is, the way in which we grow tired" (29 p.45) could only entice a project obsessed with personalization.

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However, biotypology was not totally consistent with the medical Holism that imbued its discourse, for reasons other than its internalization of the human engine metaphor. The "reductionism" it attacked nevertheless permeated it on many fronts, since biotypology resorted to the notion of heredity and a wide variety of technologies (such as anthropometry, blood tests, comprehensive radiology, the measurement of endocrine functions, etc.) in order to personalize diseases, accidents, and also health. No less reductionist was the aspiration to study "individuality" by dividing the human being into numerous facets (the famous "faces" of Pende's biotypological pyramid) and then later reassembling them, integrating and correlating the data gathered during the investigation into each of these facets.

This same reductionism pervaded the obsession with generating "biotypes" which, because these types were ideal, came into conflict with the idea of individuality (49 p.220). Peronism did not escape the reach of this obsession, either: Carrillo himself had appointed a special commission to study "the Argentine man" and he considered that the task of establishing an "ideal, somatic, visceral and psychic Argentine biotype" should be further developed by the Institute of Biotypology or the Argentine Institute of Man (50 p.1199).

The work of typologization was not exclusive to anthropometrics or biotypology; it found expression in both psychology and psychiatry, disciplines engaged in the development of "profiles" that had also left their mark on occupational medicine. Therefore, Boccia proposed the use of "profiles" in professional orientation and selection, which were understood as "a schematic and concise representation of the subject's personality." The profile would be "psychotechnic when representing the subject's psychological qualities: it would be biotypological when representing, in addition to the psychological qualities, the morphofunctional qualities of the subject" (36 p.297).

BY WAY OF A CONCLUSION

In the present, one of the ideas espoused in order to mitigate the conflict between productivity and health is the affirmation that business productivity, health and occupational safety are related in a "virtuous," "positive" and "synergic" manner. This point of view constitutes a sort of "technocratic common sense" around which several discourses converge, whose enunciating agents (the International Labor Organization, the Inter-American Development Bank, the Superintendency of Labor Risks in Argentina, etc.) play a strategic role regarding the organization, regulation and control of work processes and health protection mechanisms (51-54).

Beyond the relative strangeness this articulation presently demonstrates – which can be seen more in the technologies, vocabularies and rationalities used to construct it than in the scientific evidence that supports it – this articulation is not entirely new.

As we have explained throughout this article, in the 1930s the developers of biotypology in Argentina held the presupposition that "productivity" and "health" were related to each other in a harmonic way and, just like present-day technocrats, they offered a series of scientific arguments to support this idea. In contrast to the present day, however, the virtuous nature of the relationship between productivity and health was not expressed by ideas of health and security in terms of "quality" (of the product, processes and systems) nor was it proved by financial calculations.

On the contrary, biotypologists believed that the point of convergence between capitalist productivity and occupational health was essentially biological. At the same time, what guaranteed better performance and greater biological efficiency of human capital from the perspective of employers, and also of the Nation-State, was the management of labor according to biotypological and psychotechnical criteria. By bringing medicine and psychology closer to the factories and connecting them to pedagogical entities (schools, institutes for professional orientation and selection), biotypology aimed to provide a solution to the "formidable problem" (16 p.670) of the training and distribution of workers in a bourgeois society.

From the point of view of power, this operation could not be more economical: as the result of a mechanism guided by a specific knowledge which considered personal aptitudes, skills, and weaknesses, the place assigned to each individual was presented as "natural," hiding the

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political-authoritarian dimension of the process and discouraging, *a priori*, any resistance.

Through professional selection and orientation, biotypology not only considered itself capable of placing each body where it would be most productive, most "industrious" from the point of view of capital and of the State, but also promised to restore meaning to work, to reinstate the value of manual labor and to bring, through the experience of their capabilities, joy and satisfaction to workers.

While biotypologists defended the possibility of reaching, through the tools of the science, the perfect fit between productivity and health, the criticism that Bartolomé Bosio directed at this type of proposal demonstrated the reality of the conflict between the capitalist search for profit and worker health, a conflict that could not be solved by medicine or by psychology. He repeatedly asserted that the capitalist's only concern was to achieve the highest performance at the lowest cost, "regardless of deterioration, regardless of the fact that the human engine is soon worn out, as there are always other human engines on hand, perhaps even available at a lower cost" (32 p.915). In opposition to the utopia of the "humanization" of labor, Bosio introduced into the debate with biotypologists the reality of capitalist society:

> Those who manage the way work is organized are the owners of the economy and not the biotypologists. And the way work is organized reflects what its organizers pursue: greater productivity, in every sense, without caring at all about what happens to employees. (32 p.913-914) [Own translation]

The efforts made in the present day to show, from different places of enunciation and practice, that productivity and health are related in a virtuous manner are far from a reiteration of biotypology's authoritarian utopia of "every man in his due place." However, these present-day efforts contain the same functionalist aspiration as twentieth century biotypology: they aim to suture the conflict.

ENDNOTES

a. In general terms, the object of modern eugenics is the implementation of measures to improve human descendants, through the differential reproduction of certain individuals or groups of individuals considered more valuable or better and, in some of its versions (negative eugenics) by interfering in the reproduction of human beings that would supposedly have children with severe hereditary diseases (1 p.115-116).

b. Due to space constraints, we cannot include all the historiographical bibliography that in the last years has dealt with the development of eugenics in Argentina. Regarding this point, see the articles compiled by Marisa Miranda and Gustavo Vallejo (2). Similarly, eugenics has been included as a part of more general discussions on demographical debates (3), the history of tuberculosis in the city of Buenos Aires (4), liberal reformism (5), and mental hygiene (6), among other topics.

c. We wish to clarify that, throughout this article (in the main body as well as the endnotes), we will only include biographical references we consider fundamental to the comprehension of the article's central arguments. Arturo Rossi, director of the journal *Anales de la Asociación de Biotipología, Eugenesia y Medicina Laboral* and one of the founders of the Biotypological School, was during the "Infamous decade" (1930-1943) the leader of Argentine biotypology. In 1947, he translated, along with Donato Boccia, the *Tratado práctico de biotipología* [Treatise on biotypology] which Pende had written in 1936 (15) and he wrote a *Tratado práctico de biotipología y ortogénesis* [Practical treatise on biotypology and orthogenesis] (three volumes), published in 1944 (16).

d. This institute was inaugurated in Genoa in 1926 under the direction of Nicola Pende. Its objectives included: periodic monitoring of the physical, moral and intellectual development of children and adolescents and the physical and psychic constitution of workers; psychotechnics; and professional orientation. For further information, see Vallejo's works (7,8).

e. Regarding the Institute of Man, Alexis Carrel's work and the influence of his ideas in the country, see Reggiani (18).

f. This Italian-Argentine physician, trained in the constitutionalist school in Italy and head of the Clinical Medicine Department at the Hospital Italiano in Buenos Aires, over time became a sort of local expert in occupational medicine.

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g. The term "holism" has multiple meanings associated with it. Throughout this article the term will be used in two different ways that, while not necessarily related, in the case of Argentinian biotypologists are intertwined. We refer to biotypology as an expression of "medical holism" (26), a group of movements (which include all the constitutionalist schools: psychosomatic medicine, Catholic humanism, neo-Hippocratic medicine, etc.) developed fundamentally in the interwar period in Europe, in opposition to the "reductionism" and excessive confidence in technology that these perspectives found in the predominant medical model, which was increasingly "biomedical." But we also believe that the biotypological thought is impregnated with holism in a second, "ideological" sense of the term. As an "ideology," holism refers to the set of shared ideas and values in a society, characterized by emphasizing the social totality and neglecting or subordinating the human individual (27 p.303). In either of the two meanings, the notion of holism is intrinsically relational, in the first case opposed to medical "reductionism" and in the second to "individualism."

h. Agostino Gemelli was a Jesuit anti-Semite priest. He was rector of the Università Cattolica del Sacro Cuore of Milan, president of the Pontifical Academy and the main liaison between the fascist regime and the Vatican. Dedicated to the development of psychotechnics, he was a close collaborator to Argentine biotypologists.

i. The belief in the possibility of increasing – through the tools of science – work productivity and, on the other hand, the verification of an unavoidable tendency towards biological and civilizational decadency constitutes one of the paradoxes of Modernity/modern times, which both impregnated and was enhanced by biotypology as well as the eugenic thought of Alexis Carrel (18), psychophysiologic research on fatigue and the European science of work, among a multiplicity of other expressions (21).

j. Starting the 1960s, the "neoliberal" notion of human capital began to be imposed, understood as the set of innate and acquired aptitudes inherent to each worker which, properly employed, provided a number of benefits. While human capital in a neoliberal sense is inseparable from the worker, human capital in a "holistic" as well as in a "populational" sense is an "asset" of the Nation-Sate, therefore each worker, individually considered, is just a partial, molecular expression of human capital.

k. A summary of each of these proposals can be found in the article published in 1940 by Giraldes and Ugartein in which they propose an immunization record for children (34).

l. Regarding the problem of labor "productivity" and its relationship with health and disease processes, psychotechnics constitutes a topic of research in itself which exceeds the objectives of this article. Although a central aspect of work biotypology, psychotechnics as it was understood by biotypologists is just one perspective among the multiple approaches and formulations developed primarily in the field of experimental and applied psychology throughout the first half of the twentieth century in Europe and in the USA. For further detail see Rabinbach (21).

m. In 1923, the National Ministry of Justice and Public Instruction founded the Psychotechnics and Professional Orientation Institute (*Instituto de Pscicotécnica y Orientación Profesional*), appointing Dr. Carlos Jesinghaus as its director. The Institute responded to individual inquiries related to professional orientation (in person or by mail) and carried out complete medical and psychotechnical examinations to determine professional aptitudes. Similarly, starting in 1928, it offered regular courses to train "professional orientation counselors" and published the *Guía de estudios superiores* [Higher studies guide] and the *Cartilla de orientación profesional* [Professional orientation handbook] which were distributed in schools. In 1931, the national funds that financing it were suspended and the activities of the Institute therefore ceased. The same year, the Argentine Social Museum requested the donation of the Institute's lab material from the Ministry of Justice and founded a Professional Orientation Institute as one of its own organizations, incorporating the same technical staff. In the 1930s and 1940s psychotechnical cabinets were created – following the model of the Institute – in different cities of the country (37,44).

n. We want to thank Karina Ramaccioti the referring us to Juan Kaplan, a physician specialized in hygiene and social medicine who dedicated himself to the development of occupational medicine in Argentina, incorporating psychotechnics as part of this development. Kaplan was well acquainted with biotypology and even accepted several of its hypotheses; however, he based his development in psychotechnics on psychology applied, fundamentally, to industry.

o. The universal law of energy conservation was formulated in 1847 by Hermann von Helmholtz, a German physician and physiologist, pioneer in thermodynamics, who maintained that all nature forces (be these of a mechanical, electrical, chemical or other nature) were expressions of a singular universal energy or Kraft, which could not be destroyed. Almost simultaneously, Rudolf Clausius discovered the second law of thermodynamics, which upholds the irreversibility and decline of energy in terms of entropy (21 p.3).

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p. This Italian physiologist was one of the fathers of experimental studies on fatigue. His classical work *Fatigue*, published in 1891, was highly influenced by the discoveries of thermodynamics. We would like to thank Gustavo Vallejo for his suggestion regarding the relationship among Mosso's graphology, Palacios's research and Argentine biotypology.

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