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Normalizing sexuality in twentieth-century western societies: a critical reading of the *Diagnostic and Statistical Manual of Mental Disorders*

Vasia Lekka*

Abstract

The aim of this essay is to indicate the centrality of psychiatry's scientific discourse in the negotiation, construction and normalization of human sexuality. After a short historical account upon the dominant psychiatric discourse about homosexuality from the beginning of the nineteenth century when psychiatry emerged as a medical specialty, our focus will be on the presentation and negotiation of homosexuality in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM). DSM was the first formal recording and scientific categorization of mental disorders, which was edited by the American Psychiatric Association (APA) in 1952 and is still being constantly enriched. Our target is to highlight the role of psychiatry and its functions as a means of the normalization of human bodies, as well as to highlight the role of gender within specific regimes of truth as another regulative norm.

Keywords: homosexuality, DSM, normalization, psychiatry, racism

Introduction

On 27 June 1969, New York police invaded the Stonewall Inn Bar in Greenwich Village, south Manhattan, New York. It was just another routine “visit” by police to homosexual bars and clubs, which was accompanied by brutal controls, harassments and arrests. Nonetheless, this time police violation would not remain unanswered. A great number of people both inside and outside of the Stonewall Inn Bar, who were proliferating as time passed, occupied the Bar. They were demanding the immediate release of those arrested. And finally they succeeded in

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liberating them. This had just been the beginning. Summer of 1969 was marked by a series of riots in the area around south Manhattan, one of the districts where homosexuals usually hung out. It was an uprising against state power and police violence, with the slogan “Gay Power” echoing loudly in the streets. In the autumn of 1969, the “Gay Liberation Front” was established. It marked the beginning of the Gay Liberation Movement, which was also opposed, as we are going to see in the following, to the formal attitude of western psychiatry towards homosexuality. In the next year there took place a march with thousands of men and women participating in order to celebrate the first anniversary of the Stonewall riots, whereas the 27th June has been established as the “Gay Pride Day” all over the world.¹

Without doubt, the Stonewall riots brought to the fore significant questions regarding the human body and the mode of sexual and gender subjectification, which still require an answer. That is, within what regimes of truth human beings’ biological/ anatomic differences have been established – because they are deemed to be “natural” – as the factors par excellence for the construction of their gender identity, leading to a series of coordinated attempts to normalize human sexuality and, consequently, to reject any deviance from the dominant heterosexual model? Within what historical a priori homosexual people – along with a great variety of people and social groups, such as migrants and madmen – have been excluded as dangerous “Others” in this modern “witch-hunt”? Thus, following Judith Butler’s line of argument, we should reflect on “how and to what end bodies are constructed as it will be to think about how and to what end bodies are *not* constructed and, further, to ask after how bodies which fail to materialize provide the necessary ‘outside’, if not the necessary support, for the bodies which, in materializing the norm, qualify as bodies that matter”.² In this multileveled procedure, psychiatry’s role has been decisive. Within this frame, the aim of this paper is to indicate the centrality of psychiatry’s scientific discourse in the negotiation, construction and normalization of human sexuality, through a critical reading of the presentation and negotiation of homosexuality in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM), that is, the first formal recording and scientific categorization of mental disorders, which was first edited by the American Psychiatric Association (APA) in 1952.

¹ Drescher, Jack, “Queer Diagnoses: Parallels and Contrasts in the History of Homosexuality, Gender Variance, and the *Diagnostic and Statistical Manual*”, *Archives of Sexual Behavior*, 2010, 39: 427-460, on pp. 434, 441. Kostas Torpouzidis, *Homosexuality, Sexuality and the Struggle for Liberation* (Athens: Marxist Bookstore, 2012), pp. 31-35.

² Judith Butler, *Bodies That Matter. On the Discursive Limits of “Sex”* (New York; London: Routledge, 1993), p. 16.

Western psychiatry against homosexuality: the case of the *Diagnostic and Statistical Manual of Mental Disorders*

To begin with, it should be highlighted that western psychiatry already focused on the homosexual body from its very first steps as a distinct medical specialty, at the end of the eighteenth and the beginning of the nineteenth centuries. Taking over the reins from the, until then, dominant theological discourse, nineteenth-century psychiatrists brought about a decisive transformation in the dominant attitude towards homosexuality, by rendering it, along with a great variety of human conducts and characters, into their cognitive object and field of discipline and control. As Michel Foucault (1926–1984) has eloquently remarked, “[t]he sodomite had been a temporary aberration; the homosexual was now a species”.³

Already in 1868, the Hungarian journalist, human-rights campaigner and sodomy-law reformer Karl-Maria Kertbeny (1824–1882) used, for the first time, the terms “homosexuality” and “heterosexuality” in a private discussion.⁴ One year later, in one of his public speeches, he used the term “homosexuality” in his attempt to reform the predominant sodomy laws. In 1870, the German psychiatrist Carl Westphal (1833–1890) published an article in the *Archiv für Psychiatrie und Nervenkrankheiten*, entitled “Contrary Sexual Feeling: The Symptom of a Neuropathic (Psychopathic) Condition” (“Die konträre Sexualempfindung: Symptom eines neuropathischen (psychopathischen) Zustandes”). In this article, he spoke about the “contrary sexual feeling” (“konträre Sexualempfindung”). And he gave as indicative examples, among other things, the case of a young woman who had been admitted to the Charité Hospital in Berlin and who desired to have sexual intercourse with other women, as well as the case of a man who was feeling and dressing as a woman, even though he had never overtly expressed sexual desire towards other men. Despite the fact that these “contrary sexual feelings”, according to Westphal, did not necessarily constitute a pathological condition per se, his article marked the constitution of the psychiatric category of homosexuality.⁵

Shortly afterwards, the German psychiatrist Richard von Krafft-Ebing (1840–1902) elaborated further and established the pathological dimension of homosexuality. Already in 1877, highly influenced both by the theoretical work of Charles Darwin (1809–1882) and the

³ Michel Foucault, *The History of Sexuality. 1. The Will to Knowledge*, tr. R. Hurley (London: Penguin Books, 1998), p. 43.

⁴ Ghaziani, Amin, “The Reinvention of Heterosexuality”, *The Gay & Lesbian Review*, 2010, 17 (3): 27-29, on p. 27.

⁵ Edward Shorter, *A Historical Dictionary of Psychiatry* (Oxford: Oxford University Press, 2005), p. 127-128; Ghaziani, “The Reinvention of Heterosexuality”, p. 27; Drescher, “Queer Diagnoses”, p. 432.

dominant explanatory framework of the degeneration theory,⁶ he had referred in an article in the *Archiv für Psychiatrie und Nervenkrankheiten* to the “contrary sexual desire” (“konträre Geschlechtsgefühl”), which he attributed to the degeneration of the central nervous system. And in his work *Psychopathia Sexualis* (1886), he confirmed the introduction of homosexuality into the long catalogue of the degenerative, psychiatric disorders: “[s]ince, in nearly all such cases, the individual tainted with antipathic sexual instinct displays a neuropathic predisposition in several directions, and the latter may be brought into relation with hereditary degenerate conditions, this anomaly of psycho-sexual feeling may be called, clinically, a functional sign of degeneration”.⁷ For this purpose, he gave a list of six points that, to his view, advocated in favour of the fact that homosexuality constituted a form of degeneration. Let us cite the first three points that are, to our view, quite illustrative: first, the first signs could be detected during childhood, as, for instance, in young boys playing with dolls – this is an important element that we are going to see again being emphasized in the DSM; second, the sex organs did not present any kind of deformity; third, the individual presented at the same time another suspicious “anomaly”.⁸ At this point, we should underline the fact that, whereas in the first edition of *Psychopathia Sexualis* in 1886, Krafft-Ebing dedicated to the subject of homosexuality just 16 pages, in the twelfth edition (1902) the homosexuality section was over 100 pages. And even though there were at that time several psychiatrists, such as Paul Näcke (1851–1913) and Havelock Ellis (1859–1939), who opposed the view that homosexuality was another degenerative disorder, Krafft-Ebing's hypothesis dominated formal psychiatric discourse at the end of the nineteenth and the beginning of the twentieth centuries.

At the same time, we could claim that Sigmund Freud (1856 – 1939) paved a third path, as his attitude towards sexuality might be placed somewhere in the middle and by no means can it be characterized as condemnatory. Freud began his analysis by pointing out that all

⁶ Highly influenced by eighteenth- and nineteenth-century zoology and evolutionary biology, and with the Darwinian work giving the final impetus during the mid-nineteenth century, the theory of degeneration was dominating in the medical discourse during the second half of the nineteenth century and the beginning of the twentieth. In the field of psychiatry, quite illustrative was the work of the French psychiatrist Bénédict-Augustin Morel (1809–1873). In his *Traité de la dégénérescence* (1857), Morel regarded degeneration as the morbid deviation from an archetypal type of man. Accordingly, he described the common evolution of degeneration that could begin from the appearance of a slight nervous disposal (irritability, violent behavior, etc.), proceed to a series of brain and mental disorders (epilepsy, hysteria, hypochondria, etc.) and dangerousness, and end up in the offspring's incurable, physical and mental degeneration. Apart from the work of Krafft-Ebing, Morel's influence was quite apparent, among others, in the work of the French psychiatrist Jacques-Joseph Valentin Magnan (1835 – 1916), the English psychiatrist Henry Maudsley (1835 – 1918) and the Italian criminologist and psychiatrist Ezechia-Marco ('Cesare') Lombroso (1836 – 1909). Vasia Lekka, *The Neurological Emergence of Epilepsy. The National Hospital for the Paralyzed and Epileptic (1870 – 1895)* (New York: Springer, 2014), pp. 83–84.

⁷ Richard von Krafft-Ebing, *Psychopathia Sexualis with especial Reference to the Antipathic Sexual Instinct*, tr. F.J. Rebman (New York: Rebman Company, s.d.), p. 285.

⁸ Shorter, *A Historical Dictionary of Psychiatry*, pp. 128–130.

people are born bisexual. From this perspective, he attributed homosexuality to the fixation to one of the stages of children's psychosexual development. As he emphatically highlighted, "[p]sychoanalytic research is most decidedly opposed to any attempt at separating off homosexuals from the rest of mankind as a group of a special character. By studying sexual excitations other than those that are manifestly displayed, it has found that all human beings are capable of making a homosexual object-choice and have in fact made one in their unconscious. [...]. Thus from the point of view of psychoanalysis the exclusive sexual interest felt by men for women is also a problem that needs elucidating and is not a self-evident fact based upon an attraction that is ultimately of a chemical nature. A person's final sexual attitude is not decided until after puberty and is the result of a number of factors, not all of which are yet known; some are of a constitutional nature but others are accidental. No doubt a few of these factors may happen to carry so much weight that they influence the result in their sense".⁹ It is quite characteristic that Havelock Ellis published in 1910 a rather positive review of Freud's study, entitled *Leonardo da Vinci: a psychosexual study of an infantile reminiscence*. In his essay, Freud, even though he was often using a quite ambiguous vocabulary, tried, in a way, to interpret from a psychoanalytical point of view the homosexuality of the great Renaissance painter Leonardo da Vinci (1452 – 1519), while simultaneously opposing homosexuality's representation by homosexuals themselves: "[h]omosexual men [...] are fond of representing themselves through theoretical spokesmen as evincing a sexual variation, which may be distinguished from the very beginning, as an intermediate stage of sex or as 'a third sex'. In other words, they maintain that they are men who are forced by organic determinants originating in the germ to find that pleasure in the man which they cannot feel in the woman".¹⁰ According to his view, psychoanalysis has stressed the "psychic genesis of homosexuality" and can offer the tools to "fill this gap and to put to the test the assertions of the homosexuals".¹¹

However, the followers of the psychoanalytic tradition kept a quite inflexible and negative attitude and continued regarding homosexuality as a pathological disorder, potentially curable. It is quite indicative that according to Sandor Rado (1890 – 1972), whose divan "listened to" several famous psychoanalysts like Wilhelm Reich (1897 – 1957), heterosexuality

⁹ Sigmund Freud, *On Sexuality. Three Essays on the Theory of Sexuality and Other Works* (London: Penguin Books, 1977), p. 56-57 [footnote 1, added 1915].

¹⁰ Sigmund Freud, *Leonardo da Vinci: a psychosexual study of an infantile reminiscence*, tr. A.A. Brill (New York: Moffat, Yard & Company, 1916), p. 63. Available online at <https://archive.org/details/leonardodavincip00freu> (Accessed 23/2/2015).

¹¹ Freud, *Leonardo da Vinci: a psychosexual study of an infantile reminiscence*, p. 63.

constituted the only biological norm, the only sexual behavior that was accounted as “normal”.¹² In fact, the first half of the twentieth century was marked by psychiatrists’ and psychoanalysts’ obsession with homosexuality, where they were detecting the beginning of most psychopathological and neurotic phenomena. Notable was the declaration of the American professor of psychiatry Benjamin Karpman (1886 – 1962), who, in a state of absolute and frantic exaggeration, was claiming in 1937 that “[t]he problems of psychiatry will not be solved until we solve the problem of homosexuality”.¹³ Thus, it was within this particular, hostile climate and the specific historical conditions after the end of the Second World War when the first edition of the *Diagnostic and Statistical Manual of Mental Disorders* made its appearance.

In 1952, DSM-I made its dynamic entry into the psychiatric scene. It turned out to be the most powerful weapon in psychiatric power’s arsenal that would determine the practice and function of psychiatry worldwide. It amounted to 130 pages and counted 106 psychiatric disorders, while one could still easily detect the influence of the psychoanalytic vocabulary. In the general category “Personality Disorders”, there was included the subcategory “Sociopathic Personality Disturbance”. According to the definition, “[i]ndividuals to be placed in this category are ill primarily in terms of society and of conformity with the prevailing cultural milieu, and not only in terms of personal discomfort and relations with other individuals”.¹⁴ One of the four major types of this subcategory – the other three were “Antisocial reaction”,¹⁵ “Dyssocial reaction”¹⁶ and “Addiction” (alcoholism and drug addiction) – was the so-called “Sexual Deviation”. Without any further analysis and explanation, the codified catalogue of the sexual deviations was just cited. At the top of the list, the first “deviation” was homosexuality, followed by transvestitism, pedophilia, fetishism and sexual sadism that included rape, sexual assault and mutilation. At this point, it should be noted that, according to the immigration law that was in force at that time, entry into the U.S.A. could be forbidden to those individuals diagnosed with “Sociopathic Personality Disturbance”, as it was also the case with anarchists and communists, as well as bigamists. A well-known case is the story of the Canadian Clive Michael Boutilier, who in 1967, after his homosexuality became known, was ordered by the

¹² Drescher, “Queer Diagnoses”, pp. 432-433.

¹³ Rosario, Vernon, “Rise and Fall of the Medical Model”, *The Gay & Lesbian Review*, 2012, 19 (6): 39-41, on p. 41.

¹⁴ American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders* (Washington, DC, 1952), p. 38.

¹⁵ Antisocial reaction “refers to chronically antisocial individuals who are always in trouble, profiting neither from experience nor punishment, and maintaining no real loyalties to any person, group, or code”. American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders*, p. 38.

¹⁶ In accordance with antisocial reaction, dyssocial reaction “applies to individuals who manifest disregard for the usual social codes, and often come in conflict with them, as the result of having lived all their lives in an abnormal moral environment”. American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders*, p. 38.

Immigration and Naturalization Service to leave the U.S.A. – despite the fact that he had resided there for more than 10 years, since 22 June 1955, when he was first admitted to the country. The Supreme Court’s decision was based upon this particular law and it was further validated by the formal opinion of psychiatrists.¹⁷ Unfortunately, Boutilier’s case was not the only one. Quite characteristically, during the years 1952 – 1967, DSM-I underwent 20 reprints.

In 1968, the second edition, DSM-II, appeared. The recorded psychiatric disorders were augmented to 182, whereas the sexual deviations were being “upgraded”. In the general category “Personality Disorders”, “Sexual Deviations” were now a single subcategory, and not a type of a subcategory, as was the case in DSM-I.¹⁸ According to the definition, “Sexual Deviations” referred to those “individuals whose sexual interests are directed primarily toward objects other than people of the opposite sex, toward sexual acts not usually associated with coitus, or toward coitus performed under bizarre circumstances as in necrophilia, pedophilia, sexual sadism, and fetishism”.¹⁹ Homosexuality was still on the top of the list, while there were added in the catalogue exhibitionism, voyeurism, masochism, other sexual deviation and unspecified sexual deviation. In the last two subcategories, psychiatrists could categorize any “deviant”, “pathological” sexual behavior that could not be categorized to the other subcategories. However, psychiatrists and their formal diagnoses would soon be confronted with an unexpected surprise.

In 1970, at the annual meeting of the American Psychiatric Association in San Francisco, activists interrupted the speech by Nathaniel McConaghy, professor of psychiatry, on aversion therapy for homosexual people.²⁰ The Gay Liberation Movement had already made its presence felt, while the pressure brought by the opponents of anti-psychiatry against the functions, methods and abuses of psychiatry had also been decisive.²¹ So, at the next meeting of

¹⁷ Thomas S. Szasz, *The Manufacture of Madness. A Comparative Study of the Inquisition and the Mental Health Movement* (New York: Syracuse University Press, 1997), pp. 245-249.

¹⁸ Along with sexual deviations, there were included in the “Personality Disorders” category a list of subcategories of personality disorders (paranoid personality, cyclothymic personality, schizoid personality, explosive personality, obsessive compulsive personality, hysterical personality, asthenic personality, antisocial personality, passive-aggressive personality, inadequate personality, other personality disorders of specified types, and unspecified personality disorder), as well as alcoholism and drug dependence. In most of these subcategories, the emphasis was placed upon the person’s lack of conformity to social norms and rules. American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders, Second Edition, DSM-II* (Washington, DC, 1968), pp. 41-46.

¹⁹ American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders, Second Edition, DSM-II*, p. 44.

²⁰ Rosario, “Rise and Fall of the Medical Model”, p. 41. Drescher, “Queer Diagnoses”, pp. 434-435.

²¹ Anti-psychiatry made its appearance during the 1960s. The major reasons for its emergence were, on the one hand, the inhumane character of psychiatry’s biological “therapies” during the first half of the twentieth century (e.g., insulin shock therapy, lobotomy, electroconvulsive therapy, psychotropic drugs) and, on the other hand, psychiatry’s abuses by the Nazi during the Second World War. Among its major proponents were David Cooper (1931 – 1986) and R. D. Laing (1927 –

APA in 1971, there was included a panel entitled “Gay is Good”. The gay rights activists Frank Kameny (1925 – 2011) and Barbara Gittings (1932 – 2007) tried to explain to American psychiatrists the painful feelings of stigma, isolation and marginalization that homosexual people were experiencing. These feelings were provoked and reinforced by the fact of the diagnosis of homosexuality as a psychiatric disorder per se, as well as of its “therapy” with a series of cruel and inhuman means, such as electroconvulsive therapies, lobotomies, psychotropic drugs and aversion therapies. At the 1972 meeting, a similar panel was held. Among the participants, there was the homosexual psychiatrist and gay rights activist John Fryer (1938 – 2003), who appeared in disguise as Dr Anonymous, wearing a mask, so as to preserve his anonymity. Finally, on 15 December 1973, after a series of public discussions and consultations, the APA Board of Directors decided to remove homosexuality from DSM. The decision was confirmed by a vote, which came out with 58% in favour of homosexuality’s removal. Soon, the formal institutions of American psychologists and social workers validated APA’s decision, whereas American psychoanalysts proved to be rather hardcore, delaying notably to change their attitude. At the same time, homosexuality was still an offense in the legislation of most American states²² – the last law was recalled in Texas in just 2003...

The above events decidedly affected the third edition, published in 1980. The pages of DSM-III had been quintupled since the first 1952 edition, while it was attempted, for the first time, to give a clear definition concerning what exactly constitutes a pathological condition in the field of psychiatry – according to many commentators, the main cause had been the dynamic and militancy of the Gay Liberation Movement. According to the authors of the third edition, “[i]n DSM-III each of the mental disorders is conceptualized as a clinically significant behavioral or psychological syndrome or pattern that occurs in an individual and that is typically associated with either a painful symptom (distress) or impairment in one or more important

1989) in England, T. S. Szasz (1920 – 2012) in the U.S.A., Franco Basaglia (1924 – 1980) and Giovanni Jervis (1933 – 2009) in Italy, while in Germany the movement of anti-psychiatry led to the creation of SPK (“Sozialistisches Patientenkollektiv”), which had been the first patients’ collective founded in the psychiatric clinic at the University of Heidelberg, in 1970 – 1971. See, Szasz, *The Manufacture of Madness*; Thomas S. Szasz, *Heresies*, (New York: Anchor Books, 1976); David Cooper, *Psychiatry and Anti-psychiatry* (London: Routledge, 2013); Ronald D. Laing, *The Divided Self* (London: Penguin Books, 1990 [first published 1965, first Penguin edtn 1969]); Franco Basaglia, *Psychiatry inside out: selected writings of Franco Basaglia* (New York: Columbia University Press, 1987); SPK, *Aus der Krankheit eine Waffe Machen: Eine Agitationsschrift des Sozialistischen Patientenkollektiv an der Universität Heidelberg* (Mannheim: KRRIM – PF – Verlag für Krankheit, 1995).

²² We should note that this had been also the case in most European countries. For instance, in England, it was only after the 1967 Sexual Offences Act that homosexuality had been decriminalized. Quite characteristic is the case of Alan Turing (1912 – 1954), the famous mathematician and computer scientist, who had been convicted for his homosexuality in the early 1950s and was forced to undergo hormonal therapy. He killed himself because he felt himself in total disgrace in 1954. An official pardon was signed by Queen Elizabeth II only in 2013...

areas of functioning (disability)".²³ Within this frame, the care for people's sexual behavior was intensified in DSM-III. The category "Psychosexual Disorders" constituted now an autonomous, general category, with the following subcategories: "Gender Identity Disorders" (e.g., transsexualism, gender identity disorder of childhood, atypical gender identity disorder), "Paraphilias" (e.g., fetishism, transvestitism, zoophilia, pedophilia, exhibitionism, voyeurism, sexual masochism, sexual sadism, and atypical paraphilia such as Coprophilia, Frotteurism, Klismaphilia, Mysophilia, Necrophilia, Telephone Scatologia and Urophilia), "Psychosexual Dysfunctions" (e.g., inhibited sexual desire, inhibited sexual excitement, inhibited female orgasm, inhibited male orgasm, premature ejaculation, functional dyspareunia, functional vaginismus, atypical psychosexual dysfunction), "Other Psychosexual Disorders". In the last subcategory, there was included the so-called "Egodystonic Homosexuality"; this was referred to a pathological condition that supposedly concerned just one group of homosexuals. In effect, it was defined as the desire "to acquire or increase heterosexual arousal, so that heterosexual relationships can be initiated or maintained, and a sustained pattern of overt homosexual arousal that the individual explicitly states has been unwanted and a persistent source of distress. This category is reserved for those homosexuals for whom changing sexual orientation is a persistent concern [...]".²⁴ At the same time, it should be highlighted that in the "Gender Identity Disorders", which were recorded for the first time, a great emphasis was put upon their presence in children. The essential features of the "Gender Identity Disorder of Childhood" were "a persistent feeling of discomfort and inappropriateness in a child about his or her anatomic sex and the desire to be, or insistence that he or she is, of the other sex".²⁵ Their early prevention and "treatment" in childhood was implicitly considered by the DSM-III authors as an effective means of prevention against the appearance of homosexuality in adults. Thus, it becomes clear that homosexuality was still in the forefront; it was actually of no importance that the word "homosexuality" was entirely deleted from the 1987 revised edition (DSM-III-R), whereas already from the beginning of the 1970s the concept of "transgender" had been invented in order to replace it. So, psychiatry's stated target was now the detection of every possible "pathological" condition and the prevention and early treatment of any "deviation" from the putative "normal", heterosexual model of gender subjectification and sexual expression.

²³ American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders Third Edition, DSM-III* (Washington, DC, 1980), p. 6.

²⁴ American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders Third Edition, DSM-III*, p. 281.

²⁵ American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders Third Edition, DSM-III*, p. 264.

From this perspective, the fourth edition, DSM-IV was published in 1994, and in 2000 there appeared the revised edition, DSM-IV-TR that amounted to more than 800 pages and 300 psychiatric disorders. The general category was now called “Sexual and Gender Identity Disorders”, maintaining and considerably enriching the DSM-III subcategories, and being divided into “Sexual Dysfunctions”, “Paraphilias” and “Gender Identity Disorders”. Among other things, there has been once again put a special emphasis upon the presence of “Gender Identity Disorders” in children. In fact, a great variety of children’s habits and behaviors that were regarded by the APA psychiatrists as “different” were pathologized: “In boys, the cross-gender identification is manifested by a marked preoccupation with traditionally feminine activities. [...] There is a strong attraction for the stereotypical games and pastimes of girls. They particularly enjoy playing house, drawing pictures of beautiful girls and princesses, and watching television or videos of their favorite female characters. Stereotypical female-type dolls, such as Barbie, are often their favorite toys, and girls are their preferred playmates. [...] Girls with Gender Identity Disorder display intense negative reactions to parental expectations or attempts to have them wear dresses or other feminine attire. [...] Their fantasy heroes are most often powerful male figures, such as Batman or Superman. These girls prefer boys as playmates, with whom they share interests in contact sports, rough-and-tumble play, and traditional boyhood games”.²⁶ Let us remember Richard von Krafft-Ebing who, as we saw in the previous section, was referring to young boys’ games with dolls as a sign of their degeneration and, consequently, of their potential homosexual inclination. Accordingly, a great emphasis was put upon individuals’ feeling of dysphoria regarding their sex and their sexual orientation, and it was clearly stated that it should be the duty of psychiatrists to undertake their return to the “normal” reality.

And it was in May 2013, when the fifth edition, DSM-5, was published. DSM-5 has already led to a storm of reactions, even within psychiatric circles, and it is expected to become the object of severe criticisms and extensive comments in the immediate future. In this latest version of DSM, a new category has made its entrance to the forefront. That is, apart from the two distinct categories “Sexual Dysfunctions” (e.g., delayed ejaculation, erectile disorder, female orgasmic disorder, female sexual interest/arousal disorder, genito-pelvic pain/penetration disorder, male hypoactive sexual desire disorder, premature (early) ejaculation, substance/medication-induced sexual dysfunction, other specified sexual dysfunction, unspecified sexual dysfunction) and “Paraphilic Disorders” (e.g., voyeuristic disorder,

²⁶ American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition, Text Revision, DSM-IV-TR (Washington, DC, 2000), pp. 576-577.

exhibitionistic disorder, frotteuristic disorder, sexual masochism disorder, sexual sadism disorder, pedophilic disorder, fetishistic disorder, transvestic disorder, other specified paraphilic disorder, unspecified paraphilic disorder), the new general category “Gender Dysphoria” has been created. According to the definition, “[g]ender dysphoria refers to the distress that may accompany the incongruence between one’s experienced or expressed gender and one’s assigned gender”.²⁷ “Gender Dysphoria” is divided into two main subcategories, “Gender Dysphoria in Children” and “Gender Dysphoria in Adolescents and Adults”, while there are also the subcategories “Other Specified Gender Dysphoria” and “Unspecified Gender Dysphoria”. Once again, a special emphasis is put upon the presence of this “disorder” in children, so as to be able to prevent the future appearance of homosexuality in adolescents and adults. Following the line of argument of DSM-IV-TR, “Gender Dysphoria in Children” is defined as “[a] marked incongruence between one’s experienced/expressed gender and assigned gender, of at least 6 months’ duration”.²⁸ Quite characteristically, among the criteria for the diagnosis of a child with gender dysphoria, the first five are the following: “1. A strong desire to be of the other gender or an insistence that one is the other gender (or some alternative gender different from one’s assigned gender). 2. In boys (assigned gender), a strong preference for cross-dressing or simulating female attire; or in girls (assigned gender), a strong preference for wearing only typical masculine clothing and a strong resistance to the wearing of typical feminine clothing. 3. A strong preference for cross-gender roles in make-believe play or fantasy play. 4. A strong preference for the toys, games, or activities stereotypically used or engaged in by the other gender. 5. A strong preference for playmates of the other gender”.²⁹ A similar pattern is followed in the “Gender Dysphoria in Adolescents and Adults”, where several elements are examined, such as the specific diagnostic features, the prevalence of the disorder, its development and course, as well as the potential risk of “suffering” from it and the prognosis regarding its “cure”. Thus, despite the withdrawal of homosexuality from DSM and the *prima facie* change of direction – for, in reality, homosexuality has just been replaced at first by the “Gender Identity Disorders” and now by the newly-invented “Gender Dysphoria” – how could we interpret psychiatry’s obsession not only with homosexuality, but also with every single dimension of people’s sexual behavior, in general?

²⁷ American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, DSM-5* (Washington, DC; London, England, 2013), p. 451.

²⁸ American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, DSM-5*, p. 452.

²⁹ American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, DSM-5*, p. 452.

The normalization of bodies and pleasures: political, social, epistemological implications

According to Michel Foucault, the end of the eighteenth and the nineteenth centuries were marked by the emergence of the concept of the “population” as a specific economic and political problem.³⁰ A new form of disciplinary power made its appearance and replaced the old sovereign right of “life and death”, by putting the interest for the death of the subjects on the back burner. From now on, it would manifestly turn its attention to their life. This power over life, one of the major presuppositions and pillars of capitalism that was being born and consolidated during that same period, was orbiting around two interrelated poles.³¹ On the one hand, there was the so-called “anatomy-politics of the human body”; that is, the disciplining of the body and the optimization of its usefulness and productivity. On the other hand, there was the so-called “bio-politics of the population”; in other words, the propagation of the population, the mortality rates, the level of the citizens’ health, their life expectancy, even the habits of the population that the modern, industrial state was undertaking under its auspices. In this procedure, within the frame of the new forms of labour organization and the new social and family structures, sexuality gained highly in importance, as it was found in the crossroads of the disciplining and regulatory practices of a novel bio-political power. To invoke Foucault’s words: “Sex was a means of access both to the life of the body and the life of the species. It was employed as a standard for the disciplines and as a basis for regulations. This is why in the nineteenth century sexuality was sought out in the smallest details of individual existences; it was tracked down in behavior, pursued in dreams; [...], at the juncture of the ‘body’ and the ‘population’, sex became a crucial target of a power organized around the management of life rather than the menace of death”.³²

And it was the emergent psychiatric science, born and bred within the special historical conditions of the nineteenth century, that functioned as an extremely useful tool in the long process of the bodies’ segregation and their categorization as “normal” and “pathological”, through the transformation of human sexuality into its cognitive objects par excellence and by rendering it into an essential component of the theory of degeneration. It was psychiatric power

³⁰ As Foucault highlights: “One of the great innovations in the techniques of power in the eighteenth century was the emergence of ‘population’ as an economic and political problem: population as wealth, population as manpower or labor capacity, population balanced between its own growth and the resources it commanded. Governments perceived that they were not dealing simply with subjects, or even with a ‘people’, but with a ‘population’, with its specific phenomena and its peculiar variables: [...]”. Foucault, *The History of Sexuality. 1. The Will to Knowledge*, p. 25.

³¹ Foucault, *The History of Sexuality. 1. The Will to Knowledge*, pp. 138-140.

³² Foucault, *The History of Sexuality. 1. The Will to Knowledge*, pp. 146-147.

that proceeded to the constitution and determination of the “normal” and the “pathological” sexuality, of the “normal” heterosexual identity and the “pathological” homosexual identity, of the long list of “sexual perversions” and “sexual deviations”. It was psychiatry that had emerged as the par excellence science of constituting and determining any “Other” in western societies and that has functioned already from the late-eighteenth century, as it is still functioning today, as a safety valve for the social body.³³ By establishing clear demarcation lines within the frame of the biological and, consequently, the social continuum, psychiatry has transformed the homosexual, along with a great variety of “deviant” human characters, into an undesirable body and a dangerous threat for the social and political reality and stability, into a “scapegoat”, to invoke Thomas S. Szasz.³⁴ From now on, the homosexual would have two options: either he/she would compromise and conform by letting psychiatry cure his/her “ill”, “pathological” body, or he/she would be damned to eternal silence.

Within this frame, the menace of death never really did come out of the game of power relations; it had just transformed its form and meaning. Besides, it was at this particular point where the concept of racism came to the forefront, as Foucault indicates.³⁵ The rhetoric and practice of racism has been the pathway through which the sovereign right of death could invade the disciplinary milieu of the novel bio-political power. Of course, it was not only about a biological death aiming at the consolidation and validation of the sovereign power upon the bodies of its subjects; it was also about a death in social terms through homosexuals’ exclusion, their ostracism, their confinement and, of course, through the attempts for their rehabilitation and psychiatric “therapy”.³⁶ The constitution of the homosexual as the “Other” and his/her exclusion turned out to be the necessary element for the constitution of the heterosexual “We”. Through their psychiatric stigmatization, marginalization and social isolation, through the imposition of a constant state of exemption,³⁷ the extermination of the homosexual bodies has become absolutely necessary for the constitution and consolidation of the solid identity of the

³³ Michel Foucault, *Abnormal. Lectures at the Collège de France 1974-1975*, tr. G. Burchell (New York: Picador, 2003), pp. 118-120. Michel Foucault, “*Society Must Be Defended*”. *Lectures at the Collège de France, 1975-1976*, tr. D. Macey (New York: Picador, 2003), pp. 254-255.

³⁴ Szasz, *The Manufacture of Madness*, pp. 95-110.

³⁵ Foucault, “*Society Must Be Defended*”. *Lectures at the Collège de France, 1975-1976*, pp. 254-260.

³⁶ “When I say ‘killing’, I obviously do not mean simply murder as such, but also every form of indirect murder: the fact of exposing someone to death, increasing the risk of death for some people, or, quite simply, political death, expulsion, rejection, and so on”. Foucault, “*Society Must Be Defended*”, p. 256.

³⁷ According to the definition by Walter Benjamin (1892 – 1940), “[t]he tradition of the oppressed teaches us that the ‘state of emergency’ in which we live is not the exception but the rule”. Walter Benjamin, “*Theses on the Philosophy of History*”, in *Illuminations. Essays and Reflections*, tr. H. Zohn (New York: Schocken Books, 2007), p. 257.

heterosexual bodies.³⁸ As A. Athanasiou remarks, “[r]epresenting the absolute moral threat and the absolute political danger, the expelled and ex-communicated body of the Other has to be eliminated, for humanity’s sake, for the civilization, for ‘life’ itself. In the imaginary of the sovereignty, the social death and the physical extermination of the Other is imposed as a ‘legitimate’ means of reinforcing the security, the welfare and the pure identity of the body politic, which is composed of those worth living”.³⁹ In sum, within the frame of a growing interest in human life, as it was formed within the historical a priori of the nineteenth century, the homosexual body and the mode of gender subjectification and of sexuality’s constitution have entered into the microscope of psychiatric knowledge, which has rendered possible the discipline and normalization of the bodies and their pleasures. Having been included for almost one and a half centuries by the dominant psychiatric discourse within the sphere of the pathological, the homosexual body is still experiencing the painful consequences of this segregation – it was these particular consequences that the Stonewall riots succeeded in indicating in the most dynamic way. At the same time, the case of homosexuality has confirmed the multileveled (political, social, cultural, epistemological) implications of the constitution and the uses of the concepts of the normal and the pathological within the psychiatric field.

Conclusion

To conclude, through this journey in the presentation and negotiation of homosexuality by the dominant psychiatric discourse, this paper has attempted to indicate two interrelated points that definitely bring further questions to the forefront. On the one hand, it becomes clear that there has taken place an unprecedented expansion of the limits of psychiatry’s jurisdiction and its continuously growing attempt to detect, discipline and rehabilitate every single dimension of human behavior that can be included in the sphere of the “pathological”; a process that has been extending from homosexuality to alcoholism and drapetomania, and from clinical depression to children’s attention-deficit / hyperactivity disorder.. In other words, there should be highlighted the role and multiple functions of psychiatry as a means of normalization and constitution of the human bodies as “normal”, “healthy” and, especially, useful (politically, socially, culturally, economically); a procedure whose beginning can be detected, as we have seen, in the specific

³⁸ As Giorgio Agamben highlights, “[t]he sovereign exception (as zone of indistinction between nature and right) is the presupposition of the juridical reference in the form of its suspension. [...], the exception is situated in a symmetrical position with respect to the example, with which it forms a system. Exception and example constitute the two modes by which a set tries to found and maintain its own coherence”. Giorgio Agamben, *Homo Sacer: Sovereign Power and Bare Life*, tr. D. Heller-Roazen (Stanford: Stanford University Press, 1998), pp. 19-20.

³⁹ Athina Athanasiou, *Life at the Limit: Essays on Gender, Body and Biopolitics* (Athens: Ekkremes, 2007), p. 17.

historical conditions at the end of the eighteenth and the beginning of the nineteenth centuries. Besides, as Georges Canguilhem (1904 – 1995) has eloquently remarked, “[t]o set a norm (*normer*), to normalize, is to impose a requirement on an existence, a given whose variety, disparity, with regard to the requirement, present themselves as a hostile, even more than an unknown, indeterminant. It is, in effect, a polemical concept which negatively qualifies the sector of the given which does not enter into its extension while it depends on its comprehension”.⁴⁰ On the other hand, the functions of the concept of gender within specific regimes of truth as another regulatory norm should definitely be underlined; a regulatory norm through which those people who materialize their sex are constructed as liveable, worthy of living and recognizable subjects, whereas those who do not materialize their sex are constructed as unliveable, unworthy of living and alien non-subjects.⁴¹ Thus, through the critical reading of homosexuality’s presentation in the pages of the *Diagnostic and Statistical Manual of Mental Disorders*, apart from the critique of psychiatry per se, as well as scientific knowledge in general, the point that we should anyhow take into consideration and that would lead us one step forward, is the following: “Do we *really* need a *real* sex? With a persistence that borders on stubbornness, the modern western societies have answered affirmatively. They succeeded in continuously repeating this question of ‘real sex’ within an order of things where one could imagine that they alone estimate the value of the reality of the bodies and the intensity of the pleasures”.⁴² After all, if we could manage to answer this question, maybe, we could claim back our bodies and their pleasures...

⁴⁰ Georges Canguilhem, *The Normal and the Pathological*, tr. C.R. Fawcett (New York: Zone Books, 1991), p. 239.

⁴¹ Butler, *Bodies That Matter*, pp. 4-12.

⁴² Michel Foucault, *Dits et écrits II*, 1976-1988 (Paris: Quarto Gallimard, 2001), p. 935.

Law and Norm: Science and Biopolitics through a Foucauldian perspective

*Thanasis Lagios**

Abstract

This essay is an attempt to describe the genealogy, that is, the historical emergence of the judicio-medical apparatus of scientific discourse that is known as “criminology”, in order to raise epistemological questions concerning its conditions of possibility and its conditions of production in the context of modern western societies. More specifically, the main question that should be asked is if the discourse and practices of criminology belong exclusively in the area or field of Law and Justice or whether they belong also and inevitably in the area or field of the Norm and Medicine. Thus, a historical–philosophical survey should examine the conditions of possibility and the consequences of this judicio-medical apparatus, since its emergence and its production are based not only on the concept of Law but also on the concept of the Norm.

Keywords: Criminology, Norm, Law, Biopolitics, Foucault

Introduction

Around 1807 – 8, Georg Wilhelm Friedrich Hegel (1770 – 1831) set rather clearly and plainly a – very simple in form, but deeply serious in its content – question: “Who thinks abstractly?” And he gave the following short, sharp and surprising answer: “The uneducated, not the educated”. Subsequently, Hegel makes all speed to give a concrete example of such abstract thinking: “A murderer is led to the place of execution. For the common populace he is nothing but a murderer. Ladies perhaps remark that he is a strong, handsome, interesting man. The populace finds this remark terrible: What? A murderer handsome? How can one think so wickedly and call a murderer handsome; no doubt, you yourselves are something not much better! This is the corruption of morals that is prevalent in the upper classes, a priest may add, knowing the bottom of things and human hearts. One who knows men traces the development of the criminal's mind: he finds in his history, in his education, a bad family relationship

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between his father and mother, some tremendous harshness after this human being had done some minor wrong, so he became embittered against the social order — a first reaction to this that in effect expelled him and henceforth did not make it possible for him to preserve himself except through crime. — There may be people who will say when they hear such things: he wants to excuse this murderer!”¹

Thus, if, according to the Hegelian perspective and perception of things, the “one who knows men” traces the formation and development of the criminal in every aspect and fold of his life and personality, is the single and only example of non-abstract, that is, of non-metaphysical but of concrete and scientific thinking, then we should not be surprised by the fact that, even before the end of the nineteenth century, this very example was the model for Criminology. As it was aptly written, in 1893, by the Austrian Professor of Criminology and Law, Hans Gustav Adolf Gross (1847 – 1915), in his *Handbuch für Untersuchungsrichter als System der Kriminalistik* (1893), an investigator should acquire a deep and profound knowledge of human behaviour by noting down the individuals that surround him: “To this end everything in life can be utilised—every conversation, every concise statement, every word thrown out by chance, every action, every aspiration, every trait of character, every item of conduct, every look or gesture, (...)”.²

Therefore, the question that arises is how from a phenomenology of the spirit have we come into a phenomenology of the criminal?³ How, during modernity, have western societies been distanced from the radical critique to the metaphysical thinking of the abstract and reached the scientific worship of the concrete? Shortly, how have we found ourselves in a great distance from the abstract and moral way of thinking that characterized *not only* the common populace *but also* the ladies of the upper class who, according to the Hegelian example, equally abstractly see the criminal either as a moral monster or as an interestingly peculiar being? And how have we managed to reach the concrete, profound, that is, scientific knowledge of the biography and the thoroughly detailed mapping of the criminal personality? How, that is, at which price and through which means? Do we still remain in the field of *Right* and *Law*, when we refer to crime or do we actually approach the field of *Medicine* and the *Norm*? Could there be any kind of criminology that has not already been a forensic science? These questions might be heard as

¹ Georg Wilhelm Friedrich Hegel, “Who thinks abstractly?” in Walter Kaufmann, *Hegel: Texts and Commentary*, (Garden City, NY: Anchor Books, 1966), pp. 113-118.

² Hans Gross, *Criminal Investigation. A practical handbook for magistrates, police officers and lawyers*, tr. J. Adam & J. Collyer – Adam, (Madras: A. Krishnamahari, 1906), p. 32.

³ Gross, *Criminal Investigation*, p. 27: “We may remind our readers that the subject with which this book deals in part, *Criminal Phenomenology*, is but one branch of the wider science of Criminology”.

peculiar and untimely at a time, during which the identification of the criminal is taking place inside the police lab, before he even sits accused in the dock, but they have a profound and great historical and theoretical significance for the understanding not only of the past but also of the present of our societies and of the formation and construction not only of Criminology but also of Medicine.

Conditions of possibility of a judicio-medical domain

Therefore, it is time to be more concrete. In 1831, the Phrenological Society of Paris was founded, in order to promote the scientific ideas of the Austrian neuroanatomist and physiologist Franz Joseph Gall (1758 – 1828), who believed that it was absolutely possible to acquire knowledge of the personality and both mental and moral faculties of an individual on the basis of the external shape of its skull. The examining method called craniology, according to Gall permitted the identification of up to 27 different fundamental inclinations or tendencies that are abutted to the different regions of the brain. The empirical affirmation of his phrenological theory had taken place in various prisons in Germany, around 1805, as he found there through craniologies that all the thieves were inscribed at the *maximum* rate – that is, at an *abnormal* rate – the normal, in other respects, tendency towards greed. Gall's craniologies on convicted criminals inaugurated the medical explanation and interpretation of a crime and provided a scientific guide for the legal treatment of criminals. The path to Cesare Lombroso (born Ezechia Marco Lombroso; 1835 – 1909) was royally opened and the latter's "born criminal" (*reo nato*) could make his first steps.⁴

Nonetheless, there was a scientific path that was plotted in a parallel line. Psychiatry and its scientific discourse had already begun to fight against the primacy of legal discourse in the field of justice, as the case of farmer Pierre Rivière eloquently shows. Let us remind ourselves that in 1972 Foucault in his annual seminar at the Collège de France with a small group of attendants, including Robert Castel and Gilles Deleuze,⁵ discovered and studied the archives of an extraordinary case, where on 3 June 1835, the 23-year old Rivière premeditatedly and cold-bloodily murdered his mother, who was six months pregnant, as well as his sister and his brother and then surrendered himself to police, and there he wrote his memoir, in which through a remarkable style of writing he confesses and describes his crimes with no remorse or regret. Rivière's trial became a scene where the confrontation between the judicial and the

⁴ Cesare Lombroso, *The Criminal Man*, (New York and London: G. P. Putnam, 1911).

⁵ David Macey, *The Lives of Michel Foucault*, (New York: Vintage Books, 1993), p. 248.

medical discourse concerning its case took place. Foucault and his collaborators managed to find and published Rivière's own hand-written account of the case and Foucault stated simply: "I think the reason we decided to publish these documents was to draw a map, so to speak, of these combats, to reconstruct these confrontations and battles, to rediscover the interaction of those discourses as weapons of attack and defence in the relations of power and knowledge".⁶

These combats, these confrontations and battles had already begun in 1825, as Jean-Étienne Dominique Esquirol's (1772 – 1840) student, Etienne-Jean Georget (1795 – 1828), based his ideas on Philippe Pinel's (1745 – 1826) concept of "manie sans délire" (*insanity without delusion*), in order to bring into question certain judicial verdicts concerning homicides and to suggest a more scientifically appropriate explanation and interpretation of the "homicidal monomania", that is, of a situation where there is the certain existence of "a single pathological preoccupation in an otherwise sound mind".⁷ In Britain, James Cowles Prichard (1786 – 1848) was referring to "moral insanity", emphasizing the fact that "there is scarcely an act in the catalogue of human crimes which has not been imitated . . . by this disease".⁸ Finally, in 1832 the concept of "extenuating circumstances" was introduced into the penal code, although since 1810, in terms of the famous Article 64, the penal code allowed that in the case when the individual is in a state of dementia while the crime is committed, then there is no crime or offense. According to Michel Foucault (1926 – 1984), "thus, there is the gradual elaboration of that kind of medico-judicial continuum whose effects and principal form of institutionalization are seen in expert medico-legal opinion".⁹

Nevertheless, we should mention that this medico-legal continuum, which seems to emerge rather abruptly in the first decades of the nineteenth century has deep and strong historical roots in western societies, as it replaced the political order and function of power in the Middle Ages – coded as *Pax et Justitia* – with a more complicated schema that included in the first place, between the fifteenth and seventeenth centuries, the maintenance of order and the organization of enrichment, while on the next level, during the eighteenth century "we find a further function emerging, that of a disposition of society as a milieu of physical well-being, health, and optimal longevity. The exercise of these three latter functions – order, enrichment, and health – is assured less through a single apparatus than by an ensemble of multiple

⁶ See Michel Foucault (ed.), *I Pierre Rivière, having slaughtered my mother, my sister, and my brother: A case of parricide in the 19th century*, tr. F. Jelinek, (New York: Random House, 1975), p. xi.

⁷ Richard F. Wetzell, *Inventing the Criminal. A History of German Criminology, 1880-1945*, (Chapel Hill and London: The University of North Carolina Press, 2000), p. 19.

⁸ Wetzell, *Inventing the Criminal*, p. 20.

⁹ Michel Foucault, *Abnormal, Lectures at the Collège de France, 1974-5*, tr. Gr. Burchell (New York: Picador, 2003), p.32.

regulations and institutions which in the eighteenth century take the generic name of ‘police’. Down to the end of the ancient régime, the term ‘police’ does not signify (at least, not exclusively) the institution of police in the modern sense; ‘police’ is the ensemble of mechanisms serving to ensure order, the properly channelled growth of wealth, and the conditions of preservation of health “in general”.¹⁰ Foucault reminds us that the emergence, formation, and establishment of this ensemble of mechanisms, known under the term ‘police’, began as a utopia in 1611 via Louis Turquet de Mayerne (1550?– 1618) with his work *Aristo-democratic Monarchy* (*La monarchie aristodemocratique, ou Le gouvernement composé et meslé des trois formes de legitimes republicques*), and continued as a political program via Nicolas Delamare’s (1639 – 1723) *Treatise of the Police* (*Traité de la Police*, 1705 – 1738), in order to end up as an academic discipline with Johann Heinrich Gottlob Justi (1717 – 1771), one of the leading German political economists and founder of Cameralism, the writer of *Elements of Police* (*Grundsätze der Polizeywissenschaft*, 1756), where he describes *Polizeywissenschaft* “as at once an art of government and a method for the analysis of a population living on a territory”.¹¹ Of course, Justi was not only one of the leading German political economists and founder of Cameralism, but was also the director of police in Gottingen in 1755. Thus, he had definitely paved the way to the formation and the establishment of the power–knowledge nexus, as “[w]hile he was arresting beggars and chasing down rowdy students, Justi also founded a periodical, the *Göttingische Policey-Amts Nachrichten*. He dedicated it to the improvement of the *Nahrungsstand*, a term he used to denote society’s productive classes—its miners, farmers, manufacturers, merchants, and shopkeepers. It was the central organizing category of his police–cameralist program”.¹² As Wakefield observes concerning Justi and the so-called “police–science”: ‘Police–Science’ (*Policeywissenschaft*), the carrying card of every universal cameralist, involved the ‘knowledge and ability to maintain and increase the total wealth of the state.’ Everything followed from this. It went without saying, of course, that every true cameralist kept meticulous books and observed tireless diligence. ‘Forgetfulness, mistakes, errors, the usual excuses of disorderly and careless people, have no place in fiscal affairs’.¹³ The similarities in structure, function and order between this police–science belonging in the field of German Cameralism and the apparatus of Panopticon, which belongs to the spirit of British Utilitarianism, are striking, as Foucault showed in *Discipline and*

¹⁰ Michel Foucault, “The Politics of Health in the Eighteenth Century”, in Michel Foucault, *Essential Works, 1954–1984*, vol. 3, Power, (ed.) J. D. Faubion, tr. by R. Hurley, (London: Penguin, 2002), p. 94.

¹¹ Michel Foucault, “Omnes et Singulatim”, in Michel Foucault, *Essential Works, 1954–1984*, vol. 3, Power, p. 323.

¹² Andre Wakefield, *The Disordered Police State, German Cameralism as Science and Practice*, p. 74.

¹³ Wakefield, *The Disordered Police State*, p. 92.

Punish: “This enclosed, segmented space, observed at every point, in which the individuals are inserted in a fixed place, in which the slightest movements are supervised, in which all events are recorded, in which an uninterrupted work of writing links the centre and periphery, in which power is exercised without division, according to a continuous hierarchical figure, in which every individual is constantly located, examined and distributed among the living beings, the sick and the dead – all this constitutes a compact model of the disciplinary mechanism”.¹⁴ Furthermore, from a *philosophical* perspective the plain, explicit and predicative remarks concerning police made in 1797 by one of the most famous representatives and founding figures of German Idealism, that is, Johann Gottlieb Fichte (1762 – 1814), who at least for once abandoned his notorious obscure and perplexed prose, are *historically* illuminating: “The principal maxim of every well-constituted police power must be the following: every citizen must be readily identifiable, wherever necessary, as this or that particular person. Police officers must be able to establish the identity of every subject”. Chamayou very aptly and astutely remarks that the difference between the disciplinary model of Panopticon and the model of control, that is, the difference between *discipline* and *security*, that Fichte seems to propose through the obligatory use of passports: “Everyone must always carry a passport with him, issued by the nearest authority and containing a precise description of his person; this applies to everyone, regardless of class or rank. [...] Since merely verbal descriptions of a person always remain ambiguous, it might be good if important persons (who therefore can afford it as well) were to carry accurate portraits in their passports, rather than descriptions”.¹⁵

Consequently, these historical transformations and mutations that took place on the point of convergence of power and knowledge, of politics and science, were inscribed in a telling and significant concept: “The concept of *Medizinschepolizei*, medical police, which appeared in 1764, implied much more than a simply mortality and birth census”.¹⁶ Police-science is coextensive with the rise of mercantilism, the market town and industrial capitalism. As Foucault remarks, ‘To police’, ‘to urbanize’: (...) to police and to urbanize is the same thing. (...) Police and commerce, police and urban development, and police and the development of all the activities of the market in the broad sense, constitute an essential unity ... [T]he market town became the model of state intervention in men’s lives. I think this is the fundamental fact of the seventeenth century, at any rate the fundamental fact characterizing the birth of police in

¹⁴ See Michel Foucault, *Discipline and Punish, The Birth of the Prison*, tr. A. Sheridan, (London: Penguin, 1991), p. 197.

¹⁵ See Grégoire Chamayou, (2013). “Fichte’s Passport: A Philosophy of the Police”, tr. A. Kieran, *Theory and Event* 16(2).

¹⁶ Michel Foucault, “The Birth of Social Medicine”, in Michel Foucault, *Essential Works, 1954-1984*, vol. 3, Power, p. 140.

the seventeenth century”.¹⁷ However, as we hope to show in what follows, Foucault does not simply or diametrically oppose *discipline* to *security*; rather, he tries to show the historical interrelation and interdependence of these two modes of power: “So we should not see things as the replacement of a society of sovereignty by a society of discipline by a society, say, of government. In fact we have a triangle: sovereignty, discipline, and governmental management, which has population as its main target and apparatuses of security as its essential mechanism”.¹⁸ Moreover, Foucault does not simply or diametrically oppose *law* to the *norm*, but attempts to show their interrelation and correlation: “I do not mean to say that the law fades into the background or that the institutions of justice tend to disappear, but rather that the law operates more and more as a norm, and that the judicial institution is increasingly incorporated into a continuum of apparatuses (medical, administrative, and so on) whose functions are for the most part regulatory”.¹⁹ The consequences in both epistemological and political level were unprecedented.

In 1833 the Section of Statistics of the British Association for the Advancement of Science was founded under the guidance of a Belgian mathematician and astronomer named Lambert Adolphe Jacques Quetelet (1796 – 1874), known as the “patriarch of statistics”. Quetelet following the famous philosopher, mathematician and early political scientist Marie Jean Antoine Nicolas de Caritat, marquis de Condorcet known as Nicolas de Condorcet (1743 – 1794) and his suggestion that society is consisted of homogeneous individuals, equal under the law and consequently subject to the mathematical laws that govern any social mechanism, set off to apply mathematical analyses on the demographic data that were presented by the first census of Parisian Population, which took place in 1817. The main target for this census was the recording and the construction of an archive concerning the causes of death. This census took place under the auspices of the Royal Medical Academy and the guidance of an ex-military physician named Louis René Villermé (1782 – 1863), who used to make statistical surveys in the prisons all over France.²⁰ These data and this series of information proved to be extremely useful for Quetelet, as they were going to be the raw material of his mathematical analyses of the social phenomena through the curve of normal frequency distribution and the concept of the

¹⁷ Michel Foucault, *Security, Territory, Population, Lectures at the Collège de France, 1977-8*, tr. G. Burchell, (New York: Palgrave Macmillan, 2007), pp. 337-8. Also, Andrew Johnson (2014), “Foucault: Critical Theory of the Police in a Neoliberal Age”, *Theoria*, 141 (4), pp. 5-29.

¹⁸ Foucault, *Security*, 1977-8, pp. 107-8.

¹⁹ Michel Foucault, *The History of Sexuality: Volume 1: An Introduction*, trans. R. Hurley, (New York: Vintage Books, 1978) p. 144.

²⁰ See Dorothy Porter, *Health, Civilization and the State. A History of Public Health from ancient to modern times*, (London: Routledge, 1999), pp. 64-66.

“average man” (*home moyen*). The latter coincided with the statistical average, in regard with both its mental and its physical characteristics. As Quetelet eloquently and rather clearly put it, “the determination of the average man is not merely a matter of speculation; it may be of the most important service to the science of man and the social system... The average man, indeed, is in a nation what the centre of gravity is in a body”.²¹ Any behaviour or conduct in the field of sexual relationships or delinquency diverged from the statistical mean was, on the one hand, condemnable and, on the other hand, could be predicted or foreseen with the same level of accuracy as in the case of the planetary motions.²² The fact that the number of committed suicides varied each year from 1826 to 1831, between a minimum of 1,542 and a maximum of 2,048, the number of homicides 205 and 266, respectively, and the number of crimes against individuals varied from 1,666 to 2,046, has given the chance to Quetelet to write: “Sad condition of humanity! The share of prisons, chains, and the scaffold appears fixed with as much probability as the revenues of state. We are able to enumerate in advance how many individuals will stain their hands with the blood of their fellow creatures, how many will be forgers, how many poisoners, pretty nearly as one can enumerate in advance the births and deaths which must take place.”²³ Conviction rates of criminals were equally predictable, with guilty verdicts varying between a low of 54% in 1826 and a high of 62% in 1831.²⁴ As Ian Hacking suggests, “the avalanche of numbers after 1820 revealed an astonishing regularity in statistics of crime, suicide, workers’ sickness, epidemics, biological facts. Mathematicians attempted an analysis of such phenomena. The great applied mathematician Siméon Denis Poisson (1781 – 1840) invented the term ‘law of large numbers’ in 1835 as the name of a mathematical fact that irregularities in mass phenomena would fade out if enough data were collected. Although the term ‘law of large numbers’ is standard in probability mathematics, Poisson’s first usage was in connection with the analysis of jury trials”.²⁵ This fetishism of numbers, especially of those concerning the calculation and assessment of criminality or mortality, and which was institutionalised by and through the state censuses, which during the

²¹ Quoted in A. M. Davis, “Tailoring and the normal body”, in E. Waltraud (ed.), *Histories of the Normal and the Abnormal. Social and Cultural Histories of Norms and Normativity*, (New York: Routledge, 2006), p. 143.

²² Ian Hacking, “How should we do the history of statistics?”, in Graham Burchell, Colin Gordon & Peter Miller (ed.), *The Foucault Effect, Studies in Governmentality*, (Chicago: The University of Chicago Press, 1991) pp. 181-195. Also, Ann F. La Berge, *Mission and Method, The early nineteenth-century French public health movement*, (New York: Cambridge University Press, 1992), pp. 55-7.

²³ Wetzell, *Inventing the Criminal*, p. 21.

²⁴ See W. G. Rothstein, *Public Health and the Risk Factor. A History of an Uneven Medical Revolution*, (New York: University of Rochester Press, 2003), p. 23.

²⁵ Ian Hacking, “How should we do the history of statistics?”, pp. 187-8.

1820s had swept Western Europe and the U.S.A., is fully and clearly expressed in all its splendour in the face of the lawyer André Michel Guerry (1802 – 1866), who during 1832–1864 analysed 21,132 cases of homicides and classified them in 4,478 classes of motives that were adopted by the police.²⁶ Moreover, on 2 July 1832, Guerry presented statistical maps of France, where criminality was divided according to region, age, gender, and season of year and was depicted, introducing the use of the contemporary methods of geographical profiling of criminals by Scotland Yard or FBI.²⁷ In order to give an idea of the width and amplitude of the statistical and mathematical scan of population, it suffices to say that whereas in 1870 the census data of the U.S.A. were published in three volumes, the immediate next, that took place just a decade later, were published in 22 volumes consisting of 21,000 pages.²⁸

However, let us leave aside for the moment the field of medical theories and mathematics and turn our attention to the field of the more palpable and tangible technical discoveries. At least, this was the choice made by the editors of *The Edinburgh Philosophical Journal*, and definitely they were rewarded, as in 1836 the chemist James Marsh (1794 – 1846) discovered and published an effective technique for the detection of the most popular or “trendy” poison, from the perspective of murderers, namely, of arsenic. The Marsh test, as it has been called ever since, could detect a quantity equal to the 1/50 of the milligram in a specimen taken from the hair or the bones of the dead, if there was any suspicion of poisoning. After several vociferous and deafening judicial and police successes thanks to the Marsh test, the frequency of use of arsenic was significantly reduced and the basic principles of the test are in use and considered valid up till now. Under these circumstances, we can easily understand the non-philosophical enthusiasm and the frivolous eagerness shown by the editorial board of the *Pharmaceutical Journal*, when in an issue that appeared in 1841, they exulted at the good news by claiming that the kind of murder that seemed to “threaten the destruction of the very bonds of society”, had now, “happily been vanished from the world” and that arsenic instead of threatening the public now “there is none so dangerous to the criminal”, as the dead “are now become the witnesses whom poisoners have most to fear”.²⁹

Why did we call the haste reaction of the *Pharmaceutical Journal* non-philosophical? If we pay attention and take a closer look to the three aforementioned events of the nineteenth

²⁶ Hacking, “How should we do the history of statistics?”, p. 192.

²⁷ Wetzell, *Inventing the Criminal*, pp. 22-3. Also, E. McLaughlin & J. Muncie (ed.), *The Sage Dictionary of Criminology*, (London: Sage, 2001), pp. 132-3.

²⁸ Rothstein, *Public Health*, p. 28.

²⁹ James C. Whorton, *The Arsenic Century. How Victorian Britain was poisoned at Home, Work and Play*, (Oxford and New York: Oxford University Press, 2010), pp. 82-3.

century that were cited as quasi-nodal points, we could find out that a thread links them despite the differences between the scientific fields where their emergence occurred. Not only the medical discourse that was articulated by phrenology and psychiatry, but also both the statistical recordings and analyses that were developed by the rising bureaucratic machine and the technical discovery of the arsenic's retention, had a theoretical perspective in common and shared the same historical landscape. Shortly, this perspective was that of the concept of the Norm and the landscape was shaped by the concepts of the Population and the Individual.

How is this concept of the Norm defined? Let us listen to Georges Canguilhem (1904 - 1995): "Littré and Robin's *Dictionnaire de médecine* defines the normal as follows: normal (*normalis*, from *norma*, rule): that which conforms to the rule, regular. The brevity of this entry in a medical dictionary does not surprise us given the observations we have just made. Lalande's *Vocabulaire technique et critique de la philosophie* is more explicit. Since *norma*, etymologically, means a T-square, normal is that which bends neither to the right or left, hence that which remains in a happy medium; from which two meanings are derived: (1) normal is that which is such that it ought to be; (2) normal in the most usual sense of the word, is that which is met with in the majority of cases of a determined kind, or that which constitutes either the average or standard of a measurable characteristic".³⁰ Consequently, the medical perspective should be combined with the technical and critical perspective, if we want to see the emergence of the genealogical formation of the concept of the Norm: that is, the T-square, the tool of the professor of mathematics at high school, of the most iron-handed scientist in the secondary education, but also the tool of the carpenter, of the technician who has to square and set right what is by nature skewed, deviated and diverged from the mean, that is, pathological. In fact, the pathological, not only as the absolute Other of the Normal, but also as the mathematically and quantitatively abnormal, is the perspective under which the sciences that paved the way for criminology, put themselves. For, the penalty by including a double reference, not only judicial (Law), but also physical (Norm), not only cultural but also biological, attempted to attain and express the maximum "objectivity".³¹ Both the psychiatric discourse that discovered in the brains of – in other respects – normal individuals temporary states of insanity, which could lead to crime and the cranioscopies conducted by Gall that discovered the deviance either towards high or low of – in other respects – normal tendencies, immanent to all people, or the statistical analyses of the average mean that set limits of high and low, had as their goal the discovery of

³⁰ Georges Canguilhem, *The Normal and the Pathological*, tr. C. R. Fawcett & R. S. Cohen, (New York: Zone Books, 1991), p. 125.

³¹ Foucault, *Discipline and Punish*, pp. 170-184.

the normal inside the abnormal or pathological. As Canguilhem claims, at the beginning of the eighteenth and towards the nineteenth century we can see the formation, the constitution and establishment of a medical theory concerning “the relations between the normal and the pathological, according to which the pathological phenomena found in living organisms are nothing more than quantitative variations, greater or lesser according to corresponding physiological phenomena”.³² Suffice it to remind ourselves that the innovation of the Marsh test in regard to the scan of arsenic abuts on the continuity between normality and abnormality, for arsenic exists in the healthy human body as a trace element under normal circumstances. That is, if its existence is too high, namely in abnormal quantities, this would predicate an abnormal death.

Therefore, we could easily understand the epistemological causes and reasons that pushed Lombroso to photograph, both literally and metaphorically, the criminals that he visited inside the cells not only of the prisons but also of the statistical tables with which his books are filled. After all, Lombroso was clear and unambiguous enough, and according to Hegel, very concrete: “The fundamental proposition undoubtedly is that we ought to study not so much the abstract crime as the criminal”,³³ confirming the significance that Foucault attributed to the shifting emphasis of judicial and punitive power from the question concerning the circumstances of the crime (“What must be punished and how?”) to the question concerning the nature of the criminal (“Whom do you think you are punishing?”): “Legal justice today has at least as much to do with criminals as with crimes. Or, more precisely, though for a long time the criminal had been no more than the person to whom a crime could be attributed and who could therefore be punished, today the crime tends to be no more than the event that signals the existence of a dangerous element – that is, more or less dangerous – in the social body”.³⁴ For the crime breaks the *law*, but not the *norm*. On the contrary, the committed crime conforms to a certain normality. If we would like to explain and prevent it, we should turn our attention to the main *causa causans*, according to Lombroso and his followers, of this normality, that is to the abnormal individual, to the “born criminal”, who by his/her own nature cannot be a subject of law but only an object of control. Following not the logic of Law but that of the Norm, Lombroso classified into the category of abnormal everyone that was not a “born criminal” but were “passionate criminals”, like the political criminals and especially anarchists; the anarchists,

³² Canguilhem, *The Normal and the Pathological*, p. 42.

³³ Cesare Lombroso, *Crime, Its Causes and Remedies*, tr. H. P. Horton, (London: W. Heinemann, 1911), p. 365.

³⁴ Foucault, “About the concept of ‘Dangerous Individual’”, in Michel Foucault, *Essential Works, 1954-1984*, vol. 3, Power, pp. 178-9.

according to Lombroso, are characterized “on the one hand of an *extreme* sense of honesty and on the other of an *hyper*-sensitivity”.³⁵ For those who tend to consider Lombroso as an extremely controversial figure in the scientific field of criminology, we should remember Wertzell’s useful remark concerning the foundation of the *Archiv für Kriminal-Anthropologie und Kriminalistik* by the Austrian judge Hans Gross in 1898: “That Gross used the term ‘criminal anthropology’ in the journal’s title, even though he rejected Lombroso’s theory of the born criminal as an anthropological type, reflected the continuing influence of Lombrosian terminology”. Or that in 1913 Gross himself “recommended the most extensive program of sterilization and castration with the argument that society was in a desperate situation”.³⁶

Law and Norm

Therefore, in order to fully understand this epistemological turn to the logic of the Norm, we should see on which historical ground and horizon the scientific discourses that we have cited at the beginning of this paper were rooted and fruited. Additionally, we should keep in mind the fact that already since the eighteenth century both the population and the individuals were objects of state providence par excellence. Besides, the term “statistics” owes its very existence to the German Professor of Philosophy and Law Gottfried Achenwall (1719-1772), who coined this term (*Staatistik*), meaning statecraft, in order to describe “catalogues and surveys illustrating ‘the condition and prospects of society’ ”.³⁷ Thus, it is not surprising that “when the University of Heidelberg celebrated its 400th anniversary in 1786, it was the new school of state administration {*Staatswirtschaft*} that captured much of the attention”.³⁸ However, what is it that a state really and actually needs to know, so as to be capable of setting out and establishing a policy based on scientific knowledge of the condition and prospects of a society? If we make an attempt to listen once again – perhaps more carefully or more concretely this time – to Hegel and his remarks, the state should know everything that concerns the individual. If we then take into consideration Foucault’s remarks we could see that the scientific knowledge of the individual presupposes and is founded upon the non-abstract knowledge of the population forming a *circulus vitiosus*: “The final objective is the population. The population is pertinent as the objective, and individuals, the series of individuals, are no longer pertinent as the objective,

³⁵ Cesare Lombroso, *The Anarchists*, tr. T. Bouzanis, (Ioannina: Isnafi, 2011), p. 80. See Wertzell, *Inventing the Criminal*, pp. 61 and 104.

³⁶ See Wertzell, *Inventing the Criminal*, pp. 61 and 104.

³⁷ Porter, *Health, Civilization and the State*, p. 49.

³⁸ Wakefield, *The Disordered Police State*, p. 131.

but simply as the instrument, relay, or condition for obtaining something at the level of population”.³⁹ Consequently, “the population is not, then, a collection of juridical subjects in an individual or collective relationship with a sovereign will. It is a set of elements in which we can note constants and regularities even in accidents, in which we can identify the universal of desire regularly producing the benefit of all, and with regard to which we can identify a number of modifiable variables on which it depends”.⁴⁰

Crime, therefore, was the missing link between the knowledge of the individual and the knowledge of population. Thus, it should not surprise us that in 1838 the French Academy of Sciences awarded the prize of the best treatise to Honoré-Antoine Frégier (1789 – 1860), the Police Administrator of the region of Seine, who gave the eloquent title *Des classes dangereuses de la population dans les grandes villes, et des moyens de les rendre meilleures* (*On dangerous classes of population in the great cities and on the mediums of their amelioration*) to a content that does honour to the best moments of the French spirit, at least, as it was expressed during the infamous “Great Confinement” (1656). Let us remind ourselves that the Foucauldian term “Great Confinement”, which has its origin in his groundbreaking and seminal work on the history of madness (1961), describes “the structure most clearly visible in the classical experience of madness, and because it is that practice of confinement that would suddenly seem so scandalous when the experience came to disappear from European culture”. More precisely, “[a] single date serves as a reference point here. In Paris in 1656, the Hôpital Général was set up by a royal decree”. This structure, according to Foucault, represents at the *historical* level the exclusion of madness by reason, which had taken place in 1647 at the *philosophical* level by the “holy figure” of modern philosophy, René Descartes in his *First Meditation*. Thus, madmen are now the target of a confinement, since confinement is a generalized practice against every individual that fails to conform to the social norms: prostitutes, vagrants, blasphemers, etc. Given that during the seventeenth century, 1% of the population in Paris is confined, as “[t]he 1656 edict addressed a quite undifferentiated mass made up of a population with no resources and no social moorings”, Foucault claims that “[t]he practice of confinement demonstrates a new reaction to poverty and indigence, a strange, novel form of pathos, a different relationship between mankind and all that can be inhuman in his existence. In the course of [the] sixteenth century, the figure of pauper, and those who could not be responsible for their own existence, gradually

³⁹ Foucault, *Security*, 1977-8, p. 42.

⁴⁰ Foucault, *Security*, 1977-8, p. 74.

assumed a role that the Middle Ages would have failed to recognize altogether”.⁴¹ Almost two centuries later, Frégier’s treatise on the dangerous classes resonates the transformations and the distinctions that Foucault described regarding madness. Let us cite only a phrase in which the author characterizes and categorizes as dangerous classes, “the gambler, the prostitutes, their lovers and their pimps, their madams, the vagabonds, the swindlers and the crooks, the twisters and the thieves, the shoplifters and the fences”.⁴² This treatise is recognized as a valuable work and a milestone in the preface of the *Crime Classification Manual* (CCM), FBI’s manual that in 1992 replaced the *Diagnostic and Statistical Manual of Mental Disorders* (DSM), concerning the “classification system for serial sexual murder”.⁴³ However, it should be noted here, that DSM is still considered to be a valid – in scientific terms – a source of categorization and diagnosis of the criminal, that is, their anti-social or abnormal behaviour. As it is clearly and evidently expressed by contemporary criminologists when they face the problem of anti-social behaviour: “It is anticipated that the DSM-5 will be published in May 2013 so one will need to wait to see exactly how *antisocial* personality disorder is defined at that time and whether the traditional personality features of *psychopathy* will be prominently featured”.⁴⁴

Thus, the crime, that is, the criminal, as a factor not only of subversion of *law* and *justice* but also of the derangement and disturbance of *normality* and *normativity*, that is not only as an *illegal* but also as a *dangerous* agent, became the object of control by the modern relations of power and knowledge. In fact, this is a rupture in the confrontation with danger and its vehicle. Speaking rather schematically in regards to the control of individuals, whereas until the seventeenth century the prevailing model had been that of the leper and leprosy, namely, that of the control of the individual who is exiled, who should be excluded, driven out in order to purify the community, since the eighteenth century a model as old as the previous one has been reactivated and become prevalent: the model of the plague and the plague-infested towns. Whereas the model of leprosy is based on the exclusion and needs the Law in order to function properly, the model of plague is based on inclusion and needs other than the Law and the power of the Norm. Thenceforth, political and medical power are not confronted with the legal rights or the legal substance of the leper, in order to answer the question if he/she is or not a member

⁴¹ See Michel Foucault, *History of Madness*, J. Khalfa (ed.), tr. J. Murphy & J. Khalfa, (London & New York: Routledge), pp. 44 - 77.

⁴² Honoré Antoine Frégier, *Des classes dangereuses de la population dans les grandes villes, et des moyens de les rendre meilleures*, (Paris: B. Baillière, 1840), p. 44. Also Wetzell, *Inventing the Criminal*, pp. 27-8.

⁴³ John Douglas, Ann W. Burgess, Allen G. Burgess, & Robert K. Ressler (ed.), *Crime Classification Manual*, (Jossey – Bass, 2006), pp.3 and 98.

⁴⁴ See Gerben Bruinsma & David Weisburd (ed.), *Encyclopaedia of Criminology and Criminal Justice*, (New York, Heidelberg, Dordrecht, London: Springer, 2014) pp. 4124-5 (emphasis added).

of the community, but they are confronted with the norms of control and therapy of the plague victim in order to deal with the problem of how he/she could be healed inside the community without risking the latter's prosperity. The patient is no more excluded and expelled out of the town; on the contrary, he/she is included and confined in order to be under control more effectively. Instead of the distance that leprosy demanded, the plague demands proximity and stability of observation and control by the medical gaze. Instead of the permanent and definitive stigmatisation of leprosy, we can note the constant control of the plague-infested town according to the norms of health and to health regulations. From the exclusion of the individual aiming at the purification of the population we have passed to the care for the social body through the control of the individual's body.⁴⁵ Nonetheless, scarcely had the new model or mechanism – let us call it disciplinary – been established than one could already note the emergence of something different due to a new danger.

The smallpox epidemic was the greatest danger during the eighteenth century, as the 2/3 children were infected with a mortality rate of 1 in 7.782, that is, almost 1/8.⁴⁶ However, in 1718 Lady Mary Wortley Montagu (1689 – 1762), wife of the British Ambassador in Istanbul, Sir Edward Wortley Montagu (1678 - 1761), introduced to Europe from the Ottoman Empire the method of inoculation or variolisation for smallpox.⁴⁷ As Foucault eloquently and profoundly remarks, inoculation was characterized by four novice and significant elements: it is absolutely preventative, it has almost total certainty of success, it is in principle able to be extended to the whole population at low cost and, finally, but most importantly, inoculation was completely foreign to any medical theory, as it was “unthinkable in terms of medical rationality of this time”, as “it was a pure matter of fact, of the most naked empiricism, and this remained the case until the middle of the nineteenth century, roughly with Pasteur, when medicine was able to provide a rational understanding of the phenomenon”.⁴⁸ The new formation does not make a distinction between healthy and sick individuals; on the contrary, it addresses the whole population, for it is under threat on the basis of probabilities. Furthermore, in the interior of the population, this novice formation distinguishes groups of people with higher probable mortality, such as infants, and groups with lesser, adults, and thus attempts to bridge the distance between them in order to construct a normal mortality rate, that is, the Norm.⁴⁹ Whereas the disciplinary

⁴⁵ Foucault, *Abnormal*, 1974-5, pp. 43-5.

⁴⁶ Foucault, *Security*, 1977-8, p. 58.

⁴⁷ Porter, *Health*, p. 56.

⁴⁸ Foucault, *Security*, 1977-8, p. 58.

⁴⁹ Foucault, *Security*, 1977-8, pp. 62-3.

model is based more on the repression and the exclusion of the individual, the new model – let us call it the security one – displaces the emphasis onto the prediction and prevention of danger.

Conclusion

If someone keeps wondering what relationship do all the aforementioned cases have with Criminology and Law, we should remember that at the First International Conference of Criminal Anthropology, in Rome in 1885, the Belgian criminologist Adolphe Prins (1845 – 1919) introduced the concept of “social defence”, emphasizing the question not of the level of the criminal’s *responsibility*, but of the level of the *danger* that he/she constitutes for the society,⁵⁰ although the Italian jurist Giovanni Carmignani (1768 – 1847) had already made the same movement since 1831.⁵¹ Thus, before Nazism became the synonym of racism, western rationality through its scientific discourse under the pretext of “social defence” had already called for the sterilization of people with a “pronounced criminal disposition” and of all who suffered from incurable, supposedly hereditary, diseases including epilepsy, tuberculosis, cancer, syphilis, and alcoholism.⁵² Also, we should remind ourselves that in 1887 Sherlock Holmes, the most famous *detective*, came into existence through the typewriter of the *physician* Sir Arthur Conan Doyle (1859 – 1930). Holmes’ character was based on the characters, on the one hand, of the Professor of *Medicine* Joseph Bell (1837 – 1911) and on the other of the Professor of *Forensics* and *police doctor* Sir Henry Duncan Littlejohn (1826 – 1914),⁵³ as a literal incarnation of the historical substitution of penalty for the crime, according to the Law, by the scientific knowledge of the criminal, according to the Norm, in the context of a discourse, which is simultaneously both medical *and* judicial, both about security *and* about justice, both about *norm* and about *right*. If someone takes a critical and careful look at the history of western societies, he/she might say in turn: “Elementary, my dear Watchon”.

⁵⁰ Foucault, “About the concept of ‘Dangerous Individual’”, in Michel Foucault, *Essential Works, 1954-1984*, vol. 3, Power, p. 190.

⁵¹ E. McLaughlin & J. Muncie (ed.), *The Sage Dictionary of Criminology*, p. 272-4. Also, P. Pasquino, “Criminology: The Birth of a special Knowledge”, in G. Burchell, C. Gordon & P. Miller (ed.), *The Foucault Effect, Studies in Governmentality*, pp. 235-50.

⁵² Wetzell, *Inventing the Criminal*, p. 104.

⁵³ E. J. Wagner, *The Science of Sherlock Holmes. From Baskerville Hall to the Valley of Fear. The real Forensics behind the great detectives cases*, (Wiley, 2006), pp. 54-60.

The current of Neoromanticism in the Weimar Republic: the re-enchantment of Science and Technology

Grigoris Panoutsopoulos*

*That the hygienic factory and everything pertaining to it, Volkswagen and the sports palace, are obtusely liquidating metaphysics does not matter in itself, but that these things are themselves becoming metaphysics, an ideological curtain, within the social whole, behind which real doom is gathering, does matter.*¹

Abstract

This study investigates the bidirectional relationship between the wider ideological and social context of the Weimar Republic with the particular characteristics that science and technology received during this period. Of catalytic importance in this interactive relationship were a set of ideas, metaphors, terms and emotionally charged references to German tradition, which became widely accepted from both the engineering and scientific communities, as well as the social currents, intellectuals and political carriers of the period. In order to describe this particular ideological tradition, the term *Neoromanticism* will be introduced —the result of a blending of two ideological traditions, that of classical *romanticism* and that of *Modernism*, which were given a unique meaning by the various ideological, philosophical and social currents already established in Germany since the end of the nineteenth-century. Even though the Weimar Republic *Neoromanticism* shares many theoretical origins with classical *Romanticism*, such as *Lebensphilosophie* and a holistic view of nature, it displays substantial differences. It did not reject scientific modernity or technological progress, industrialized production nor the symbolism of the machine. *Neoromanticism* was formed under a national imperative: any anti-technological views would express a national weakness. Thus, *Neoromanticism* was an important catalyst for the social part and the meaning that was given to both science and technology in the Weimar Republic, since, despite the idealism and

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¹ Adorno Theodor & Horkheimer Max, *Dialectic of Enlightenment*. (Stanford: Stanford University Press, 2002), p. xviii.

mysticism that dominated the ideological field, what was achieved was the formation of a context of legitimization of Germany's new main goals: rearmament and industrial rationalization. These goals would be accomplished only through the radical development of technology and science. Various facets of the ideological context of the period will be considered: in German intelligentsia, in philosophical and social currents, and in the scientific and engineering communities.

Keywords: *Technology, Science, Neoromanticism, Weimar Republic, Modernity, Enlightenment, Kultur.*

Introduction

The study of science and technology, as well as their relationship to the wider ideological, social and political environment of the Weimar Republic (1919–1933) is of particular importance, since it brings us up against some of the greatest concerns of modernity: How did western societies confront, not always in unison, the challenges of the industrial revolutions and the increasing determination of everyday life by science and technology? What part did the ideas of the Enlightenment, *rationalism*, the symbolism of the machine, and the phenomenon of mass production play in this debate? What is the role of science and technology in periods of crisis and radical change? How are the various political and ideological crises incorporated into scientific theories and technological orientations and how do the new scientific and technological worldviews contribute, in turn, to these crises? How and why did one part of these views on science and technology of the period connect organically with the vision of the Nazis whereas another was against it? Can nuclei of thought be found within modern science and technology that, given the right environment, could lead towards one path or another? If so, how can one champion a 'neutral character' of science and technology? Could all of the above constitute a serious challenge to the cumulative model for the development of knowledge?

By keeping the above in mind, the reader may now realize that the goal of this text is not simply to present the particular conceptualizations that science and technology received during the Weimar Republic, but, starting from there, an attempt will be made to reflect on the deeper nature of the Enlightenment and modernity. This because the systematic study of the historicity of the technoscience phenomenon, both in regards to how it is exercised, as well

as its conceptual core, if not sufficient, is certainly a necessary condition for the understanding of the process of the modernization of the Western World.

In the literature with references to science and technology in the period of interwar Germany (1919–1939), one can discern four predominant currents. The first one, influenced by a positivist conception of science, while representing in depth the conflicts that arose in the fields of politics, art and philosophy, presents the massive changes that science and technology underwent in a rather detached way, untouched by what had been going on in the political and ideological fields.² Obviously this is not the result of either naiveté or an insufficient study of this period, but originates instead from a deep-rooted ideological admission regarding the autonomy of scientific branches and technology from the wider social status quo. It is also the result of a modernist view of science and technology, as closed, delimited social systems, of which the main goals are Truth and Progress.

Paul Forman (1937-), with his classic 1971 article titled “Weimar Culture, Causality and Quantum Theory 1918-1927: Adaptation of the German Physicists and Mathematicians to a Hostile Intellectual Environment”³, attempted to deconstruct the positivist conception of the history of science in the Weimar Republic. In it, Forman turns the spotlight, in a radical and bold way, to the relationship between science and its cultural environment, by arguing that the non-causal nature of quantum mechanics was largely the result of the adaptation of the majority of scientists to the hostile intellectual environment of *Weimar*. The so-called *Forman Thesis*, which delineates the second historiographical current regarding science in the Weimar Republic, was a decisive step towards the promotion of the osmotic relationship between science and the wider historical context. The problem with the *Forman Thesis*, however, is that it presents the scientific communities as having a mostly passive stance and simply trying to adapt to an extremely hostile environment. The one-sided focus of this historiographic narrative on the influence that the communities received from their environment creates, in my opinion, a distorted representation of the period. The scientific communities did not keep a passive stance towards the new ideological currents but, by readjusting their strategy, their ideas, their alliances and their institutions, they managed to make scientific discourse dominant once again. Science never lost its main social role, a fact that becomes apparent through the noteworthy development in fields such as quantum

² See, among others, Laqueur Walter, *Weimar: a cultural history 1918-1933*, (London: Weidenfeld & Nicholson, 2000), Gay Peter, *Weimar Culture: The Outsider as Insider*, (New York: W.W. Norton & Company, 2001).

³ Forman Paul, “Weimar Culture, Causality and Quantum Theory 1918-1927: Adaptation of the German Physicists and Mathematicians to a Hostile Intellectual Environment”, *Historical Studies in the Physical Sciences*, 1971, 3: 1-115

mechanics, aerodynamics and mathematics, through the multitude of Nobel prizes⁴ that were awarded to German scientists of the era, through wealthy sponsorships (from the Weimar Republic state to Rockefeller Foundation) towards scientific institutes, laboratories, universities and academies, through the involvement of a large part of the German intelligentsia with scientific issues as well as through the public discourse that is often given to scientists of the period in magazines, newspapers and public lectures. Science did not lose its main social role even when it was forced to balance between two grounds that appeared to be diverging: on one hand it should remain an organic part of the German *Seele* (Soul) and *Kultur*⁵, with obvious idealistic and holistic aspects, and on the other hand, it should also be an essential cog for a technologically advanced nation that would replace the fractured knowledge of *Zivilisation*⁶. Thus, the new scientific ideas were not only incorporated into the ideological context of the period, but they also reinforced it, making it even more solid.

The problematic aspect of the *Forman Thesis*, described above, seems to be covered by a third historiographical current the core of which is the term *Reactionary Modernism*, which was introduced by Jeffrey Herf (1947-) in his book *Reactionary Modernism: Technology, Culture and Politics in Weimar and the Third Reich*⁷. By this, Herf promotes the interactivity of the relationship between the engineering and scientific communities and the wider ideological context. For him, cultural politics, especially those of the engineers in the Weimar Republic and later during the Nazi period, was of catalytic importance for the prevalence of a set of ideas that dominated the political and social field. However, despite the important contribution of Herf's historiographical schema towards the promotion of the special relationship of technology with the wider interwar German culture, he highlights the differences instead of the similarities of this particular context with the respective contexts of other interwar countries. Building on the rapid growth of mythological, romantic and mystical ideas, Herf argues that what takes place in interwar Germany is a withdrawal of western *rationalism*, West-born scientific and technological values, as well as the entire ideological core of the Enlightenment. In his own words: "It was the weakness of the

⁴ 1918: Max Planck (1858–1947), Physics, Fritz Haber (1858–1934), Chemistry. 1919: Johannes Stark (1874–1957), Physics. 1920: Walther Hermann Nernst (1864–1941), Chemistry. 1921: Albert Einstein (1879–1955), Physics. 1922: Otto Fritz Meyerhof (1884–1951), Medicine. 1925: James Franck (1882–1964), Physics, Gustav Ludwig Hertz (1887–1975), Physics, Richard Adolf Zsigmondy (1865–1929), Chemistry. 1927: Heinrich Otto Wieland (1877–1957), Chemistry. 1928: Adolf Windaus (1876–1959), Chemistry.

⁵ A term used in German that refers to intellectual culture.

⁶ A term used in German that refers to technical culture.

⁷ Herf Jeffrey, *Reactionary Modernism: Technology, Culture and Politics in Weimar and the Third Reich* (Cambridge: Cambridge University Press, 1984).

Enlightenment in Germany, not its strength that encouraged the confusions concerning technology I have called reactionary Modernism. And it was also Germany's unique (at that time) path to modernity that made possible the ultimate political impact of reactionary modernist ideology”.⁸

It is clear that, by emphasizing the peculiarity of the German case, i.e., by dissociating it from the modernization processes of the rest of the West and placing it against the ideas of the Enlightenment, Herf conceives of this particular period as an exception, as a parenthesis, in the continuity of Western Civilization. Thus, Herf's historical narrative reinforces the historiographical current of the *Deutscher Sonderweg* (*German Special Path*), which, in my view, obfuscates the organic relationship that interwar Germany had with the ‘dark side’ of the Enlightenment. It is a fact that the modernization of German society presented certain characteristics, such as the intense propensity towards romantic ideas⁹, which are not to be found in an equivalent scale in the modernization process of other countries in the Western World. However, when one looks deeper into the ideological core of interwar Germany, at concepts such as normality, systemicity, rationalization of means, processes and functions, scientification and technologization of everyday life, urbanization and industrialization, one comes to realize that Germany interwar was not an exception in the modernization of the Western World but instead was one of its more dynamic cogs. Science and technology of the period condensed, in a particular way and time, the possibilities of western sovereignty over nature and the individual. Moreover, studies on the interwar historical context of countries such as Greece¹⁰, Sweden¹¹, Romania¹², Spain¹³ and Japan¹⁴, have shown that the coating of science, technology and the modernist vision with a mix of sovereignty, mysticism, romantic ideas, traditions and myths, were not peculiar to Germany at the time.

⁸ Herf, *Reactionary Modernism*, p. 48.

⁹ We should note, however, that during the modernization process, there is a distinct turn towards romantic/bucolic ideas in other countries as well, if not with the same intensity, such as in the USA. See Marx Leo, *The Machine in the Garden: Technology and the Pastoral Ideal in America*, (New York: Oxford University Press, 1964).

¹⁰ See, among others, Zarifi Maria (2010), *Science, Culture and Politics, Germany's cultural policy and scientific relations with Greece 1933-1945*, (Saarbrücken: VDM Verlag Dr. Müller, 2010), Bogiatzis Vassilios, *Μετεώρος Μοντερνισμός*, (Athens: Eurasia, 2012).

¹¹ See, among others, Pietikäinen Petteri, *Neurosis and Modernity: The Age of Nervousness in Sweden*. (Leiden: BRILL, 2007).

¹² See, among others, Cotoi Calin, “Reactionary Modernism in Interwar Romania: Anton Golopentia and the Geopoliticization of Sociology” in Tomasz Kamusella, Krzysztof Jaskułowski, *Nationalisms Today*. (Bern: Peter Lang, 2009).

¹³ See, among others, Geoffrey Jensen, *Irrational Triumph: Cultural Despair, Military Nationalism, and the Ideological Origins of Franco's Spain* (University of Nevada Press, 2001).

¹⁴ See, among others, Tansman Alan, *The Culture of Japanese Fascism*. (Durham: Duke University Press, 2009).

Herf's view conflicts directly with the fourth historiographical current that we will examine in this paper, the roots of which may be found in the seminal work of Theodor Adorno (1903–1969) and Max Horkheimer (1895–1973), *Dialectics of the Enlightenment*.¹⁵ In this work, the two thinkers set out to critique the Enlightenment itself, not only in the sense of a particular historical period, but also as a characteristic of the total rationalistic tradition of the West. The core of their critique is the relationship between Enlightenment and myth, forces that seemingly contrast, but in reality interweave in a mystical complicity: "Myth is already Enlightenment, and Enlightenment reverts to mythology".¹⁶ For them, interwar and Nazi Germany were not an 'anti-Enlightenment' example, but the result of a connection between rationality, myth and sovereignty, which can be found in the works of Kant, Hegel, Nietzsche and the organized torture and orgies of De Sade, all of them rooted in the Enlightenment tradition.¹⁷ Adorno and Horkheimer's research, as well as the introduction in the philosophical and sociological field of concepts such as *reification* and *aestheticization* were of catalytic importance for understanding the organic relationship between Enlightenment, modernity and the ideas that prevailed in interwar Germany—a relationship which is largely promoted through the ideas that were developed during this particular period regarding science and technology. Furthermore, it remains a fact that the *Dialectics of the Enlightenment*'s critique on the various aspects of modernity, from the culture industry to Nazi ideology, seems to be indifferent in shining a light on the diversity of the individual phenomena but insists on describing their common characteristics.¹⁸ One could, therefore, argue that in this way, the historiographical schema of Adorno and Horkheimer relativizes to a degree the various interwar contexts of the Western World. Even if the ideas of interwar and Nazi Germany were the result of certain characteristics that can be found, in latent form, within enlightened and modern thought, they are still far removed from the ideological contexts developed in the interwar USA and Great Britain. Even if one has to reduce the case of Germany to indigence and dilemmas on the entirety of modernity and the Enlightenment, this does not negate the fact that each nation has modernized in its own way, through a

¹⁵ Adorno Theodor & Horkheimer Max, *Dialectic of Enlightenment*. (Stanford: Stanford University Press, 2002).

¹⁶ Adorno & Horkheimer, *Dialectic of Enlightenment*, p. xviii.

¹⁷ See Adorno Theodor & Horkheimer Max, *Dialectic of Enlightenment - Excursus II: Juliette or Enlightenment and Morality*, pp. 63-93.

¹⁸ Behind this lack of differentiation on the part of Adorno and Horkheimer, there could lie a warning for the ever-present danger of the possible slide of modern civilization towards Nazi and fascist violence. The words of Holocaust survivor Primo Levi come to mind: "It happened, therefore it can happen again: this is the core of what we have to say. It can happen, and it can happen everywhere" (Levi Primo, *The Drowned and the Saved*, London: Abacus, 1989).

complex process of reconciliation with the wider ideological and social context of each place and each period.

By attempting, therefore, to balance ourselves between relativism and the uniqueness of the case of Germany, and having as a basis the historiographical schemas of Forman, Herf, Adorno and Horkheimer, it is proposed within the context of this particular paper to consider the analytical tool of *Neoromanticism*. This tool attempts to conjoin the complementary elements of the above historiographical currents while simultaneously overcoming their weaknesses. *Neoromanticism* will attempt to bring to the foreground the organic relationship of ideas regarding science and technology in Weimar Republic, both with the deeply romantic ideological roots of German culture, as well as the industrialized modern context in which they develop. In this way, the historiographical prism of *Neoromanticism* will allow us to conceive the history of the period in all its complexity, by avoiding Manichean ways of thinking. Because, even if we don't accept that "the wholly Enlightened earth is radiant with triumphant calamity",¹⁹ we should at least admit that the Enlightenment was not wholly liberating, since certain of its aspects were connected with totalitarian sovereignty. Respectively, modernity is not characterized solely by rationality but also by myth. The *disenchantment* and *re-enchantment* of the world, faith and scientific explanation, the romantic ideas and modern technology coexist and are organically connected. This particular paper attempts, through the case of the Weimar Republic, to shed light on the connections between these conflicting but often complementary aspects of the Enlightenment, Romanticism and modernity.

The Birth of Neoromanticism

The Weimar Republic was a period abundant in references to science and technology, a fact which becomes apparent in almost every expression of social life: in cinema, in theatre, in literature, in visual arts. The ideas regarding technology and science that took shape in interwar Germany were, in essence, a part of the multifaceted ideological conflict on the role that science and technology would play in modern societies. It is important to note that this conflict did not only include scientists and engineers but also the majority of the German intelligentsia (E. Jünger, O. Spengler, W. Benjamin etc.), politicians (K. Haenisch, K. Riezler, O. Spann, J. Goebbels, etc.), art movements (*die Neue Sachlichkeit*, *das Bauhaus*, *der*

¹⁹ Adorno & Horkheimer, *Dialectic of Enlightenment*, p. 1.

Deutsche Werkbund, etc.) and philosophical currents (*Circle of Vienna*, *Phenomenology*, etc.). This historical debate lasted for the entire duration of the Weimar Republic, occupying the time of a large part of German public opinion through books, popularized articles in magazines and newspapers, conferences and seminars.

The discussion on the social role of science and technology resulted in the development of a coherent and meaningful set of ideas, metaphors, terms and emotionally charged words and expressions with reference to German tradition. This particular mindset arose through the demand for a complete restructuring of the *Zivilisation*, perceived as degenerate, so that it could align itself with the characteristics of the German *Kultur*. In order to describe the ideological currents that developed within the scientific and engineering communities, as well as within the intellectual, philosophical, political and artistic circles, the term *Neoromanticism* will be used.²⁰ It is worth noting that this term was never used during the Weimar Republic in order to describe the ideological currents that are presented in this article. Yet it constitutes an ideal typical construct, which will assist us in connecting a series of characteristics of the ideological context of the era, all of which played a catalytic role in the particular meanings that science and technology received in that period.

The social basis of neoromantic ideas was the middle class, broadly defined. The diverse groups of the German *Mittelstand* were bound together by common reactions to the rapid industrialization of Germany and the violent shift that took place in everyday life as it underwent modernization. Anxious and afraid of large capital, on the one hand, and the organized working class on the other, they viewed the nation and the idealistic traditions of German culture as a redemptive unity. Additionally, the German middle class imaginary was built on the shuffle of modern, capitalist and industrial experiences with traditional, pre-capitalist and pre-industrial life. The *Mittelstand* lived in the cities and worked in modern industry, but the memories of small-town life and less rationalized forms of production were still vivid in the Germany of the 1920s.²¹ So, we can argue that the German *Mittelstand* was an intermediate class in a temporal as well as social sense.

WWI was of paramount importance in constituting the *neoromantic* ideas predominant in the ideological field of the Weimar Republic. The war instilled in the generation that played an active part in it, contempt toward the democratic institutions, a

²⁰One should not confuse this term with other intellectual movements that happen to use the same term, such as *Neoromanticism* of the late nineteenth century, revolving around the compositions of Richard Wagner, or of the musical current at the start of the 1980s, which became known as *Neue Einfachheit*.

²¹See, among others, Lebovics Herman, *Social conservatism and the middle classes in Germany, 1914-1933*, (Princeton: Princeton University Press, 1969).

familiarization with violence, and finally, it also gave them a sense of community, which they would later long for. It was after the war that a large part of the German intelligentsia connected the romantic ideas regarding tradition, idealism and feeling, with an adoration for technology and scientific applications. When the generation of the interwar period idealized the lost communities of the past, they looked back to the modern battlefield and the trenches, not to the preindustrial landscape. The *Kriegserlebnis* (*war experience*), through the *neoromantic* viewpoint, presented postwar reaction with a fully up-to-date masculine alternative to bourgeois society, one preferable to “the effeminate and escapist fantasies” of previous generations.²² Based on these facts, it was Ernst Bloch (1885–1977) who was the first to argue that the appeal of Nazism lay less in traditional anti-modernism than in the promise of cultural and emotional redemption through embracing aspects of the modern world in accordance with German national traditions.²³

The *neoromantic* current was mostly the result of the blending of two ideological traditions, of *Romanticism* and of *Modernism*, which were given meaning, however, by the cultural and historical context of the particular period. *Modernism* in interwar Germany was on one hand connected to radical movements such as the *Werkbund* and the *Bauhaus*. At the same time, however, the other side of interwar *Modernism* displayed an excellent dynamic; a side that flirted with far-right ideas, substantially influenced by Filippo Marinetti (1876–1944) and the *Futurists* in Italy, by Wyndham Lewis (1882–1957) in England, Ezra Pound (1885–1972) in the USA, Drieu La Rochelle (1893–1945) and Charles Maurras (1868–1952) in France. In other words, modernism influenced by an important part of Western intellect that connected technology to a new anti-bourgeois vitalism, with masculine violence, with the *will* for power, with a new aesthetic, with *productivity* instead of *trade parasitism*. Finally, it also connected it with a life that was full, lived to the limits of emotions, a life that was in total contrast with bourgeois decadence and boredom. German *Modernism*, however, preserved inside itself its own unique legends. From Ernst Jünger (1895–1998) to Joseph Goebbels (1897–1945), the modernist credo was a triumph of spirit and *will* and the subsequent fusion of this *will* to an aesthetic mode: if aesthetic experience alone justifies life, morality is suspended and desire has no limits.

²²Herf, *Reactionary Modernism*, p. 29.

²³Bloch Ernst, *Erbschaft dieser Zeit*, (Frankfurt am Main: Suhrkamp, 1992/1935).

On the other hand, *Romanticism* was, for the Western World, a reaction to the radical life changes that took place through the Industrial Revolutions, which led, as the exponents of the movement underlined, to the estrangement of nature, to the industrialization of society and the mechanization of life. In order to explain the historical line, however, that connects *Romanticism* with the Weimar Republic's *Neoromanticism*, it should be noted that the German-speaking area was one the foremost cores of development of *Romanticism* and that romantic ideas were perfectly aligned with the idealistic German tradition, which was widely accepted in interwar Germany. *Romanticism* also shaped the nature of German science, as was the case with *Cartesianism* in France and *Baconism* in England, having its own unique symbols such as Johann Wolfgang von Goethe (1749–1832), whose scientific aspect was often praised during the Weimar Republic. References to him during the interwar period were a symbol of unity for *Kultur* and Science, through the prism of a particular cultural nationalism.

Despite the fact that the Weimar Republic's *Neoromanticism* shares many theoretical origins with *Romanticism*, such as the ideological tradition of the *Lebensphilosophie*²⁴ (Philosophy of Life) and a holistic view of nature, it presents, at the same time, substantial differences. *Neoromanticism* did not reject scientific modernity, much less technological progress and industrialized production. It elaborately integrated modern technology into the cultural system of modern German nationalism. Thomas Mann had perhaps conceived of the essence of *neoromantic* ideas when he wrote that “the really characteristic and dangerous aspect of National Socialism was its mixture of robust modernity and an affirmative stance toward progress combined with dreams of the past: a highly technological Romanticism.”²⁵

Thus, the ideological current of *Neoromanticism* expressed an increasing hostility towards many aspects that were up to that point defined as typically *romantic*, such as the critique of the estrangement of human nature by the machine. The new conception of *Romanticism* that dominated also implied some subtle but important shifts in the meanings given to romantic concepts and symbols. For example, when German interwar intellectuals such as Carl Schmitt (1888–1985), Oswald Spengler (1880–1936), Ernst Jünger, Werner Sombart (1863–1941) referred to *Romanticism*, they mostly referred to the idea of *will* and not the anti-industrial vision. Its proponents believed that the new *Romanticism* was the product of the war, rather than of pastoral poetry. Although the German Intelligentsia used terms such

²⁴ *Lebensphilosophie* is a philosophical school of thought, which emphasizes the meaning, value and purpose of life as the foremost focus of philosophy. Inspired by the critique of rationalism in the works of Arthur Schopenhauer, Søren Kierkegaard, and Friedrich Nietzsche, it emerged in nineteenth-century Germany as a reaction to the rise of positivism and the theoretical focus prominent in much of post-Kantian philosophy.

²⁵ Mann Thomas, *Deutschland und die Deutschen, Essays* 2^oPart, (Frankfurt: Fischer Taschenbuch, 1977), p. 294.

as *Gemeinschaft* (community) or *Innerlichkeit* (inwardness), they redefined these legacies of *Romanticism* in ways that elude the dichotomies of tradition *or* modernity, and progress *or* reaction²⁶. Their enthusiasm regarding *Fronterlebnis* (experience of the trenches), as well as their belief that the war brought to the foreground a *New Man*, was an old romantic vision placed within a modern context.

In order, however, to paint a more complete picture of *neoromantic* rhetoric, we need only look at an excerpt from the speech that Joseph Goebbels²⁷ read at the Heidelberg City Hall in 1943:²⁸

Every time has its Romanticism, its poetic presentation of life [...] Ours does as well. It is harder and cruder than a previous Romanticism, but it remains romantic. The steely Romanticism of our time manifests itself in actions and deeds in service of a great national goal, in a feeling of duty raised to the level of an unbreachable principle. We are all more or less romantics of a new German mood. The Reich of droning motors, grandiose industrial creations, an almost unlimited and unenclosed space which we must populate to preserve the best qualities of our Volk —is the Reich of our romantics.

Neoromanticism was thus formed under a national imperative: anti-technological views would be expressions of national weakness. The distinction of technology *or* *Kultur* was largely replaced by the indivisible unity of technology *and* *Kultur*. The German nation could not be simultaneously powerful and technologically backwards. Germany not only could but should be simultaneously technologically advanced and true to its *Seele*. As Goebbels noted repeatedly, this century would be the century of *Steel Romanticism*. Therefore, it should come as no surprise that despite the intense idealism and mysticism that dominated the ideological field, the main goals were rearmament and industrial rationalization, both of which could be achieved through the radical development of technology and science.

The contribution of German intellectuals

By exalting, therefore, the concept of the beauty over regulatory standards and interpreting technology as an embodiment of *will*, *Weimar*'s right-wing intellectuals contributed towards a mythological embrace of technology. When, for example, they discussed trains as

²⁶ Herf, *Reactionary Modernism*, p. 30.

²⁷ It is worth noting that Joseph Goebbels' studies and doctoral thesis were both on nineteenth century Romanticism.

²⁸ Goebbels Joseph, *Reden* (Heidelber Stadthalle, July 7, 1943).

embodiments of the *will* to power or saw the German *Seele*, expressed in the Autobahnen (motorways), they were popularizing what had been the preserve of a cultural vanguard.²⁹

Ernst Jünger, one of the most recognized intellectuals of the era, was one of the leaders of the *neoromantic* current of ideas. He attempted to connect technology with the primal forces of *will* and thus saved the machine from the attacks on the part of the anti-technological currents of German idealism. Jünger began developing this symbiosis of animism and machine, a process of *re-enchantment* of technology, in long essays written during the 1920s. The generation of the trenches was one that “builds machines and for whom machines are not dead iron but rather an organ of power, which it dominates with cold reason and blood. It gives the world a new face.”³⁰ War was for him the defining event that allowed his generation to perceive the dynamic and importance of technology through a mystical prism:³¹

Today we are writing poetry out of steel and struggle for power in battles in which events mesh together with the precision of machines. In these battles on land, on water, and in the air, there lay a beauty that we are able to anticipate. There the hot will of the blood restrains and then expresses itself through the dominance of technical wonder works of power.

Jünger's *magical realism* thus found its purest expression in the descriptions of war. Here appeared to be an endless composition of fire and blood, of precision and passion, of *rationalism* and magic, of external form and hidden *will*.³² The following description of a sinking battleship, for example, aptly shows Jünger's mystical passion for technology:³³

But haven't we, who of course are not materialists, but instead label ourselves realists, already felt the experience of mathematical precision and magical background during the war. Didn't phenomena such as the modern battleship arouse the same impression in us? This embodiment of an icy will, all coal and steel, oil, explosives and electricity, manned by specialized positions from admiral to boiler heater, the image of the latest precision mechanics, served by workers and directors, functional in the highest degree, composed of millions of objects—this whole apparatus is sacrificed in

²⁹Herf, *Reactionary Modernism*, pp. 12-13.

³⁰Jünger Ernst, *Das Wäldchen 125: Eine Chronikaus den Grabenkämpfen 1918*, (Berlin, 1925) p. 19.

³¹Jünger Ernst, “Der Kampfsinneres Erlebnis”, in *Sämtliche Werke, Band 7, Essays I*, pp. 9-103, (Stuttgart: Klett-Cotta, 1980).

³²Herf, *Reactionary Modernism*, p. 83.

³³Jünger Ernst, “Nationalismus und modernes Leben”, *Die Kommenden* 5, 18, 1930, pp. 205-206.

seconds for the sake of things which one does not know but rather in which one can only take on faith.

Human beings are presented in Jünger's work mostly as a part of an operating mechanism. The organic relationship between the machine and the human body is discussed often, through the illustrative relationship between the soldier and the military technology:³⁴

We have to transfer what lies inside us on to the machine. That includes the distance and ice-cold mind that transforms the moving lightning stroke of blood into a conscious and logical performance. What would these iron weapons that were directed against the universe be if our nerves had not been intertwined with them and if our blood didn't flow around every axle.

However, the metaphor "what lies inside us," does not simply formulate a symbiosis of man and machine. Rather, it's a complete reconsideration of the concept of man and his thought, since a machine, contrary to the body, may achieve, according to Jünger, the ideal condition of flawless operation. We come therefore to what Adorno and Horkheimer argued, a few years later, to be a fundamental aspect of their critique, "thought is reified as an autonomous, automatic process, aping the machine it has itself produced, so that it can finally be replaced by the machine."³⁵

If therefore, as Jünger insists, our nerves are indeed intertwined with technology, then the conservative suspiciousness and hostility towards this view of modernity should be left aside:³⁶

Yes, the machine is beautiful. It must be beautiful for him who loves life in all life's fullness and power. Nietzsche insisted that life is not only a merciless struggle for survival but also possesses a will to higher and deeper goals. The machine cannot only be a means of production, serving to satisfy our paltry material necessities. Rather, it ought to bestow on us higher and deeper satisfactions [...] The artistic individual, who suddenly sees in technology the totality instead of a functional assembly of iron parts.

Another intellectual, whose role was of catalytic importance in the formation of the *neoromantic* current of thought, was Oswald Spengler. Even though he is usually considered as the principal representative of *Weimar's political pessimism*, multiple aspects of his work

³⁴Jünger Ernst, *Feuer und Blut*, (Berlin, 1929), p. 84. as cited in Herf, *Reactionary Modernism*, p. 79.

³⁵Adorno & Horkheimer, *Dialectic of Enlightenment*, p. 19.

³⁶Jünger Ernst, *Feuer und Blut*, (Berlin, 1929), p. 81, as cited in Herf, *Reactionary Modernism*, p. 79.

attempt to connect technology and science with the beauty, the *will* and the productivity, thus placing them within the sphere of German *Kultur* and not of Western-born *Zivilisation*. In his monumental work, *The Decline of the West*, Spengler not only refrains from attacking science and technology, but also shows his admiration for them in multiple points of his work, attempting to re-define them through the values and visions of the *neoromantic* movement:³⁷

The depths and refinement of mathematical and physical theories are a joy, who would sooner have the splendidly clear, highly intellectual forms of a fast steamer, of a steel structure, of a precision lathe, the subtlety and elegance of certain chemical and optical processes, than all the pickings and stealing of present day applied art, architecture and painting included.

While for modern physics, he adds that it is: “our ripest and strictest science.”

However, physics in his generation is not merely plodding forward in a beaten track, tying up loose ends. It is also, according to Spengler, disintegrating and metamorphosing, undergoing a transformation of the goals and principles of scientific explanation parallel to the *Zeitgeist* (spirit of the age), the “second religiousness”. This implies that scientific theory that grasps the invisible processes of the natural world possesses the same ritualistic and mythic aspects as religion³⁸. Hence, the fate and the salvation of physics will be a reunification of thought and feeling, a self-discovery of physics as a fundamentally religious-anthropomorphic expression³⁹. Deeply inspired by the *neoromantic* ideological context and the faith in the German nation’s special mission of becoming the ark of science in the twentieth-century, he writes:⁴⁰

The goal reached the vast and ever more meaningless and threadbare fabric woven by natural science falls apart. It was, after all, nothing but the inner structure of the mind. [...] But what appears under the fabric is once again the earliest and deepest, the myth, immediate becoming, life itself. [...] Out of the religious soulfulness of the gothic there grew up the urban intellect, the alter ego of irreligious natural science, overshadowing the original world feeling. But today, in the sunset of the scientific epoch, in the stage of victorious skepsis, the clouds dissolve and the quiet landscape of the

³⁷Spengler Ostwald, *The Decline of the West*, trans. C. F. Atkinson, (New York: Knops, 1926), pp. 43-44.

³⁸Spengler, *The Decline of the West*, p. 507.

³⁹ Forman, “Weimar Culture, Causality and Quantum Theory 1918-1927”, pp. 36-37.

⁴⁰Spengler, *The Decline of the West*, pp. 427-8.

morning reappears in all distinctness [...] weary after its striving, the Western science returns to its spiritual home.

Beyond science, Spengler dedicates a large portion of his work on technology and the role it should play in the rebirth of the German nation. Thus, both in *The Decline of the West* as well as in other works of his, such as *Der Mensch und die Technik* (Man and Technology), Spengler creates a fragile truce between right-wing conservatism and modern technology. Behind the lean, glossy surface of modern technological constructs, Spengler could discern the work of those mythological, mysterious forces at the epicenter of the former *Romanticism* in Germany. The keywords are *creating, myth, form, soul* and *formative power*. They offer a way of talking about the rationalization of German industry, of retrofitting and technological applications, as if they were the processes of renewal of myth and *re-enchantment* of the modern world. In Spengler's view, modern science expressed a “Faustian world feeling”, a drive to expand into the natural spaces of the earth, to overcome resistance and formlessness. But, once science and technology appear as outcomes of a primal *Faustian* drive, it is merely “scientific prejudice” that asserts that only primitive people create myth and images of God and that in modern culture the power to form myths is lost. On the contrary, the soul fills the world with forms in modern no less than in primitive times.⁴¹

Also noteworthy is that, in the widespread attempt at infusing science and technology with the magical-mythological element, contributions were also made by the esoteric-apocryphal currents of the era, such as *Theosophy*, which viewed science and technology as an intense *religiousness*. One of the protagonists of the *theosophical* current, the paleontologist Edgard Dacque (1878-1945), writes in his book, bearing the characteristic title *Natur und Erlösung* (Nature and Redemption):⁴²

Our knowledge, whether it be mechanistic or magical, perceives and yearns for the eternal idea in things. Even pure technology, such as the construction of a machine, signifies a glimpse into and a realization of the idea of eternity, when we see this technical activity as the physical realization of a primal image through the medium of our own spirit. When we stand in awe and perhaps also in terror of a functioning machine what is it we are seeing other than a true homage to the ideational meaning of iron that, so to speak, receives life from our spirit and shows us its inner countenance in symbols. It is art in the highest and noblest sense that we see before us. We admire the

⁴¹Herf, *Reactionary Modernism*, p. 54.

⁴²Dacque Edgar, *Natur und Erlösung*, (Munich: R. Oldenbourg Verlag, 1933), p. 53.

spirit and powerful manliness that inventors and builders have here represented from within their beings.

By keeping the above in mind, the, at first cryptic phrase from the *Dialectic of Enlightenment* becomes somewhat clearer: “Any intellectual resistance it encounters merely increases its [Enlightenment] strength. The reason is that Enlightenment also recognizes itself in the old myths.”⁴³

Science in the neoromantic ideological context

What was, however, the role of the scientific communities within this particular *neoromantic* context of ideas that was taking shape at the time? The necessity of harmonizing the scientific communities in a period of crisis and rapid change, their attempt at assuming more central social roles in an era of intense rearrangements, their relationship with other social groups and the newly delineated borders between them and their environment, all play a catalytic role in the formation of a new ideological core. We should not, however, conceive the science of the era as a passive carrier that simply capitulates and adapts to a hostile environment. Scientists and engineers alike, being two of the most important components of the social configuration of the period, not only managed to adapt science and technology to the *neoromantic* ideological context, but also actively contributed towards its formulation.

The *crisis in science*,⁴⁴ during the time of Weimar Republic, developed concurrently with the unfolding of several political and ideological crises, which both gave rise to it and were facilitated by it. Therefore, this ‘crisis in science’ was not only the result of an external imperative of the particular historical context, but that of an interactive scheme where the ‘internal core’ of science was influenced by its environment while at the same time it influenced said environment to a great degree. Thus, we should always keep in mind the duality of this relationship, by wondering not only if the crises in science were affected by wider social crises but also to what degree did the scientific crises affect the political and ideological crises that took place during the Weimar Republic.

⁴³Adorno & Horkheimer, *Dialectic of Enlightenment*, p. 3.

⁴⁴ *Crisis in science* is a term that is used mostly during the *Weimar Republic* by scientists and their wider environment. As P. Forman (1971) notes, from the first years of the *Weimar Republic*, we have a wealth of examples regarding an attitude towards considering the state of physics as critical. Taking only those cases in which the crisis is proclaimed in the title itself, there is Richard von Mises's lecture *On the Present Crisis in Mechanics* of September 1921, Johannes Stark's pamphlet on *The Present Crisis in German Physics* of June 1922, Joseph Petzoldt's remarks *Concerning the Crisis of the Causality Concept* of July 1922, and Albert Einstein's popular article *On the Present Crisis in Theoretical Physics*, dated August 1922.

Looking at the books, articles and public addresses by some of the foremost representatives of the scientific community of the period, we could conclude that their rhetoric can be crystallized in the phenomenally contradictory scheme of the dominant *neoromantic* context: on one hand, science was called on to perform its functional role through its applications in a society that is both undergoing industrialization and preparing for war. Thus, mathematics and physics research are presented as the foundations of the necessary modernization of German society, which protect and expand the German nation. At the same time, however, science swears allegiance to German *Seele*, to *Kultur*, to *Lebensphilosophie* and to myth, attempting through its discourse to reinvent a particular *re-enchantment* of the world.

If there is someone who encapsulates, through his discourse and his work, the integration of modern technology within the *neoromantic* cultural system, then that individual is no other than Pascual Jordan (1902–1980), one of the foremost physicists of the period, who co-wrote with Heisenberg and Born the *Drei-manner Arbeit* (Work of Three), which standardized Heisenberg's quantum mechanics in 1925–6.

Throughout the 1930s, Jordan sought in popular articles and books to show that this transformation of the western tradition to German *Kultur* should be understood as the necessary result of 20th century physics and philosophy, especially quantum mechanics. Quantum mechanics would point the way toward an “organic conception,” a rigorous conceptual foundation for previously fuzzy ideas like “finality” and “wholeness”. It would ground in physics itself, in its strictest mathematical form, a holistic, ideological viewpoint on all aspects of nature.⁴⁵

Physicists, according to Jordan, exhibit two prominent characteristics: love of *beauty* and *will* to power. For them, the *beauty* of things is captured in their theoretical representations, which resemble the artistic expressions of architecture and music; while their *will* to power is “one of the most sublime, most refined forms of the will to power, and yet filled with an almost brutal vitality.” This juxtaposition of beauty with brutality was of course common in romantic ideology. In such characteristics of physicists Jordan saw “a deep affinity with the spirit and desire of our epoch,” which ever more clearly took the imprint of “the resolute will to power”.⁴⁶

Jordan's glorification of science and technology is related to the prominent role that they played during wartime. Besides, war was a main foundation of the *neoromantic* construct,

⁴⁵ Wise Norton M., “Pascual Jordan: Quantum Mechanics, Psychology, National Socialism”. In M. Renneberg & M. Walker (Eds), *Science, Technology and National Socialism*, (Cambridge: Cambridge University Press, 1994), pp. 227, 229.

⁴⁶ Wise Norton, “Pascual Jordan: Quantum Mechanics, Psychology, National Socialism”, p. 234.

since through war a new world, cleansed from the sins of the Western Civilization, could one day arise. Thus, the triptych of science/technology, war and domination, which we encounter often in the *neoromantic* ideological context, is present in Jordan's work as well:⁴⁷

Democratic liberalism was dead, along with its deceptive insistence that the true value of science lay in the world of ideas, not material technology. We are not willing to see any abuse in the coupling of science to military might, after military might has proven its compelling *aufbauende* (constructive) force in the creation of a new Europe.

Despite the fact that Jordan in his work insists often on the necessity and functionality of scientific applications and technological development, his view on science never distances itself from the mythological dimension of the period. Jordan describes science as a crucial factor that will contribute towards the revealing of Nature and Life's mystical character. The titles of his books *Die Physik und das Geheimnis des organischen Lebens* (Physics and the Mystery of Organic Life) and *Schöpfung und Geheimnis* (Creation and Mystery) are indicative.

A common component of the public addresses of scientists of the era was a ruthless critique of the nature of *Western Science*, which was usually accompanied by an exhortation for the rise of a *New Science*, through a revolutionary process, which will be able to embrace the new idealistic directional lines, construct a holistic view of Nature and contribute to the *re-enchantment* of the world. Let us observe this tension, however, through the words of the protagonists of the period themselves. It is important to note that even their writing style has more in common with poetry and literature than with the nature of scientific discourse we are familiar with today.

In his inaugural speech, the mathematician Gustav Doetsch (1892–1977), a professor at the department of applied mathematics at the University of Halle, mentions:⁴⁸

Such rationalistic dogmatism is the characteristic expression of that intellectual epoch which is at this moment perishing. It is the spirit, one could say, of the age of natural science, which, essentially, coincided with the 19th century, and which in our days is sinking with violent convulsions into its grave in order to make room for a new spirit, a new life-feeling [...] this epoch, at whose beginning we unquestionably find ourselves today, is fed up with this rationalistic attitude.

⁴⁷Jordan Pascual, *Die Physik und das Geheimnis des organischen Lebens*, p. 8-9, as cited in Wise "Pascual Jordan", p. 250.

⁴⁸Doetsch Gustav, "Der Sinn der angewandten Mathematik", *Jahresbericht der Deutschen Mathematiker-Vereinigung*, 1922, 31, pp. 231-232.

In turn, Georg Hamel (1877–1954), president of the Reich's Mathematical Union, in his address as Dean on the 30th of June 1928 at the Technische Hochschule in Berlin, claims:⁴⁹

Mathematics customarily appears as the rational science per se; to the layman the mathematician is a calculator. In opposition thereto I maintain the thesis that mathematics is an art, and that, in the last analysis, it is conditioned not logically but transcendently [...] The mathematician is a poet. Like the dramatist he creates a form [...] The problem of irrational numbers leads mathematics into metaphysics.

The fact that the *New Science* was connected organically with myth and mysticism becomes apparent in the speech given by Richard von Mises (1883–1953), Professor of Mechanics at the Dresden Polytechnic on February 1920:⁵⁰

It is not a question of new facts of any sort, nor of new theoretical propositions, nor even of new methods of research, but, if I may say it—taking this word in its philosophical sense—of new intuitions of the world. Atomic physics has taken up again the question of the old alchemists; numerical harmonies, even numerical mysteries play a role, reminding one no less of the ideas of the Pythagoreans than of some of the cabbalists.

This short reference to the public addresses of scientists of the era may come to an end with the mathematician Emanuel Lasker (1868–1941), who will attempt to bring once more to the historical foreground the concept of the physicist–philosopher in contrast to the scientist–craftsman who lacks philosophical depth, in his book titled characteristically, *Die Kultur in Gefahr* (*Kultur in Danger*):⁵¹

The physicist who is content to measure remains an artisan. He becomes an artist only when he is also a philosopher. The philosopher in turn is negligible unless he is stamped as an experimental physicist. The physicist–philosopher alone is permitted to interpret and evaluate experiments [...] The true instrument of the physicist–philosopher is illumination [...] We are prepared to debate with anyone who is both physicist and philosopher and accepts our methods. To debate with other people would be a waste of time, and we have quite enough work to do turning science into new pathways.

⁴⁹ Hamel Georg, "Ueber die philosophische Stellung der Mathematik," *Forschungen und Fortschritte*, 1928, 4, p. 267.

⁵⁰ As cited in Forman, "Weimar Culture, Causality and Quantum Theory 1918–1927", p. 49.

⁵¹ Lasker Emanuel, *Die Kultur in Gefahr*, (Berlin: Siedentop, 1928), pp. 20–21.

The cultural policy of German engineers and the subjugation of technology to the neoromantic context

One could easily wonder how it became possible, despite the absolute disaster of WWI, in which both science and technology played a vital part, that the engineering community does not appear weakened, but also uses the War as an important example of its dynamic. In order to answer this question, we should consider the discussion that ensued regarding the consequences of the War. On the one hand the greater part of the Left, trapped in the myth of neutrality of technology and fascinated with industrial progress, systematically avoids critiquing technology. On the other hand, a large part of the conservative Right has transformed the War into an object of worship, into an eternal force that formulates the *Seele* of the nation. For *Weimar*'s right-wing nationalists, the violence of the battlefields, the efficiency and power of tanks and ships, and the explosions of grenades were the external expression of inner impulses toward life. For them, technology was untouchable. Goebbels' words are characteristic of this: "The Germans must learn the primary lesson of WWI: Germany was defeated by deficiencies of the spirit rather than by material deficiencies. We did not lose the war because our cannons failed, but rather because our spiritual weapons didn't fire."⁵² In this way, technology after WWI was surrounded by an exceptionally powerful myth that connects the roots of Prussian culture with the future of the German nation. The community of engineers took full advantage of this particular myth. Thus, if Jünger saw the male community of the trenches as a taste of the future, many engineers saw the war draft as a preconception of their corporatist visions.

To the above we should add the increased demand for industrial production, the vision of a car that is accessible to the common people, the *Volkswagen*, the ever-increasing use of radio, the emerging dynamic of the cinema, the appearance of television, the impressive Autobahnen and the modern, superfast trains. Thus, Interwar Germany, in a very short time span, undergoes a massive industrialization and attempts to find a balance between electrical systems, massive factories and orchestrated production lines. Mass production, new materials and machines were adopted as the authentic symbols of the new machine-dominated period, while their propagation and application was deemed as a constitutive part of progress and social change. The new principles of order, normality, sameness and of the system, lead to a vision of coordinated modernity.

⁵²as cited in Herf, *Reactionary Modernism*, p. 195.

The dominant ideological elements that constituted the identity of the German engineer were connected in a multitude of ways with the political situation of the period. In Germany, the legitimization of the technocratic spirit passed through its subjugation to the *Geist* (Spirit) of German culture: land, blood, race and the nation.⁵³ For this particular legitimization, however, required a number of symbols, keywords and emotionally charged metaphors to bridge the professional conscience of the engineers and the wider current of *Neoromanticism*. An important role in this particular process was played by the curriculums of the famous technical institutes and polytechnic schools of Germany that were highly attuned to the necessity of harmonizing technology with the mythological element, which bridged industrialized reality with the idealistic roots of German civilization.⁵⁴

The main goal of the engineers and their communities was to present technological progress as compatible with the uprising of German nationalism against *Positivism*. The subjugation of technology into the German *Kultur* would fulfill the engineers' expectations for greater political recognition, for prestige and social status equal to those of other professions, for greater assistance from the state, as well as, during the latter years of *Weimar*, for employment positions and the termination of restrictions that had been imposed on technical progress and rearmament. The German historian Karl-Heinz Ludwig, in attempting to summarize the main characteristics of the rhetoric used by the engineers during the Weimar Republic in order to achieve the legitimization of technology in the German consciousness, divided them into four categories:⁵⁵

- technology emanating from the deepest impulses of German *Kultur* and not from the *dis-enchanted materialism* of Western *Zivilisation*
- the cultural, political, and economic crises of modern German society were not due to the machine but to its misuse by private capitalist interests
- the welfare of the national community could be protected only by a strong state, which ought to predominate over private economic interests
- engineers had a central role to play in providing the expertise necessary for Germany in an age of technological warfare.

⁵³ See Hard Michael, "German Regulation: The Integration of Modern Technology into National Culture" in *Intellectual Appropriation of Technology, Discourses on Modernity, 1900-1939*, M. Hard & A. Jamison (Eds) (Cambridge Massachusetts: MIT Press, 1998), pp. 36-46.

⁵⁴ See Ringer Fritz, *The Decline of the German Mandarins. The German Academic Community, 1890-1933* (Cambridge Massachusetts: Harvard University Press, 1969), pp. 128-130, 213-227.

⁵⁵ Ludwig Karl-Heinz, *Technik und Ingenieure in Dritten Reich*, (Königstein: Athenäum/Droste Taschenbucher Geschichte, 1979), pp. 15-102.

Also interesting, however, is the reinterpretation of technology through myth and the magical element. The *re-enchantment* of technology was a constant characteristic of the engineering community's rhetoric. One of the foremost examples is the essay by engineer Heinrich Hardensett (1853–1943), *Magische Technik* (Magical Technology), which was published in 1926 in the popular magazine *Technik und Kultur* (Technology and Culture). In this essay, Hardensett argues that technological advance did not lead to a *disenchantment* of the world but to a revived understanding of the relationship between reason and magic. Technology, according to him, had a deep religious impulse that persisted despite numerous efforts, beginning with Galileo, to eliminate animism and magic from mechanics. An irreducible *unmagical magic* remained, evidence of the inseparability of religion and technology.⁵⁶

Another prominent engineer of the period, Carl Weihe, aligning himself with the ideological climate of the period, argued that “Classical Romanticism” should be replaced by a “New Romanticism” that would also encompass the life-giving power of technology. Weihe thus suggests an *enchanted technocracy* as the basis of the *New Society*, which would rise over the ruins of the old one. In a characteristic excerpt from his emblematic, for the period, work *Kultur und Technik*, we read that:⁵⁷

Man is on the path of total self-transformation. The deed will once again be placed ahead of the work, the fist before the tongue, the vision before the concept [...] The era of negotiations and compromise, of parliamentary activity and bargaining, is past. [...] Engineers and their modern technical products have a duty to become active in enlightening, lending assistance and serving as examples.

Conclusions

By studying science and technology in relation to their wider ideological environment during the Weimar Republic, we should focus on the following pivotal points. Firstly, the historical findings, urge us to question the tenet that the development of science and technology are solely defined by what happens within their boundaries. The intense interactive relationship of science and technology with the ideological and political currents that develop during this

⁵⁶ Herf, *Reactionary Modernism*, p. 182.

⁵⁷ Carl Weihe, *Kultur und Technik*, (Frankfurt am Main: Selbstverlag des Verfassers, 1935), p. 65–66.

period,⁵⁸ motivates us towards researching the cultural roots of science and technology, behind the veil of objectivity and neutrality that so often obscures them. Secondly, the views of the protagonists of the period on science and technology lead us to avoid interpreting the dominant ideological context as a return to nineteenth-century Romanticism. *Neoromanticism*, as a tool for analyzing this particular era, attempts to delineate a new path of study, which focuses more on interpreting the ideas developed during the Weimar Republic as a part or as a particular expression of interwar modernist visions and less as a disorderly retreat into the past, as an exception or a parenthesis to the modernization of western societies. The third point of critique that this paper has attempted to highlight could be seen as the logical extension of the second. The study of science and technology in interwar Germany seems to contest the confidence with which Max Weber argued that modernity is characterized by the progressive *disenchantment* of the world. Instead, a rapprochement of this particular period through the prism of *Neoromanticism* urges us to view modernity not as a gradual cleansing from the magical and mythological element but as an extremely complex process where the *disenchantment* is connected dialectically with the *re-enchantment*, the myth with the reason, the faith with the scientific discourse, the technology with the religiousness. The endeavor of the *Dialectic of the Enlightenment* to evince the consequences of Enlightenment's disputing of the myth and metaphysics, allowed it to discern the latent metaphysical structure of the Enlightenment thought itself.

The last point that I believe should be focused upon is that of scientific discourse. By studying the public discourse of the scientists regarding their positions on science, we observe a series of intense idealistic, mystical and apocryphal elements that today would be considered even as 'pseudoscience'. Yet during the interwar period such views formed the basis of the scientific endeavor and were in no way characterized as marginal. This fact leads us to question the existence of a scientific discourse, both with regards to form as well as substance, remaining intact throughout history and unaffected by the wider context. We should, therefore, probably accept that the scientific worldviews, what is included and excluded by the scientific endeavour, the very horizon of science itself, all cannot escape the ideological premises of the wider social context, which seal historically the thought of a period and

⁵⁸ The interaction between science and the wider ideological context during the *Weimar Republic* is made apparent in the clearest way in the discourse of several of the protagonists of the period. For example in the speech that Physics Professor Gustav Mie (1869-1957) gave at the University of Freiburg in 1925, he mentions: "That is why we are ready to turn to another worldview. I believe that this new worldview will bear certain characteristics, which also shape the image of modern spiritual life [...] It is interesting to observe that even physics, despite dealing with strict experimental results, will be lead down paths, which are parallel to those of spiritual movements in other sectors."

constitute its boundaries. Therefore, a genealogy of scientific discourse and a study of the shift of the boundary line, between scientific and non-scientific, would be particularly interesting, not only because it would remind us of the interaction between science and the social status quo but also because they would, in their own way, bring to light historical periods of great importance for human history such as that of the interwar period and the Weimar Republic.

In closing, I would like to point out that the critical tendency of this particular study with regards to scientific and technological discourse as well as their enlightenment and modernist roots, does not aim to demonize or reject the Enlightenment or modernity but lead to a deeper understanding of their complexity and multifactorial nature. As Adorno and Horkheimer aptly argued in one of the few optimistic parts of the *Dialectic of Enlightenment*: “The critique of Enlightenment is intended to prepare a positive concept of Enlightenment which liberates it from its entanglement in blind domination [...] The necessity for Enlightenment is to reflect on itself, if humanity is not to be totally betrayed. What is at stake is not conservation of the past but the fulfillment of past hopes.”⁵⁹

⁵⁹Adorno & Horkheimer, *Dialectic of Enlightenment*, pp. xvii, xviii.

Science, History and Ideology in Gramsci's *Prison Notebooks*

Francesca Antonini*

Abstract

Antonio Gramsci (1891–1937) made his notes on science within his *Quaderni del carcere* (*Prison Notebooks*) written between 1929 and 1935, while imprisoned by the Italian fascist regime. This overview focuses mainly on three themes: 1) the Gramscian criticism of the idealist (Croce) and materialist (Bukharin) conceptions of science and, in particular, his criticism of the alleged “objectivity of reality”; 2) the historical and ideological nature of scientific knowledge and the relationship between history of science and history of technology; 3) the interrelation between science, politics and society in the framework of Gramsci's “philosophy of praxis”.

Keywords: Antonio Gramsci, science, technology, ideology, absolute historicism.

Science and historical materialism in the *Prison Notebooks*

The nature of science and its role within society are topics that Antonio Gramsci (1891–1937) did not develop systematically, although he devotes several notes to them:¹ the majority of these, in their “final” version, are collected in notebook 11 (especially in the third and in the fourth sections, entitled respectively *La scienza e le ideologie scientifiche* (Science and scientific ideologies) and *Gli strumenti logici del pensiero* (The logical instruments of thought), but also other notebooks contain reflections on issues (more or less) related to the epistemological dimension of scientific knowledge.² This theme remained at the margins of the investigation of Gramscian

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¹ As is known, however, the unsystematic character is a typical feature of the *Quaderni* as a whole. From a general point of view on the *Prison Notebooks*, see Gianni Francioni, *Come lavorava Gramsci*, in Antonio Gramsci, *Quaderni del carcere. Edizione anastatica dei manoscritti*, vol. 1 (Cagliari: Istituto dell'Enciclopedia Italiana-L'Unione Sarda, 2009), pp. 21-60; on the new critical edition (forthcoming) and on the new chronology see Cospito, Giuseppe, “Verso l'edizione critica e integrale dei *Quaderni del carcere*”, *Studi Storici*, 2011, 4: 881-904.

² On Notebook 11 see in particular Fabio Frosini and Gianni Francioni, *Nota introduttiva al Quaderno 11 (1932)*, in Gramsci, *Edizione anastatica*, vol. 15, pp. 1-22.

philosophy and only in recent years has been given some attention.³ Even if Gramsci's observations on scientific knowledge do not have a systematic character, they can provide useful hints for the present-day debate about the history of science.

In the *Prison Notebooks* several core concepts of politics and philosophy are defined.⁴ As for science, the most meaningful definitions are contained in Q 11, § 15 and in Q 11, § 37. In Q 11, § 37 Gramsci shows his intention to “bring together the principal definitions that have been given of science”, and in particular he recalls the positivistic definition of science as research of the constants in the relationships between phenomena in order to forecast future developments.⁵

In Q 11, § 15, however, his approach is critical of the extension of this expectation to history: he says that “situating the problem as a search for laws and for constant, regular and

³ After the pioneering studies by Aloisi, Rossi and Lefons (Aloisi, Massimo, “Gramsci, la scienza e la natura come storia”, *Società*, 1950, 3: 106-110; Aloisi, Massimo, “Scienza, natura e storia in Gramsci”, *Società*, 1951, 1: 95-110; Rossi, Paolo, “Antonio Gramsci sulla scienza moderna”, *Critica Marxista*, 1976, 2: 41-60; Lefons, Chiara, “Scienza, tecnica e organizzazione del lavoro in Gramsci”, *Critica Marxista*, 1978, 4: 103-132) the topic was neglected for a long time. A first renewal of interest took place in the late 1980s and in the middle of the 1990s: Silvano Tagliagambe, *Gramsci, Bucharin e il materialismo dialettico sovietico*, in *La questione meridionale. Atti del convegno di studi di Cagliari, 23-24 ottobre 1987* (Cagliari: Edizioni del consiglio regionale della Sardegna, 1988), pp 220-254; Derek Boothman, *Gramsci, Croce e la scienza*, in Ruggero Giacomini, Domenico Losurdo and Michele Martelli (eds) *Gramsci e l'Italia* (Napoli: La Città del Sole, 1994), pp. 165-186; Derek Boothman, *General introduction*, in Antonio Gramsci, *Further Selections from the Prison Notebooks* (London: Lawrence & Wishart, 1995), pp. VII-LXXXVII, partially translated in Boothman, Derek, “Scienza e traducibilità nei Quaderni di Gramsci”, *Critica Marxista*, 1995, 2: 47-55. But especially in the last few years many critics dealt with the theme: Giuseppe Cospito, *Il marxismo sovietico e Engels. Il problema della scienza nel Quaderno 11*, in Francesco Giasi (ed), *Gramsci nel suo tempo* (Roma: Carocci, 2008), pp. 747-765; Derek Boothman, *Scienza*, in Guido Liguori and Pasquale Voza (eds), *Dizionario gramsciano: 1926-1937*, (Roma: Carocci, 2009), pp 746-749; Omodeo, Pietro Daniel, “La via gramsciana alla scienza”, *Historia Magistra*, 2010, 4: 53-68; Nieto-Galan, Agustí, “Antonio Gramsci Revisited: Historians of Science, Intellectuals, and the Struggle for Hegemony”, *History of Science*, 2011, 49: 453-478; Voza, Pasquale, “La critica di ciò che è ‘oggettivo’. Appunti su scienza e tecnica in Gramsci”, *Critica Marxista*, 2013, 6: 45-54. Particularly remarkable are also the proceedings of the conference organised by the Istituto Gramsci of Friuli-Venezia Giulia, entirely devoted to the Gramscian conception of science, Marina Paladini Musitelli (ed), *Gramsci e la scienza. Storicità e attualità delle note gramsciane sulla scienza*, (Trieste: Istituto Gramsci del Friuli-Venezia Giulia, 2008) with the following contributions: Silvano Tagliagambe, *Gramsci, la modernità e la scienza*, pp. 17-42; Pietro Greco, *Antonio Gramsci e i quanti*, pp. 43-62; Giuseppe Cospito, *Gli strumenti logici del pensiero: Gramsci e Russell*, pp. 63-80; Andrea Catone, *Gramsci, Bucharin e la scienza*, pp. 81-108; Antonio Di Meo, *L’“oggettività del reale”: riflessioni gramsciane su scienza e neotomismo fra programma nazionale e cosmopolitismo*, pp. 109-146. For a review of the volume see Baratta, Giorgio, “Gramsci e la scienza”, *Critica Marxista*, 2009, 2: 76-77. On the unsystematic character of the Gramscian reflections on science see Lefons, “Scienza, tecnica, lavoro”, p. 108; despite the lack of method of the *Quaderni*, however, it is excessive to deny *tout court* the existence of some coherent theoretical framework, as Lefons sometimes does.

⁴ In my paper I quote always from the Italian critical edition by Valentino Gerratana (Antonio Gramsci, *Quaderni del carcere*, 4 voll. (Torino: Einaudi, 1975)); in the following pages I indicate it only with the number of the notebook (Q), that of the paragraph (§) and, if necessary, that of the page(s). I refer mainly to Notebook 11; only on a few occasions do I mention the first version of the texts in parenthesis (for the sake of brevity I omit dealing here with the philological problem of the differences between the first and second versions of the notes). As to the translation, I quote the following English editions: Antonio Gramsci, *Selection from the Prison Notebooks*, edited by Quintin Hoare and Geoffrey Nowell Smith (New York: International Publishers, 1971 – I use the electronic reprint (London: ElecBook 1999)), henceforth SPN; Antonio Gramsci, *Further Selections from the Prison Notebooks*, edited by Derek Boothman (Minneapolis: Minnesota University Press, 1995), henceforth FS. When the English version is not available, the translation is mine, unless otherwise indicated.

⁵ Q 11, § 37, p. 1455. FS, p. 290: “Bring together the principal definitions that have been given of science (in the sense of natural science). ‘Study of phenomena and of their laws of similarity (regularity), coexistence (coordination), succession (causality)’. Other tendencies, taking into account the most convenient order that science establishes between phenomena, in such a way so as to be better able to master them through thought and dominate them for the purposes of action, define science as the ‘the most economic description of reality’”.

uniform lines is connected to a need, conceived in a somewhat puerile and ingenuous way, to resolve in a peremptory fashion the practical problem of the predictability of historical events”.⁶ Furthermore, by recalling the authority of Marx, he warns against the application of the scientific model of forecast beyond natural regularities. Scientific prediction, in the historical and political context, is not a pure theoretical and abstract activity, but a highly practical one and requires voluntarism and concrete effort:⁷

Since it “appears”, by a strange inversion of the perspectives, that the natural sciences provide us with the ability to foresee the evolution of natural processes, historical methodology is “scientifically” conceived only if, and in so far as, it permits one “abstractly” to foresee the future of society. Hence the search for essential causes, indeed for the “first cause”, for the “cause of causes”. But the *Theses on Feuerbach* had already criticized in advance this simplistic conception. In reality one can “scientifically” foresee only the struggle, but not the concrete moments of the struggle, which cannot but be the results of opposing forces in continuous movement, which are never reducible to fixed quantities since within them quantity is continually becoming quality. In reality one can “foresee” to the extent that one acts, to the extent that one applies a voluntary effort and therefore contributes concretely to creating the result “foreseen”. Prediction reveals itself thus not as a scientific act of knowledge, but as the abstract expression of the effort made, the practical way of creating a collective will.

As clearly stands out from these observations, Gramsci’s position on scientific knowledge is definitely not so straightforward: he is aware of the practical and theoretical relevance (and of the difficulty) of the issue and he intends to deepen it by rejecting its “mistakes” and, at the same time, by highlighting its positive and progressive aspects. Gramsci’s aim is to contextualise this topic within the framework of historical materialism. In other words, his analysis of science is at the crossroads of different crucial aspects of his thought. Consequently, although not systematic, his investigation on the nature and role of the scientific knowledge is of absolute interest.

To account for this complexity, I shall start by identifying the polemical targets of Gramsci and show what is mistakenly attributed to science according to his opinion. After the *pars destruens*, I will concentrate on the *pars construens*, namely on the far-reaching connection

⁶ Q 11, § 15, p. 1403; SPN, p. 796.

⁷ Q 11, § 15, pp. 1403-1404; SPN, pp. 796-797. On the issue of the forecast in Gramsci’s thought see Mancina, Claudia, “Rapporti di forza e previsione. Il gioco della storia secondo Gramsci”, *Critica Marxista*, 1980, 5: 41-54 and De Giovanni, Biagio, “Il ‘moderno Principe’ tra politica e tecnica”, *Critica Marxista*, 1981, 3: 51-79; with special regard to its reflection on science see Lefons, “Scienza, tecnica, lavoro”, pp. 114-115.

between the Gramscian conception of science, his “absolute historicism” and his “philosophy of praxis”.⁸

Against Croce and Bukharin

In his notes on science Gramsci refers more or less explicitly to two polemical targets. The first one is represented by the idealism of the leading Italian philosopher Benedetto Croce – this is, more generally, one of the most important points of (critical) reference of Gramscian philosophy.⁹

If, on the one hand, he agrees with Crocean criticism against the blind faith in science and scientific development of their contemporaries, on the other hand he finds Croce’s conception of science clearly reductive, insofar as it considers natural sciences as “composed of empirical concepts (which are not true knowledge)”.¹⁰ As explained by Derek Boothman, in Croce’s philosophy “the existence of the object becomes a ‘position’, that is to say, something opposed to the spirit, or given to the spirit”; in other words, “nature is reduced to a construction of the spirit” and the scientific knowledge is constituted by “pseudo-concepts [pseudo-concetti]”.¹¹ The logical consequence of this strongly relativistic position is the reduction of science to a collection of “classifications of facts [classificazioni di fatti]”.¹²

However, this statement has a paradoxical outcome; while it denies the autonomy of scientific thought, Croce’s conception of science turns out to be very similar to the positivistic one he is questioning. In fact, according to Gramsci, an effective scientific theory cannot be constructed starting from a simple collection of facts (as positivists – and also Croce – tried to do), since it requires a meta-factual concept that joins them; not by chance, in Q 11, § 45 does Gramsci mention the “abstract ‘classification’” as an example of the “philosophical Esperantism

⁸ These aspects (and in particular the connection between science and Gramsci’s absolute historicism) have not been thoroughly investigated, despite the growing interest for the Gramscian reflections on science: my aim then is to shed some light on them.

⁹ Benedetto Croce (1866-1952) was an Italian neo-idealist philosopher who was one of the main intellectual figures of the interwar period (and also before) and the discussion of his thought plays a big role within the Gramscian reflection. The literature on Gramsci and Croce is huge; for a general overview on the question see Fabio Frosini, *Il neoidealismo italiano e la filosofia della praxis*, in Giasi, *Gramsci nel suo tempo*, pp. 727-746 and more recently Fabio Frosini, *La religione dell’uomo moderno. Politica e verità nei Quaderni del carcere di Antonio Gramsci* (Roma: Carocci 2010).

¹⁰ Benedetto Croce, *Logic as the Science of the Pure Concept*, translated by Douglas Ainslie (London: MacMillan, 1917), p. 332.

¹¹ Boothman, “Gramsci, Croce”, pp. 172-173 (but see also pp. 174-176). On Croce’s conception of science see also Zappoli, Stefano, “Benedetto Croce’s Theory of Science”, *Logic and Philosophy of Science*, 2011, 1: 531-537.

¹² Croce, *Logic*, p. 333.

[...] especially rooted in positivist and naturalistic conceptions”.¹³ Moreover, the mere instrumental character of this conception hinders any investigation of the epistemological value of science and prevents from any serious consideration of the role of the scientists within the intellectual community (they are marginalised by “humanistic” intellectuals as Croce and Gentile).¹⁴

The second target of Gramsci’s criticism is represented by the positivistic approach that underlies the Soviet Marxism embodied in Bukharin’s *Popular Manual*.¹⁵ The literature on Gramsci’s criticism against Bukharin is huge and cannot be summarised here.¹⁶ However, it is a fact that the Gramscian critique of his conception of science plays an important role within his more general reflection on Bukharin. Notebook 11 – that is the one that contains most of the notes on scientific knowledge – is usually conceived as the “Anti-Bukharin”; its second section is entitled *Osservazioni e note critiche su un tentativo di “Saggio popolare di sociologia”* (Observations and critical notes on an attempt of “Popular Manual of Sociology”) and collects the texts on Bukharin contained in the three series of the miscellaneous notebooks *Materialismo e idealismo* (Materialism and idealism).¹⁷ Furthermore, Gramsci had at his disposal also the book *Science at the Cross Roads*, which contains the papers of the Russian delegation at the International Congress of History of Science and Technology that took place in 1931 in London (Bukharin was the head of the delegation and his introductory speech, *Theory and Practice From The Standpoint of Dialectical Materialism*, represents a meaningful sample of his idea of the relationship between Marxism and science).¹⁸

¹³ Q 11, § 45, p. 1476; FS, pp. 303-4. See Q 17, § 23, p. 1926; FS, pp. 283-284: “The investigation of a series of facts to find the relationships between them presupposes a ‘concept’ that allows one to distinguish that series from other possible ones: how does the choice of the facts to be adduced as proof of the truth of one’s assumption come about, if the criterion of choice is not already in existence? But what will this criterion of choice be, if it is not something that is a higher level that each individual fact investigated? [...] (This observation is to be linked to the other on the ‘sociological law’ by which one does nothing other than repeat the same fact twice, the first time as a fact, the second as a law – this is sophism of the double fact, not a law”. On this issue see also Boothman, “Gramsci, Croce”, p. 174.

¹⁴ See Q 14, § 38; FS, pp. 439-40. See Cospito, *Il marxismo sovietico e Engels*, p. 750.

¹⁵ *Manuale popolare* (*Popular Manual*) is the name usually given by Gramsci to the famous book by Nikolai Bukharin *Historical Materialism. A System of Sociology* (London: International Publishers, 1925 - first published in Moscow in 1921).

¹⁶ Nikolai Ivanovich Bukharin (1888-1938) was a Bolshevik politician, usually considered as the head of the “right” wing of the Russian Communist Party. After having initially supported Stalin’s positions (1926-1929), from the end of the 1920s Bukharin fell into his disfavour, and was executed in 1938. As a theoretician, he was the representative of a deterministic and vulgar conception of the historical materialism that Gramsci strongly opposes in the *Prison Notebooks*. For an introduction to the question see Valentino Gerratana, *Introduzione*, in Nikolai Bukharin, *Teoria del materialismo storico* (Italian version) (Firenze: La Nuova Italia, 1977), pp. V-XXXVII and, more recently, the entry *Bukharin* by Fabio Frosini in Liguori-Voza, *Dizionario gramsciano*, pp. 85-88.

¹⁷ See Cospito, *Il marxismo sovietico e Engels*, pp. 752-754 and Omodeo, “La via gramsciana”, p. 63.

¹⁸ Nikolai I. Bukharin, *Science at the Cross Roads. Papers from the Second International Congress of the History of Science and Technology* (London: Kniga, 1931). See also the edition with a preface by Joseph Needham and an introduction by Paul G.

In brief, Bukharin understands scientific knowledge as a blueprint for historical materialism, which appears therefore to Gramsci as a “sociology”, i.e., as a kind of new, naïf metaphysics:¹⁹

The philosophy implicit in the *Popular Manual* could be called a positivistic Aristotelianism, an adaptation of formal logic to the methods of physical and natural science. The historical dialectic is replaced by the law of causality and the search for regularity, normality and uniformity. [...] If “speculative idealism” is the science of categories and of the *a priori* synthesis of the spirit, i.e. a form of anti-historicist abstraction, the philosophy implicit in the *Popular Manual* is idealism upside down, in the sense that the speculative categories are replaced by empirical concepts and classifications which are no less abstract and antihistorical.

This “vulgar”, materialistic interpretation of Marxism, which was influenced by different elements, last but not least by Engel’s *Antidühhung*, has strong implications: a firm deterministic view of the historical evolution and, above all, a “scientific objectivism” that is mirrored in Bukharin’s strong belief in the objectivity of the scientific knowledge.²⁰

Thus, the position of Croce and that of Bukharin are opposite but assimilable insofar as they promote a a-historical and a-critical conception of science, which is heavily stigmatized by Gramsci.²¹

The alleged “objectivity of reality”

First of all, Gramsci aims at dispelling the myth of the “universality” of the scientific method. In contrast to the assertion that science represents “the most economic description of reality”,²² apt to describe the similarities and the relationships between phenomena, Gramsci highlights the limits of scientific knowledge: he does not allow a generalisation of the scientific approach (if

Werskey (London: Frank Cass, 1971), which has recently been reprinted (New York: Routledge, 2013). See Omodeo, “La via gramsciana”, pp. 64-65 and Catone, *Gramsci, Bucharin*, pp. 81-85.

¹⁹ Q 11, § 14, pp. 1402-1403; SPN, pp. 795-796.

²⁰ See Q 11, § 32; SPN, pp. 606-607. See Cospito, *Il marxismo sovietico e Engels*, p. 760.

²¹ See Q 11, § 64, p. 1492. Here he is discussing an article from the Jesuit journal *Civiltà Cattolica*: “for Catholics ‘... the whole theory of idealism is based on the denial of the objectivity of all our knowledge and on the idealistic monism of ‘Spirit’ (a monism which, as such, is equivalent to the positivistic monism of ‘Matter’)” (SPN, p. 699). In this context he reaffirms that both approaches are wrong and argues that the correct “monism” is an “identity of contraries in the concrete historical act, that is in human activity (history-spirit) in the concrete, indissolubly connected with a certain organised (historicised) ‘matter’ and with the transformed nature of man. Philosophy of the act (praxis, development), but not of the ‘pure’ act but rather of the real ‘impure’ act, in the most profane and worldly sense of the word” (SPN, pp. 699-700). On the interpretation of this equivalence between Croce’s idealism and Bukharin’s materialism see Frosini, *La religione dell’uomo moderno*, pp. 65-66.

²² Q 11, § 37, p. 1455; FS, p. 290.

“scientific” is not simply a synonym of “rational” or “in conformity with the end”²³ and claims the dignity and the methodological autonomy of every single discipline: “every research has its own specific method and constructs its own specific science, and that the method has developed and been elaborated together with the development and elaboration of this specific research and science and forms with them a single whole”.²⁴

Gramsci’s critique against the universal applicability of scientific method is counterbalanced by the confutation of the alleged “objectivity of reality”, which constitutes the basis of the authority of scientific knowledge.²⁵ This issue plays a central role in the Gramscian analysis of science; it is the theme of many notes of Notebook 11, which recover notes contained in miscellaneous Notebooks 4 and 7.²⁶ As he affirms in Q 11, § 37,²⁷

the most important question to be resolved about the concept of science is this: whether science can give us, and if so in what way, the “certainty” of the objective existence of so-called external reality. [...] One may maintain it is an error to ask of science as such the proof of the objectivity of reality, since this objectivity is a conception of the world, a philosophy and thus cannot be a scientific datum. Science makes a selection of sensations, the primordial elements of knowledge: it considers certain sensations as transitory, as apparent, as fallacious because they depend on special individual conditions and certain others as lasting, as permanent, as superior to those special conditions. [...] One thus establishes what is common to everyone, what everyone can control in the same way, one independently from another, as long as each has observed to an equal degree the technical conditions of ascertainment. “Objective” means this and only this: that one asserts to be objective, to be objective reality, that reality which is ascertained by all, which is independent of any merely particular or group standpoint. But, basically, this too is a particular conception of the world, when taken in its entirety, can be accepted by the philosophy of praxis because of the direction it indicates.

²³ Q 6, § 180, p. 826; FS, p. 282.

²⁴ Q 11, § 15, p. 1404. SPN, pp. 796-797. See also the already mentioned Q 6, § 180, p. 826; FS, pp. 281-2: “The ambiguity about the terms ‘science’ and ‘scientific’ stems from the fact that they took on this meaning from a certain group of sciences, that natural and scientific sciences to be precise. Any method that was similar to the method of research and investigation current in the natural sciences – which became the sciences *par excellence*, science-as-fetish – was called ‘scientific’. There do not exist sciences *par excellence* and there does not exist a method *par excellence*, ‘a method in itself’. Every type of scientific research creates an appropriate method for itself, its own logic, the generality and universality of which consist solely in being ‘in conformity to the end’”.

²⁵ Almost all the scholars who dealt with this issue have recognised its crucial character for the comprehension of the Gramscian conception of science, but see in particular Voza, “La critica di ciò che è ‘oggettivo’” and Di Meo, *L’“oggettività del reale”*, pp. 133 ff. See moreover Frosini, *La religione dell’uomo moderno*, pp. 67-80.

²⁶ See especially Q 4, § 41 (→ Q 11, § 37); Q 4, § 37 (→ Q 11, § 64); Q 4, § 43 (→ Q 11, § 34); Q 7, § 25 (→ Q 11, § 20); Q 7, § 47 (→ Q 11, § 17).

²⁷ Q 11, § 37, pp. 1455-1456; FS, pp. 290-1.

In Gramsci's view, "objective" is equivalent to "intersubjectively shared", or, as Cospito wrote, "humanly 'subjective' [umanamente 'soggettivo']".²⁸ As Gramsci wrote shortly after the aforementioned passage,²⁹

in science, too, to seek reality outside of humanity, understood in a religious or metaphorical sense, seems nothing other than paradoxical. Without humanity what would the reality of universe mean? The whole of science is bound to needs, to life, to the activity of the humanity. Without humanity's activity, which creates all, even scientific, values, what would "objectivity" be? A chaos, i.e. nothing, a void, if one can indeed say that, because in reality, if one imagines that humanity does not exist, one cannot imagine language and thought.

A discourse about reality does not make sense if it does not take into account the human beings that create it and live in it. Therefore the objectivity of reality is just the result of a convention among scientists as Omodeo has pointed out: "for him [Gramsci] it does not exist a 'nature', neither human, nor extra-human: nature is a concept, a relationship: it does not build up the scientific activity, but it is a product of it".³⁰ In another note this conception is further illustrated through a hint at the concepts of "West" and "East" and with a meaningful example from Bertrand Russell.³¹

Later I will dwell on the features of scientific knowledge that emerge from these observations; now I would like to concentrate myself on the *pars destruens* of his argument. The objectivity of reality is in no way brought into question by the "common sense" of a "religious" (even when secularised) belief.³² The author of the *Popular Manual*, Gramsci argues, shares the

²⁸ Cospito, *Il marxismo sovietico e Engels*, p. 757. See Q 11, § 17, pp. 1415-1416; SPN, p. 807: "Objective always means 'humanly objective', which can be held to correspond exactly to 'historically subjective': in other words, objective would mean 'universal subjective'. Man knows objectively in so far as knowledge is real for the whole human race *historically* unified in a single unitary cultural system".

²⁹ Q 11, § 37, p. 1457; FS, p. 292.

³⁰ Omodeo, "La via gramsciana", p. 66.

³¹ See Q 11, § 20, p. 1419; SPN, pp. 809-810: "To understand exactly what might be meant by the problem of the reality of the external world it might be worth taking up the example of the notions of 'East' and 'West', which do not cease to be 'objectively real' even though analysis shows them to be no more than a conventional, that is 'historic-cultural' construction. [...] One can also recall the example contained in a little book by Bertrand Russell [...] Russell says approximately this: 'We cannot, without the existence of man on the earth, think of the existence of London or Edinburgh, but we can think of the existence of two points in space, one to the North and one to the South, where London and Edinburgh now are.' It could be objected that without the existence of man one cannot think of 'thinking', one cannot think at all of any fact or relationship which exists only in so far as man exists. What would North-South or East-West mean without man? They are real relationships and yet they would not exist without man and without the development of civilisation. Obviously East and West are arbitrary and conventional, that is historical, constructions, since outside of real history every point on the earth is East and West at the same time". On Gramsci and Russell see Cospito, *Gli strumenti logici del pensiero*.

³² See Q 11, § 37, p. 1456; FS, p. 291: "Common sense asserts the objectivity of the real in so far as reality, the world, has been created by God independently of and before humanity". On the Gramscian conception of "common sense" see the entry *Senso comune* by Guido Liguori in Liguori-Voza, *Dizionario gramsciano*, pp. 759-761 and Gensini, Stefano, "Appunti su 'linguaggio',

same “mythological conception of the world”³³ when he sets himself against the supporters of a “subjectivist conception of reality”.³⁴ Instead of taking it seriously into account, as the philosophy of praxis should do (Gramsci reconnects the “idealist assertion of the reality of the world as a creation of the human spirit” to his conception of the historicity of the ideologies and of the superstructures),³⁵ in his essay of 1931, he rejects it harshly (in this way Gramsci demonstrates the “conservatism” of Bukharin’s conception and its fetishism for positivistic science):³⁶

The point that must be made against the *Popular Manual* is that it has presented the subjectivist conception just as it appears from the point of view of common-sense criticism and that it has adopted the conception of the objective reality of the external world in its most trivial and uncritical sense without so much as a suspicion that it can run into objections on the grounds of mysticism, as indeed it has.

The “cumulative” nature of science

In his effort to overcome both the idealist and the materialistic construct, Gramsci outlines an idea of science that is deeply influenced by his “absolute historicism”, as clearly emerges from the *pars construens* of his analysis.

In this formula he synthesises his rejection of the “philosophy of history” and his claims to the complexity and the irreducibility of reality, which cannot be understood from an external and superior point of view. Not by chance the core of this conception is the category of “immanence”, which demolishes every belief in a transcendent truth by arguing the inescapable “earthliness” of human thought and action. Thus, Gramscian historicism strongly opposes the

‘senso comune’ e ‘traduzione’ in Gramsci”, *il cannocchiale*, 2012, 3: 163-193. A very interesting Gramscian topic (that, for reasons of space, I cannot deepen here) which is connected to the relation of science and common sense is represented by the use of the scientific knowledge made by the Church and in particular by the Jesuits; see Di Meo, *L’“oggettività del reale”* (on the neo-scholastic).

³³ Q 11, § 37, p. 1456; FS, p. 291.

³⁴ See Q 11, §§ 36-68. The supporters of a subjectivist conception of the world are, in Gramsci’s view, the representatives of the so called “new physics” (i.e., quantum mechanics); however, he criticises more directly with two Italian intellectuals (Giuseppe Antonio Borgese and Mario Camis) who tried to “popularise” this conception – see for all these questions Greco, *Antonio Gramsci e i quanti*.

³⁵ Q 11, § 17, p. 1413; SPN, p. 803. Here is the entire passage: “It is surprising that there has been no proper affirmation and development of the connection between the idealist assertion of the reality of the world as a creation of the human spirit and the affirmation made by the philosophy of praxis of the historicity and transience of ideologies on the grounds that ideologies are expressions of the structure and are modified by modifications of the structure” (SPN, p. 803).

³⁶ Q 11, § 17, p. 1415; SPN, p. 806.

mechanistic and economistic (i.e. teleological) approaches to history, as well as the classical and idealistic (speculative) interpretations of historicism; the label of “absolute” distinguishes it from these misleading readings and highlights the inclusive essence of his philosophy of praxis.³⁷

If this is the general context, it reflects significantly on Gramsci’s notes on science. If, on the one hand, in his stressing the singularity of science there is of course a polemical intent (notably to distinguish historical materialism from scientific knowledge, stigmatising Bukharin’s approach), on the other hand, the affirmation of the “incommensurability” of scientific research entails a peculiar historical nature of the discipline.

According to Gramsci, the main feature of science lies in its nature of “work in progress”. This implies not only its character of continuing revision of previous hypotheses and instruments, but also the existence of a structural “ignorance” (at this point a parallel with Veca’s concept of “explorative incompleteness” could be particularly stimulating):³⁸

Scientific work has two main aspects: the first constantly corrects our way of knowing, corrects and reinforces our sensory organs, formulates new and complex principles of induction and deduction, that is to say refines the very instruments of experiment and experimental control; the second one applies this ensemble of instruments (on a material and on mental variety) to draw a dividing line between what is essential in the sensations and what is arbitrary, individual, transitory. [...] If scientific truths were conclusive, science would have ceased to exist as such, as research, as new experiments, and scientific activity would be reduced to popularising what has already been discovered. Fortunately for science this is not true. But if scientific truths themselves are not conclusive and unchallengeable, then science too is a historical category, a movement in continual development. Only that science does not lay down any form of metaphysical “unknowable”, but reduces what humanity does not know to an empirical “not knowledge”, which does not exclude the possibility of its being known, but makes it

³⁷ See Q 11, § 27, p. 1437; SPN, p. 836 (“The philosophy of praxis is absolute ‘historicism’, the absolute secularisation and earthliness of thought, an absolute humanism of history”). On the thorny problem of Gramscian “absolute historicism” and on his connection with the category of “immanence” see the entry *Storicismo* by Giuseppe Cacciato and *Immanenza* by Fabio Frosini, in Liguori-Voza, *Dizionario gramsciano*, respectively, pp. 814-818 and pp. 408-412; see also Frosini, Fabio, “Storicismo e storia nei *Quaderni del carcere* di Antonio Gramsci”, *Bollettino filosofico*, 2011-2012, pp. 351-367 and Frosini, *La religione dell’uomo moderno*, cap. II, pp. 112-161.

³⁸ See Salvatore Veca, *L’idea di incompletezza. Quattro lezioni* (Milano: Feltrinelli 2011), p. 14. The occasion that gave birth to this essay was in fact the reading of Salvatore Veca’s recent book about the idea of incompleteness. In this work Veca focuses on the limits and on the structural problems of answering to the “request for theory”, i.e., the request for a theoretical explanation of “uncertain” situations, by rejecting both the so called “new realism” and the “postmodern”, Nietzschean interpretation of the issue (pp. 7 ff). Within this context he investigates also the nature of science: on the one hand it differs from the humanistic knowledge for its “cumulative” nature and for its character of “justificatory narration” (i.e. every scientific theory takes into account and explains the previous one; see p. 56); on the other hand, science is similar to art and literature, in so far as it is historically determined and sometimes lives “crises of explanation” (Veca underlines the complex historical dynamics that bring to scientific discoveries; see p. 59). Therefore, science appears as a form of knowledge that should be considered not only in relation to its “completeness” but also in relation to its “incompleteness” and historicity. In my opinion these categories can offer an original and stimulating theoretical frame to analyse Gramsci’s reflection.

conditional on the development of physical instrumental elements and on the development of the historical understanding of single scientists.³⁹

For Gramsci, the development of science is different from that of the other disciplines; whereas in literature, art or philosophy there are “changes of tendency” rather than an evolution, science owns a peculiar “cumulative” nature, i.e., it adds knowledge to knowledge and considers the earlier notions as the basis for the successive ones (“has the whole process of science not up to now been manifested in the fact that new experiments and observations have corrected and extended previous experiments and observations?”).⁴⁰ Furthermore, in Gramsci’s opinion, the existence of the scientific objects itself is historically determined. As he says about the matter:⁴¹

Clearly, for the philosophy of praxis, “matter” should be understood neither in the meaning that it has acquired in natural science [...] nor in any of the meanings that one finds in the various materialistic metaphysics. [...] Matter as such therefore is not our subject but how it is socially and historically organised for production, and natural science should be seen correspondingly as essentially an historical category, a human relation. Has the *ensemble* of the properties of all forms of matter always been the same? The history of the technical sciences shows that it has not. For how long was the mechanical power of steam neglected? Can it be claimed that this mechanical power existed before it was harnessed by man-made machines? Might it not be said in a sense, and up to a certain point, that what nature provides the opportunity for are not discoveries and inventions of pre-existing forces – of pre-existing qualities of matter – but “creations”, which are closely linked to the interests of society and to the development and further necessities of development of the forces of production?

Then he takes also electricity as an example:⁴²

Electricity is historically active, not merely however as a natural force (e.g. an electrical discharge which causes a fire) but as a productive element dominated by man and incorporated into the ensemble of the material forces of production, an object of private

³⁹ Q 11, § 37, pp. 1455-1457; FS, pp. 291-2.

⁴⁰ Q 11, § 36, p. 1452; FS, p. 287. On the cumulative character of science see also Q 11, § 30, p. 1445 (SPN, p. 840). Here, while discussing the atomistic theory and the latest scientific discoveries, Gramsci wrote: “Is modern atomic theory a ‘definitive’ theory, established once and for all? What scientist would dare make such an assertion? Might it not rather be simply a scientific hypothesis which may be superseded, that is to say, absorbed into a vaster and more comprehensive theory? [...] If atomic theory is what the *Manual* makes it out to be, given that the history of society is a series of upheavals and there have been many forms of society whereas atomic theory would appear to be the reflection of an ever-constant natural reality, how then has society not always obeyed this law? Or is it being claimed that the change from the mediaeval corporate regime to economic individualism was antiscientific, a mistake of history and of nature? According to the theory of praxis it is evident that it is not atomic theory that explains human history but the other way about: in other words that atomic theory and all scientific hypotheses and opinions are superstructures”.

⁴¹ Q 11, § 30, pp. 1442-1443; SPN, pp. 836-837.

⁴² Q 11, § 30, pp. 1443-1444; SPN, p. 838.

property. As an abstract natural force electricity exists even before its reduction to a productive force, but it was not historically operative and was just a subject of hypothetical discourse in natural history (earlier still it was historical “nothingness”, since no one was interested in it or indeed knew anything about it).

Scientific discoveries, according to Gramsci, are to be considered “creations” since the aspects of the reality they describe do not “exist” before the men become conscious of them and they become part of human history: it means, according to the Gramscian re-elaboration of the Marxian *Critique* of 1859, until the conditions for a change become available. Consequently, it is apparent that science is something “historical”, despite the claims of many theoreticians and scientists about the “Esperanto or Volapük of philosophy and science”.⁴³

The scientific “ideology”

Due to this cumulative aspect, the evolution of science appears as a “justificatory narration”, i.e., a kind of knowledge the necessity of which is warranted by its own historical genealogy.⁴⁴ From a Gramscian point of view this means that even science is a form of ideology. As is known, in Gramsci’s theory the concept of ideology is pivotal. By reassessing Marxian principles, he gives a positive definition of ideology: “ideological” is every kind of knowledge, since the knowledge entails theory and praxis and is variously connected to the historical and political context in which knowledge is developed and which is, in its turn, influenced by knowledge.⁴⁵

To argue that science is an ideology means that the scientific knowledge is not a universal, abstract and lifeless achievement, but, on the contrary, it is unavoidably related to the

⁴³ See Q 11, § 45, pp. 1466-1467; SPN, pp. 303-304: “From an incomprehension of the historicity of languages and therefore of philosophies, ideologies and scientific opinions, there stems a tendency that is characteristic of all form of thought (including idealist-historicist ones) to build themselves up as an Esperanto or Volapük of philosophy and science. [...] For the Esperantists of philosophy and science, everything that is not expressed in their language is a delirium, a prejudice, a superstition, etc. [...] Philosophical Esperantism is especially rooted in positivist and naturalistic conceptions”. Sarcastically, Gramsci quotes two artificial and a-historical languages as examples of conceptions of the world detached from history and, more generally, from human reality (see also, *mutatis mutandis*, Q 11, § 18, p. 1417; SPN, p. 812: “methodical anti-historicism is sheer metaphysics”; the Volapük is an artificial language created by the German priest J. M. Schleyer in 1879-1880; it was replaced by the creation of the far more popular Esperanto at the end of the 19th century). Gramsci discusses the topic of the scientific languages in some other notes of notebook 11 (in particular in the fifth section of the notebook entitled *Traducibilità dei linguaggi scientifici e filosofici* [Translatability of the scientific and philosophical languages]). On the theme of language see the entry *Linguaggio* by Derek Boothman in Liguori-Voza, *Dizionario gramsciano*, pp. 482-483, but especially Giancarlo Schirru, *Filosofia del linguaggio e filosofia della prassi*, in Giasi, *Gramsci nel suo tempo*, pp. 767-791 and Alessandro Carlucci, *Gramsci and Language. Unification, Diversity, Hegemony*, (Leiden: Brill, 2013).

⁴⁴ Veca, *L’idea di incompletezza*.

⁴⁵ On the Gramscian reappraisal of the *Critique* of 1859 and on the concept of ideology see the entry *Ideologia* by Guido Liguori in Liguori-Voza, *Dizionario gramsciano*, pp. 399-403, but especially Fabio Frosini, *Gramsci e la filosofia. Saggio sui Quaderni del carcere* (Roma: Carocci, 2003), pp. 79 ff., Fabio Frosini, *Da Gramsci a Marx. Ideologia, verità e politica*, (Roma: DeriveApprodi, 2009) and Frosini, *La religione dell’uomo moderno*, pp. 76 ff. et passim.

determinate historical conjunctions and to the single human beings that make it possible (therefore science involves, although not directly, an entire world of social relations, political beliefs, etc.).⁴⁶ A demonstration of the “superstructural” (i. e. ideological) character of scientific knowledge is provided by the history of culture: it is known, in fact, that in the past science was defeated by stronger ideologies and encountered “eclipses”. As he writes in Q 11, § 38,⁴⁷

science too is a superstructure, an ideology. [...] That science is a superstructure is also demonstrated by the fact that it has had whole periods of eclipse, obscured as it was by another dominant ideology, religion, which claimed that it had absorbed science itself: thus the science and technology of the Arabs seemed pure witchcraft to the Christians. Further, and notwithstanding all the efforts of scientists, science never appears as a bare objective notion – it always appears in the trappings of an ideology: in concrete terms, science is the union of the objective fact with a hypothesis or system of hypothesis which go beyond the mere objective fact.

Also the historical delay of Italy in the scientific field, on which Gramsci focuses in some notes, is a consequence of this fight between antagonistic ideologies and of the influence of the catholic religion.⁴⁸

History of science and history of technology

The demonstration of the ideological nature of science is in line with the conception of the role of technology. If it true that the improvement of the instruments and of the techniques greatly contributes to the development of scientific knowledge, it is also true that the history of science cannot be reduced to the history of technology, as affirmed by Bukharin (and Loria before him).⁴⁹ As the examples of geology and mathematics show, the principal “instrument” of a scientist is his/her mind:⁵⁰

⁴⁶ See also Omodeo, “La via gramsciana”, pp. 60-61.

⁴⁷ Q 11, § 38, p. 1458; FS, p. 293.

⁴⁸ See Omodeo, “La via gramsciana”, p. 61 (he quotes Q 6, § 152, p. 809).

⁴⁹ See Q 11, § 21, pp. 1420-1422; SPN, pp. 824-825: “It is affirmed, in the *Popular Manual*, that the progress of science is dependent, as an effect from a cause, on the development of the instruments of science. This is a corollary of the general principle adopted by the *Manual*, originating with Loria, about the historical function of the ‘instrument of production and work’ (which is substituted for the ensemble of social relations of production). But in the science of geology no instruments except a hammer are used and the technical progress in hammers is in no way comparable with progress in geology. If the history of sciences can be reduced, as the *Manual* claims, to the history of their particular instruments, how can one produce a history of geology? It is no good saying that geology is based also on the progress of a complex of other sciences so that the history of the instruments of these sciences helps to describe the history of geology, because with this let-out one ends up with an empty generalisation and a recourse to ever-wider movements right up to the relations of production. It is very apt that the motto of geology should be ‘mente et malleo’” (it seems Gramsci ignores basic field equipment of geology, as for instance maps, compasses, theodolites, photographic cameras, microscopes and 3D models, then used for quite some time). Shortly after that he

It can be said in general that the advance of science cannot be materially documented. The history of the sciences can at most be brought alive in the memory and that not in all cases, through the description of the successive perfecting of the instruments which have been one means of advance and through the description of the machines which have been applications of the science itself. The principal “instruments” of scientific progress are of an intellectual (and even political) and methodological order and Engels has written that “intellectual instruments” are not born from nothing and are not innate in man, but are acquired, have developed and are developing historically.

Even if the materiality plays an important role in the development of scientific knowledge (see Q 11, § 29, where, by stigmatising the position of Bukharin’s *Popular Manual*, he shows how difficult it is to distinguish clearly between what can be considered “structure” or “superstructure”),⁵¹ science remains an ideology and its development is influenced by the historical and political circumstances in which scientists work.

For a “unified” conception of reality

Gramsci’s claim against the absoluteness of scientific knowledge implies a strong critique of the necessity of progress and, more generally, a refusal of every “scientific superstition”.⁵²

mentions mathematics as example: “How superficial the affirmation in the *Manual* is can be seen from the example of the mathematical sciences which have no need of any material instruments (the development of the abacus, is not, I think, a valid counter-example) and which are themselves an ‘instrument’ of all the natural sciences” (SPN, p. 826). On Bukharin’s “degeneration” see also Q 11, § 29, pp. 1441-1442; SPN, pp. 830-831: “It is clear that the whole theory of the technical instrument in the *Manual* is pure *abracadabra* and comparable to the theory of memory concocted by Croce to explain why artists are not content to conceive their works purely in an ideal form but write them or sculpt them. etc. [...] There is no doubt that all this is just an infantile deviation of the philosophy of praxis generated by the baroque conviction that the more one goes back to ‘material’ objects the more orthodox one must be”. On this theme see Lefons, “Scienza, tecnica”, pp. 117-118, Cospito, *Il marxismo sovietico e Engels*, p. 755 (and especially footnote 43, that contains interesting observations on the differences between the first version [Q 7, § 5] and the second version of the note [Q 11, § 21]) and Voza, “La critica di ciò che è ‘oggettivo’”, pp. 50-51.

⁵⁰ Q 11, § 21, p. 1421; SPN, p. 825. And it continues: “How great a contribution to the progress of science was made by the expulsion from the scientific fields of the authority of Aristotle and the Bible? And was not this expulsion due to the general progress of modern society? Recall the example of theories on the origin of springs. The first exact formulation of the way that springs are produced is to be found in the *Encyclopaedia* of Diderot, etc. While the ordinary people can be shown to have had correct opinions on the question before then, in the scientific world there were a succession of the most arbitrary and bizarre theories which aimed to reconcile the Bible and Aristotle with the experimental observations of good sense” (SPN, p. 825).

⁵¹ Q 11, § 29, p. 1441; SPN, pp. 826-831. In this case it is interesting to confront the first version of the note (Q 4, § 12 and § 19) with the second one (Q 11, § 29): not only in the second version Gramsci has deeply re-elaborated the text, but also the references to Bukharin and Loria are clearer and sharper.

⁵² See Q 28, § 11, p. 2330: “The Land of Cokaygne motif that Croce finds in Graziadei is of a certain general interest, since it serves to outline a subterranean current of romanticism and popular phantasmizing that is fuelled by the ‘cult of science’, by the ‘religion of progress’ and by twentieth century optimism, which itself is also a form of opium” – I thank Derek Boothman for having provided me with this translation). The same motive of the “Land of Cokaygne” and of the intellectual opium is recalled also in Q 11, § 39, pp. 1458-1459; FS, pp. 294-5: “is to be noted that, together with the most superficial infatuation for the sciences, there exists in reality the greatest ignorance about scientific facts and methods, things that are very difficult and are becoming all the more difficult because of the progressive specialisation of new branches of research. Scientific superstition carries such ridiculous illusion and such infantile conceptions that religious superstition finds itself ennobled by them. Scientific progress has given birth to belief in and the expectation of a new Messiah who will bring about the Land of the Cokaygne on this earth. The forces of nature, without any intervention from human toil but through the action of ever more perfected

Nevertheless, science represents also a “forerunner” of the philosophy of praxis since it is able to join the abstract and intellectual reflection with the practical activity (in other words, to find a mediation between nature and culture, according to Gramscian historical materialism).⁵³

Engels’ phrase that “the materiality of the world is demonstrated by the long and laborious development of philosophy and natural science” should be analysed and made more precise. Does science mean theoretical activity or the practical-experimental activity of scientists, or a synthesis of the two? One might say that the typical unitary process of reality is found here in the experimental activity of the scientist, which is the first model of dialectical mediation between man and nature, and the elementary historical cell through which man puts himself into relation with nature by means of technology, knows her and dominates her. There can be no doubt that the rise of the experimental method separates two historical worlds, two epochs, and initiates the process of dissolution of theology and metaphysics and the process of development of modern thought whose consummation is in the philosophy of praxis. Scientific experiment is the first cell of the new method of production, of the new form of active union of man and nature. The scientist-experimenter is also a worker, not a pure thinker, and his thought is continually controlled by practice and vice versa, until there is formed the perfect unity of theory and practice.⁵⁴

As stated in this passage from Q 11, § 34, the scientific activity constitutes the first, concrete step towards the elaboration of a “unified” conception of reality (and this unification must not be confused with an idealist or materialism monism). At the same time, science is also the first example of a new form of life and production, i.e., it is the basis of a desirable “intellectual and moral reform” of the society.⁵⁵ Moreover, science has also a privileged position among the superstructures: because of the possibility of distinguishing between the fact and the hypothesis (as he says in Q 11, § 38), it enables the proletariat to take possession of the scientific knowledge of the bourgeoisie, with the great advantage of the workers’ movement.⁵⁶

mechanisms, will give society an abundance of everything necessary for satisfying its needs and living at ease. This infatuation – the abstract superficial faith in humanity’s miracle-working ability – leads paradoxically to the sterilisation of the very bases of this ability and to the destruction of all love for concrete and necessary work in new type of opium”. On the concept of progress see also Q 10, II, § 48, p. 1335; SPN, p. 677: “Progress is an ideology: [...] ‘Progress’ depends on a specific mentality, in the constitution of which are involved certain historically determined cultural elements: ‘becoming’ is a philosophical concept from which ‘progress’ can be absent. In the idea of progress is implied the possibility of quantitative and qualitative measuring, of ‘more’ and ‘better’”.

⁵³ See Omodeo, “La via gramsciana alla scienza”, p. 55 and Di Meo, *L’“oggettività del reale”*, p. 134.

⁵⁴ Q 11, § 34, pp. 1449-1449; SPN, pp. 808-809.

⁵⁵ See Boothman, “Scienza e traducibilità”, p. 51. See also Voza, “La critica di ciò che è ‘oggettivo’”, pp. 51-52.

⁵⁶ See on this point Voza, “La critica di ciò che è ‘oggettivo’”, p. 52. However, as Voza also recognised, this Gramscian statement is problematic (Voza rightly underlines the obscure style of the passage as well).

Science and hegemony

Last but not least, the ideological character of scientific knowledge implies a reassessment of it within the context of “cultural hegemony”, which has to be considered as a part of the general hegemonic process.⁵⁷

A reconsideration of the role of the scientists within society, a bigger awareness of the (in a broader sense) political meaning of scientific knowledge, as well as a critical reflection on the purposes of the operations of science popularisation are logical consequences of a serious “interiorisation” of Gramsci’s observations. From this point of view, in fact, the Gramscian notes represent a starting point for further reflections rather than a complete analysis of the issue. In the *Prison Notebooks* it is possible to find some significant consideration on the appropriation of scientific knowledge by the ruling class, on the application of scientific methods to economical production and on science education and popularisation that can be fruitfully applied to different historical and political scenarios.⁵⁸

Conclusions

To sum up, this paper presents an overview of Gramsci’s idea of science from his *Prison Notebooks*. First of all I concentrated on his polemical targets, Croce and Bukharin; although their conceptions originated from very different cultural *milieux*, they similarly consider science as an a-critical and a-historical form of knowledge (in particular I analysed Gramsci’s discard of Bukharin’s positivistic belief in the alleged “objectivity of the scientific knowledge”).

Secondly, I focussed on the connection between his notion of science and his “absolute historicism”, by highlighting the peculiar “historical” nature of scientific knowledge and its

⁵⁷ For an introduction to the Gramscian category of “hegemony” see Giuseppe Cospito, *Egemonia*, in Fabio Frosini and Guido Liguori (eds), *Le parole di Gramsci* (Roma: Carocci, 2004), pp. 74-92. On the topic see also Giuseppe Cospito, “Il ritmo del pensiero”. *Per una lettura diacronica dei Quaderni del carcere di Gramsci* (Napoli: Bibliopolis, 2011), chapter II, pp. 77-126, Angelo D’Orsi (ed), *Egemonie* (Napoli: Dante & Descartes, 2008) and Mauro Pala (ed), *Narrazioni egemoniche. Gramsci, letteratura e società civile* (Bologna: Il Mulino, 2014). I would like to note also the papers on the concept of hegemony by Cospito, Frosini and Schirru, which were presented during the *Ghilarza Summer School 2014 – Scuola Internazionale di Studi Gramsciani* (Ghilarza (OR), Italy, 8th-12th September 2014) and will be published soon; the programme is available at: <http://www.internationalgramscisociety.org/communications/gss2014.html>). In general, “cultural hegemony” represents only an aspect of the multifaceted hegemonic process investigated by Gramsci; as Cospito wrote, “the *civil* or *political* hegemony [is] connected and not opposed to the *cultural* and *intellectual* one” (Cospito, *Egemonia*, p. 89). As a matter of fact, the cultural aspect of hegemony is strictly linked to the role of intellectuals within society and to “intellectual and moral reform” with all its political and practical consequences (this issue, however, is very complex and cannot be examined deeply here).

⁵⁸ See first of all Nieto-Galan, “Antonio Gramsci Revisited” and Gavroglu, Kostas, “Science popularization, hegemonic ideology and commercialized science”, *Journal of History of Science and Technology*, 2012, 6: 85-99. The conference that took place in Barcelona on 22th-24th January 2014 (*Science as Cultural Hegemony. Gramscian Concepts for the History of Science*, Centre d’Història de la Ciència (CEHIC), Universitat Autònoma de Barcelona-Institut d’Estudis Catalans), where a first version of this paper was presented, was a unique occasion to discuss these topics.

impossibility of being compared with other disciplines (art, literature, etc). As far as the evolution of science is the result of a cumulative process, it appears as a “justificatory narration” and, consequently, as a form of ideology.

This perspective entails a new reading of the history of science, which appears strictly connected to the social and political contexts and to the single human actors that made it (and not simply, as was affirmed, to the development of technical instruments). Moreover, the ideological character of science implies a reconsideration of it in the context of the struggle for “hegemony”, i.e., a reassessment within the framework of the political and social transformations analysed by Gramsci.

Noteworthy corollaries are the critique of the concept of progress and, more generally, the refusal of blind faith in scientific knowledge. However, the most important consequence of these observations, in Gramsci’s view, is the possibility of taking science as a model of a “unified” conception of reality, which, according to his “philosophy of praxis”, is able to join intellectual reflection with practical activity.

In conclusion, the notion of science represents not only a useful critical tool, but also a meaningful *tessera* of the bigger mosaic of the *Prison Notebooks*: I have tried to show how Gramscian reflections on scientific knowledge involve many different aspects of his conceptual system and of his interpretation of Marxism. Due to its richness, Gramsci’s interpretation constitutes a fruitful field of speculation for historians of science, a starting point not only to reflect on the nature of scientific knowledge in itself, but also to get a deeper comprehension of the historical and political mechanisms that govern the (lack of) success of a specific scientific theory.

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Visions of Psychiatry, Madness and the Republic in the Work of Dr. Luís Cebola (1876–1967): An Historical Approach at the Crossroads of Psychiatry, Ideology and Fiction in Portugal in the First Half of the Twentieth Century

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Historiographical framework

As stated by Roy Porter, “the critique of t–he epistemological status of insanity” in Michel Foucault’s *Madness and Civilization* (1961), which inverted the traditional history of psychiatry by converting its heroes, i.e., the doctors, into villains, as well as the anti-psychiatric movement, as evidenced in the works of the American psychiatrist Thomas Szasz, *The Myth of Mental Illness* (1961) and *The Manufacture of Madness* (1970), which considered mental illness to be a myth forged by psychiatrists for their own glorification, made psychiatry and social policy towards the mentally ill from the 1960’s onwards a subject of intense historical and sociological analysis¹. These ground-breaking publications gave rise to several critical historiographical works, which Porter referred to as representing the “new” history of psychiatry and Andrew Scull spoke of as being an intellectual enterprise inspiring an array of provocative questions and fresh areas of research, which in turn resulted in the publication of monographs which have presented us with a more subtly multifaceted and nuanced history of psychiatry².

The subsequent production of a new breed of anti-institutional historiographical writing, Kathleen Jones contended, made the evaluation of psychiatric praxis during the nineteenth and twentieth centuries a highly problematic field of enquiry, since reliable historical analysis was, in her opinion, hindered by both prejudice and anachronism, having underplayed or completely disregarded how these institutions had been the principal means by which to care

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¹ Porter, Roy; Wright, David, *The Confinement of the Insane: International Perspectives 1800–1965* (Cambridge: Cambridge University Press, 2003), pp. 1–19.

² Andrew Scull, *Social Order / Mental Disorder: Anglo-American psychiatry in historical perspective* (Berkeley: University of California Press, 1989), p. 12.

for society's most vulnerable individuals during that historical era³. Scull, on the other hand, following a more sociological approach, argued that the history of psychiatry should portray psychiatrists, asylums and patients in their sociological milieu, inasmuch as it was impossible to understand the perception and conceptualisation of mental illness, as well as the psychiatric profession itself, without duly examining the ideology, professional interests, changing social structures and the shifting forms of power in a particular historical context. Nevertheless, he also recognised the dangers of a historiography that considered the perception of alienation as a social construction *tout court* or that demonised the psychiatric profession⁴.

Furthermore, as Marijke Gijswijk and Harry Oosterhuis have pointed out, the political framework of a particular historical moment and the societal conditions of a nation must also be taken into account when writing the history of psychiatry. The development and institutionalisation of the psychiatric profession after the French Revolution, for example, was associated with the rise of the bourgeoisie and the ideational ferment of the Enlightenment. In consequence of these watershed factors, and until the first-half of the twentieth century, the profession and its institutions served two key functions: first, a medical one, i.e. the welfare and treatment of patients and secondly, a socio-political one relating to the ultimate goal of freeing society from the social and economic burden represented by the population of the mentally ill. How these two functions influenced each other varied from place to place, since they were intrinsically connected to a country's political and ideological environment⁵.

In regard to the history of Portuguese psychiatry, it is impossible to write on the evolution of this medical discipline and practice without referring to the political background as it existed at the end of the nineteenth and early twentieth centuries. Thus, at the beginning of the twentieth century, Portuguese anti-monarchists were highly influenced by Comte's positivism: they held the belief that humanity would henceforth participate in the so-called third stage of socio-political evolution, one that would be dominated by the establishment of a scientific-secular faith. In short, they believed that the new era of social organisation and development would be securely founded on scientific knowledge. Consequently, pedagogy and psychiatry became two of the sciences to which the First Portuguese Republic gave particular attention after its establishment (following the overthrow of the Portuguese monarchy) in 1910.

³ Jones, Kathleen, "The culture of Mental Hospitals", in German Berrios, Hugh Freeman (eds.), *150 years of British Psychiatry: 1841–1991* (London: Gaskell, 1991), p. 17.

⁴ Scull, *Social Order / Mental Disorder*, p.8.

⁵ Marijke Gijswijt, Harry Oosterhuis, *Psychiatric Cultures Compared: Psychiatry and Mental Health Care in the Twentieth Century – Comparisons and Approaches* (Amsterdam: Amsterdam University Press, 2005), pp. 17–18.

The former was rightly considered to be indispensable to the attainment of the Republic's ideals and to develop the citizenry's civic sense, moral character, intellectual and cultural maturity and physical health⁶, while the latter, devoted to brain research (the locus of mind and consciousness), would provide the relevant knowledge necessary to better understand the nature of social organisation and human behaviour. In this context, the historian of psychiatry, as it has developed in Portugal, must consider the contributions made by the following Portuguese doctors and psychiatrists: Júlio de Matos (1856–1922), Miguel Bombarda (1851–1910) and Egas Moniz (1874–1955), who were actively involved in the so-called Republican conspiracy and subsequent revolution of 1910. It should be noted that, after the establishment of the Republican government, the abovementioned medical professionals, indeed the medical class in general, became an influential presence in the Portuguese Parliament⁷. Notwithstanding the fact that only minor changes occurred in terms of psychiatric care *per se* during the first decades of the twentieth century, the years of the First Portuguese Republic (1910–1926) were a fertile period with respect to the institutionalisation and development of the psychiatric profession. Indeed, following the establishment of the Portuguese Republic, the Provisional Government established a constitution in 1911 which guaranteed the right to health care for all citizens⁸. Nonetheless, psychiatry was still only lectured in free courses at the beginning of the twentieth century. In fact, it was only on 22 February 1911, as a result of a significant reform vis-à-vis medical training and teaching, that the chairs of neurology, psychiatry and forensic psychiatry were officially recognised as a regular part of the curriculum of the Portuguese Faculties of Medicine⁹. On 11 May 1911, a law regulating the hospitalisation of psychiatric patients was approved. This document authorised the government to establish seven new psychiatric asylums and ten agricultural colonies with a view to the treatment of the insane¹⁰.

⁶ Fernando Catroga, *O Republicanismo em Portugal: da formação ao 5 de Outubro de 1910* (Lisboa: Notícias editorial, 2000), pp. 277–291.

⁷ José Mattoso (dir.), *História de Portugal*, 8 vols., Vol. 6: Rui Ramos, *A Segunda Fundação (1890–1926)* (Lisboa: Edições Estampa, 1994), pp. 415–476.

⁸ Pimentel, Irene Flunser, “A Assistência social e familiar de Estado Novo nos anos 30 e 40”, *Análise Social*, 1999, XXXIV: 477–508 on p. 478.

⁹ José Morgado Pereira, “A psiquiatria no tempo da I república”, in *Corpo: Estado, Medicina e Sociedade no tempo da I República* (Lisboa: Imprensa Nacional Casa da Moeda, 2010), p. 135.

¹⁰ Diário do Governo: 13 de Maio de 1911, nº111, Série I, Imprensa Nacional, [<http://dre.pt/pdfgratis/1911/05/11100.pdf>].

Aims of this Doctoral Dissertation

The life and work of the Portuguese psychiatrist Luís Cebola, the author of a wide-ranging literary output, as well as clinical director of Casa de Saúde do Telhal (CST) for thirty-eight years, has hitherto not been the object of extensive historical research¹¹. Indeed, he is barely mentioned in Barahona Fernandes's work on the history of Portuguese psychiatry¹². However, several studies on Luís Cebola have been prepared by historians whose work is closely linked to the Ordem Hospitaleira de S. João de Deus (OHSJD), i.e., the religious brotherhood administering the psychiatric hospital where Cebola was clinical director for thirty-eight years. A monograph about Cebola was published in 2009 by the Centro de Estudos Interdisciplinares do Século XX (CEIS20), written by Aires Gameiro, Augusto Moutinho Borges, Ana Mateus Cardoso and Fernando de Oliveira — *Um Republicano no Convento* [A Republican in the Monastery]¹³. This monograph includes Gameiro's personal view of Cebola's character, since both Gameiro and Cebola knew each other while the latter was clinical director of the CST. The four authors refer in particular the scarce documentation available in both the archives of the psychiatric hospital and those of the religious brotherhood. Moreover, the authors address the issue as to why Cebola, as well as the CST, have been hitherto largely neglected by scholars working on aspects of the history of Portuguese psychiatry. They further highlight the need to carry out in future a more detailed analysis and study of Cebola's life and work. Subsequently, Gameiro separately published a paper concerning Cebola in which he addresses topics similar to those examined in the aforementioned monograph: "Evocação de um medico esquecido, o Dr. Luís Cebola pioneiro da Ocupação Ergoterápica na Casa de Saúde do Telhal, da Ordem Hospitaleira de São João de Deus" [Evocation of a Forgotten Physician, Doctor Luís Cebola: a Pioneer in Ergotherapy at the Casa de Saúde do Telhal, a Psychiatric Hospital Affiliated with the Ordem Hospitaleira de São João de Deus]¹⁴. Both publications have proved to be useful while preparing this doctoral project, and represent a valuable starting point for my own research insofar as they offer a global view of Cebola's personality, as well as provide insights into fundamental features of his work as clinical director of the CST.

¹¹ Aires Gameiro, Augusto Moutinho Borges, Ana Mateus Cardoso, Fernando D'Oliveira, "Um Republicano no Convento", *Cadernos do CEIS20* [Centro de Estudos Interdisciplinares do Século XX], 2009, 13, on pp. 27–28.

¹² Barahona Fernandes, *A Psiquiatria em Portugal* (Lisboa: Roche, 1984), p. 166.

¹³ Gameiro et al., "Um Republicano no Convento".

¹⁴ Aires Gameiro, "Evocação de um Médico Esquecido, o Dr. Luís Cebola Pioneiro da Ocupação Ergoterápica na Casa de Saúde do Telhal, da Ordem Hospitaleira de São João de Deus", *Medicina na Beira Interior da Pré-história ao Século XXI*, Marques, António Lourenço (dir.), 2009, 23: 126–132.

The aim of my doctoral research is to prepare a biography of Luís Cebola with particular emphasis given to his ideological position and the specific features of his clinical practice. Additionally, I intend to explore the medical perception of mental illness and treatment protocols as seen in the first half of the twentieth century. To adequately do so, I have chosen the clinical director of CST as my case study. This doctoral project represents, therefore, a pioneering study on this nearly forgotten medical figure and his contributions to the development of Portuguese psychiatry. My doctoral research also addresses the issue of the popularisation of science and medicine as evidenced in his literary work. In addition, while focusing mainly on his personal experience as clinical director of the CST and on his conceptualisation of mental illness, my research also seeks to characterise the relationship between mental patient and psychiatrist as generally practised during the first half of the twentieth century in Portugal. Additionally, my research seeks to integrate Cebola's conceptualisations and clinical praxis (including his treatment protocols for mental illness), as practised at the CST, in light of the broader developments of Portuguese and international psychiatry during the same historical period.

Luís Cebola seems to have been largely ignored by his peers during his lifetime, and as previously mentioned, he is barely referred to in historical studies published to date despite his having been the clinical director of one of the few psychiatric hospitals functioning in Portugal during the first half of the twentieth century. A detailed study of his life and work will therefore contribute to the historian's understanding of the mechanisms by which peer recognition of fellow professionals occurs, as well as the processes by which a scientific idea, method, or theory become part of a disciplinary canon. My research project also seeks to increase historical knowledge with respect to the community of Portuguese psychiatrists during the decades of Cebola's professional activity and the important role that community played in the institutionalisation and development of the profession in Portugal. As stated above, it will explore Portuguese developments in psychiatry through the case study of Cebola and the CST; conversely, it will examine the influence which contemporary advances in psychiatry, as understood and practised in Europe, had upon the Portuguese context.

This doctoral dissertation ultimately seeks to elucidate the reasons why Luís Cebola has not hitherto been recognised as a medical figure on a par with the pantheon of other, much better-known contemporaries of his, who, in contrast to Cebola, presently comprise the academic discourse and heroic narrative informing the history of psychiatry in Portugal. Thus, I seek to restore Cebola's contributions to their rightful place within this history. The study of

such a marginalised figure will ultimately result in a more complete understanding of the history of psychiatry in Portugal in general.

Luís Cebola: Between Historiography and Biography

In his introduction to “The History and Poetics of Scientific Biography” (2007), the editor Thomas Söderqvist refers to what he calls the “paradoxical status” of scientific biography in the context of the history of science. In his view, scientific biographies constitute a vast, reader-friendly corpus of publications on the one hand, having a significant impact on the public understanding of scientific culture and practices, yet, on the other hand, they are rarely mentioned in historiographical discussions of science, medicine and technology. Nevertheless, the author remarks that this schism between historiographical study and biography has in fact undergone a significant evolution over the past twenty years¹⁵. For example, Mary Terall, in her paper “Biography as Cultural History of Science,” emphasises that although biography as a genre focuses on the particulars of an individual life, it also allows the historian to examine and integrate the life of the scientist within a broader social context. In this way, it is possible to increase our historical understanding concerning the role played by science – as a professional practice and a multi-disciplinary domain – in the development of the scientist’s personality, as well as its impact on the society and culture of a specific historical epoch¹⁶. Mary Jo Nye, in her appraisal of scientific biographies entitled “Scientific Biography: History of Science by Another Means?,” argues in turn that many scientific biographies in fact explore and address issues relating to moral conduct and public virtue as well as focus on scientific processes and achievements, which, in her opinion, encourages the writing of more compelling narratives which not only permit a more complete understanding of scientific culture in general but also more complexly portray the scientist’s ambitions, passions, motivations, disappointments and moral choices. Ultimately, such narratives may even serve to expand the historians of science’s readership¹⁷. Finally, Söderqvist explores in his chapter entitled “What is the Use of Writing Lives of Recent Scientists?” seven usages of scientific biography as a genre. Amongst those usages, two of them seem of major relevance as a framework to the preparation of this doctoral dissertation, namely, the use of biographical narrative as a tool to understand the origin and

¹⁵ Thomas Söderqvist, “A New Look at the genre of scientific biography” in *The History and Poetics of Scientific Biography* (Ashgate: Aldershot and Burlington, 2007), pp. 1–15.

¹⁶ Mary Terall, “Biography as Cultural History of Science”, *Isis*, 2006, 97: 306–313.

¹⁷ Mary Jo Nye, “Scientific Biography: History of Science by Another Means”, *Isis*, 2006, 97: 322–329.

construction of scientific knowledge and the establishment of a contextual narrative of scientific practice. According to the author, biography permits the writing of narratives on the history of science which reveal the larger cultural, social and political contexts at work. Furthermore, Söderqvist argues that the origin and construction of scientific knowledge and practices should be understood not primarily with reference to the broader cultural circumstances but mainly with reference to individual circumstances (motivations, ambitions, ideas, feelings, personal experiences and experimental practices). Thus, biography as a genre may help to better understand the scientific persona and the scientific endeavour¹⁸.

The choice of a largely neglected historical figure, as a case study for this doctoral dissertation, allows for the expansion of research topics in the area of the history of medicine, more specifically in the field of the evolution of the perception of mental illness and clinical practices in Portugal during the first half of the twentieth century. Additionally, Luís Cebola's twenty-three literary publications are extremely rich documents, since they reveal the interconnectedness of medical-scientific themes and literary and socio-political concerns. During his lifetime, Cebola published seven literary volumes focusing mainly on psychiatric themes, six poetry anthologies, six volumes focusing on socio-political and historical analyses, two philosophical essays, a travel book and an autobiography. Both his autobiographical memoir, *Memórias de Este e do Outro Mundo* (1957), and his main work on psychiatry, *Psiquiatria Clínica e Forense* (1940), had two editions during his lifetime. Following his retirement from medical practice, Luís Cebola continued to write and publish. His books, based on the clinical and psychological analysis of his patients, portray madness in a way that moves beyond a simple symptomatological enumeration. Empathetic to the mental state of his patients, in parallel with his strong socio-political rhetoric (of a Republican-inspired, propagandistic nature), Cebola's literary works comprise an invaluable document which deepens our understanding of the social and clinical perception of mental illness during the first half of the twentieth century.

¹⁸ Thomas Söderqvist, "What is the Use of Writing Lives of Recent Scientists?" in Thomas Söderqvist, Ronald E. Doel (eds.), *The Historiography of Contemporary Science, Technology and Medicine: Writing Recent Science* (New York: Routledge, 2006), pp. 99–127.

A brief clinical portrait of Luís Cebola and of the CST

José Luís Rodrigues Cebola was born in Alcochete on 5 September 1876¹⁹. From 1899 to 1906 he studied medicine at the Escola Médico-Cirúrgica de Lisboa²⁰. This School had been created in 1836 (replacing the earlier Escola Régia de Cirurgia established in the Hospital Real de S. José in 1825 by King John VI (D. João VI), and occupied the premises of a convent situated near the Hospital de S. José²¹.

Luís Cebola prepared his final dissertation [his “tese inaugural”], *A Mentalidade dos Epilépticos* [The Epileptics’ Mind], while working at the Hospital de Rilhafoles (the first state-run psychiatric hospital created in Portugal), under the supervision of Professor Miguel Bombarda (1851–1910)²². Miguel Bombarda had been appointed director of this hospital in 1892 by the Portuguese House of Commons and was also the Regent Professor of Physiology and Histology at the Escola Médico-Cirúrgica de Lisboa from 1883²³. Cebola’s work in Rilhafoles consisted in the analysis (in terms of appearance and content) of works of art produced by epileptic patients with a view to discovering an underlying psychopathological law²⁴.

According to Gameiro *et al.*, Luís Cebola was nominated clinical director of the Casa de Saúde do Telhal on 2 January 1911 by the Governo Provisório da República Portuguesa [Provisional Government of the Portuguese Republic], since he was deemed to be politically aligned with the tenets of the new Republic and therefore an apt candidate to work in this religious institution caring for the mentally ill²⁵. Luís Cebola himself stated in his abovementioned autobiographical memoir that it was his friend, the statesman Afonso Costa (1871–1937), then Head of the Republican Government, who invited him to accept this position. He claims to have accepted the invitation because he was a firm supporter of the new political regime and considered it a way for him to be of service to his country²⁶. He would

¹⁹ Lisboa, AHMCUL [Arquivo Histórico do Museu de Ciência da Universidade de Lisboa], Processo Individual de José Luís Rodrigues Cebola Júnior, s. d., Cx. 1541.

²⁰ *A Escola Médico-Cirúrgica de Lisboa em 1899 – 1900, Anuario*, José António Serrano (ed.), (Lisboa: Imprensa Nacional, 1900), p. 41; *A Escola Médico-Cirúrgica de Lisboa em 1905–1906, Anuario*, P. A. Bettencourt Raposo (ed.) (Lisboa: Imprensa Nacional, 1907), p. 100.

²¹ Maria Esperança Pina, “As Faculdades de Medicina na I República” in *Corpo: Estado, medicina e Sociedade no tempo da I República*, (Lisboa: Imprensa Nacional Casa da Moeda, 2010), pp. 78–79.

²² Luís Cebola, *Memórias de Este e do Outro Mundo* (Lisboa: Edição do autor, Lisboa, 1957), pp. 32–33.

²³ Fernandes, *A Psiquiatria em Portugal*, p. 261.

²⁴ Luís Cebola, *A Mentalidade dos Epilépticos*, (Setúbal: Edição do autor, 1906), foreword.

²⁵ Gameiro et al., “Um Republicano no Convento”, p. 14.

²⁶ Cebola, *Memórias de Este e do Outro Mundo*, pp. 57–58.

remain the clinical director of this institution for the next thirty-eight years, retiring only on 28 February 1949²⁷.

The CST, also known as Manicómio do Telhal or Casa do Sagrado Coração de Jesus, affiliated with the religious brotherhood the Ordem Hospitaleira de S. João de Deus (OHSJD), began to function as an insane asylum in 1893. It was built on a farm in Sintra which had been purchased by Bento Menni, an Italian member of the OHSJ²⁸. The aim of this brotherhood was to create a hospital which exemplified the humanitarian and spiritual vision of their patron saint, S. João de Deus. Significantly, their policy was to keep abreast of, and use, the most up-to-date international developments (both theoretical and technical innovations) in the fields of medicine and psychiatry²⁹.

On 15 October 1911, Afonso Costa, then a delegate of the recently instituted political regime, visited the CST. He authorised the religious brotherhood to continue their work as male nurses on condition that they stopped using clerical uniforms and that the institution be subjected to detailed inspections carried out by government representatives³⁰. Concomitantly, between October 1910 and April 1911, the Portuguese Republican government abolished all references to Catholicism in public matters; on 20 April 1911, a decree was passed officially separating church and state. Under this law, the Catholic Church's patrimony became government property³¹. However, owing to the fact that Bento Menni had bought the farm under his own name (and therefore could not be considered property belonging to the brotherhood), the republican government could not claim rights over this hospital³².

It should be noted that when the CST opened, there were only two psychiatric hospitals in Portugal: the Hospital de Rilhafoles in Lisbon and the Hospital do Conde de Ferreira in Porto. The former had begun to function on 13 December 1848. It occupied the premises of the old São Vicente de Paula Convent. Until then, mental patients had been hospitalised at the Hospital Real de Todos os Santos (a general hospital) located in the Rossio district of the city. Following its demolition in the aftermath of the 1755 earthquake, patients were transferred to

²⁷ Aires Gameiro (dir.), *Casa de Saúde do Telhal 1º Centenário 1893–1993 — Documentos Históricos e Clínicos*, (Lisboa: Editorial Hospitalidade, 1993), p.27.

²⁸ Joaquim Chorão Lavajo, *Ordem Hospitaleira De S. João de Deus em Portugal 1892–2002*, (Lisboa: Editorial Hospitalidade, 2003), p. 70.

²⁹ *Hospitalidade, Crónica Trimestral dos Irmãos de São João de Deus em Portugal*, vol. 1, (Sintra: Editorial Hospitalidade, 1936), p. 21.

³⁰ Ilustração Portuguesa –Carlos Malheiro Dias (dir.), Edição semanal do jornal “O Século”, Lisboa, 24 de Outubro de 1910, 244, p. 522.

³¹ Ramos, *A Segunda Fundação* (1890–1926), p. 407.

³² Lavajo, *Ordem Hospitaleira De S. João de Deus em Portugal 1892–2002*, p. 92.

the nursing facilities of S. Teotónio and Santa Eufémia at the Hospital de S. José. The medical care was very poor in these nursing facilities as a result of the dearth of specialised medical staff and also to the overall poor quality of the facilities themselves³³.

In the northern Portuguese city of Porto, the precarious conditions with regard to the care and treatment of mental patients were similar to those seen in the capital. Until 1883, when the first psychiatric hospital was created – the Hospital Conde de Ferreira – the mentally ill were hospitalised in a general hospital. Its first director, António Maria de Sena, published the hitherto most extensive study concerning the medical care of the insane – *Os alienados em Portugal: História e Estatística* [The Mentally Ill in Portugal: History and Statistics] (1884)³⁴.

In consequence of World War I, there emerged a great number of military men needing psychiatric and clinical care. The CST was subsequently selected by the Ministry of War to become a military asylum. This was an important moment for the CST, since payments made by the government enabled the improvement of the existing buildings, as well as the construction of new ones³⁵. During the 30's, the CST would again be chosen by the Portuguese Military as a health-care institution for their members requiring psychiatric treatment³⁶.

In 1936, a Nursing School was founded at the CST³⁷. Nurses' education was supervised by Meira de Carvalho, who was hired as a general practitioner there in 1931³⁸. Luís Cebola stated that he himself was responsible for suggesting the creation of this Nursing School to the hospital administration in 1925 in order to improve the OHSJD nurses' scientific knowledge in the areas of anatomy, physiology, minor surgery procedures, pharmacology, hygiene and psychopathology³⁹. Concurrently, a course on psychiatry was also given to the future nurses of the OHSJD by Luís Cebola himself⁴⁰. This private Nursing School became an

³³ Fernandes, *A Psiquiatria em Portugal*, pp. 255–256.

³⁴ Pedro Teixeira Pereira, Eva Gomes, Olga Martins, “A Alienação no Porto: O Hospital de Alienados do Conde de Ferreira (1883–1908)”, *Revista da Faculdade de Letras – HISTÓRIA*, 2005, III série, 6: 99–128, on p. 100.

³⁵ Lavajo, *Ordem Hospitaleira*, p.113.

³⁶ Meira de Carvalho, (1943), “Tratamentos no Telhal pelos anos 30”, in Aires Gameiro (dir.), *Casa de Saúde do Telhal 1º Centenário 1893–1993 — Documentos Históricos e Clínicos* (Lisboa, Editorial Hospitalidade, 1993), p. 226.

³⁷ Meira de Carvalho, “Memória Histórica sobre a Escola de Enfermagem” (1968), in Aires Gameiro (dir.), *Casa de Saúde do Telhal 1º Centenário 1893–1993 — Documentos Históricos e Clínicos* (Lisboa, Editorial Hospitalidade, 1993), p. 233.

³⁸ Cebola, *Memórias de Este e do Outro Mundo*, p.31; Luís Cebola, “Evolução terapêutica na Casa de Saúde do Telhal” in Gameiro (dir.), *Casa de Saúde do Telhal*, p. 222.

³⁹ *Hospitalidade, Crónica Trimestral dos Irmãos de São João de Deus em Portugal*, vol. 9, (Sintra: Editorial Hospitalidade, 1938), p. 32.

⁴⁰ Fr. Martinho Barroco Guiomar, “Arquivando para a História” in Fr. Martinho B. Guiomar (dir.), *Boletim de Informação Familiar e Hospitalar*, Vol. 9, 1952, pp. 119–120.

official state institution in 1939, thenceforth named the “Escola de Enfermagem S. João de Deus”⁴¹, which continued to operate at the CST until 1971⁴²

Concluding Remarks

In practical terms, my research will be based on the analysis of his multifaceted bibliography, complemented mainly by documentation regarding his clinical practice found at the Museu São João de Deus – Psiquiatria e História and the Casa de Saúde do Telhal. Additional information will be taken from contemporary medical periodicals, such as *Medicina Contemporânea* [Contemporary Medicine], *Anais Portugueses de Psiquiatria* [Portuguese Annals of Psychiatry] and *Jornal do Médico* [The Physician’s Gazette], among others)

A scientific and ideological biography of Luís Cebola, based fundamentally on the analysis of his published works, will permit a more complete critically and conceptually informed understanding of the relationship between medical-scientific knowledge and the *polis*, e.g., the permeability of clinical ideas to multiple social and discursive contexts as, for example, their thematic and rhetorical appropriation by way of literary device and political discourse (and vice-versa, i.e., the adoption of literary characters and themes as metaphors for diseases and the recourse to political ideologies as a way to explain natural phenomena or scientific theories). Furthermore, the elucidation of the rhetorical devices by which Cebola presents himself (as scientist, clinician and citizen) to his readers enables the historian to adduce a mental framework or set of (often only) implied or understated premises underlying the perception and self-perception of the psychiatrist and the man of science during the first half of the twentieth century in Portugal.

⁴¹ Irmão Cândido, “Dados biográficos” in *Hospitalidade, Crónica Trimestral dos Irmãos de São João de Deus em Portugal*, vol. 223 (Sintra: Editorial Hospitalidade, 1993), p.7.

⁴² Carvalho, “Memória Histórica sobre a Escola de Enfermagem”, p. 233.

Antonio Sánchez, *La Espada, la Cruz y el Padrón: soberanía, fe y representación cartográfica en el mundo ibérico bajo la Monarquía Hispánica, 1503-1598*. Madrid: CSIC, 2013. 333 pp. ISBN 978-84-00-09738-7

By Jorge Cañizares-Esguerra*

Sometime in 1508 Ferdinand of Aragon ordered the *Casa de Contratación* of Seville to create a *padrón* real: a map of the known planetary landmasses that seemed to fall under his sovereignty. This global mappa-mundi was to be constantly updated, as the contours of the known world were rapidly changing since in the early fifteenth-century Portugal began to inch its way down the coast of West Africa. Practical and ideological reasons went into the making of the *padrón*. By determining secure, reliable knowledge of new maritime routes and coastal landmarks, the *padrón* established proprietary sea lanes within an expanding Atlantic Ocean and Mar del Sur. Rapidly changing representations that tracked the discovery of new worlds continually asserted imperial sovereignty over the most viable sea-routes. Padrones demanded great technical expertise in cartography and navigation, as well as well-coordinated efforts at gathering and synthesizing information. There were nevertheless two powerful opposing forces, informing the activities of those famed pilots and learned cosmographers charged with the making of a *padrón*: on the one hand, they had to strive for great accuracy and reliability, for wrong maps could easily cause shipwrecks and major commercial losses; on the other hand, pilots and cosmographers had to render padrones useful in the geopolitical arms race between Spain and Portugal over where to draw imaginary planetary lines (bestowed by the pope), partitioning the world between the two empires. Lines moved around at will as to make new worlds fall in and out of one's own or the rival's alleged sovereignty. Sánchez's book is a meticulous and judicious study of the origins and history of the *padrón* real in sixteenth-century Spain and of 16 surviving *mappa-mundi* modeled after the ever changing *padrón*.

Sánchez divides his book into two sections. The first explores the medieval Mediterranean cartographic traditions that informed the *padrón* and the many different mappa-mundi it yielded. Sánchez establishes that these new maps drew upon the fifteenth-century cartographic Portuguese efforts to chart the West African coast, which, in turn, drew upon the thirteenth-century Mallorcan portolan tradition of Mediterranean mapping. Unlike

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Mediterranean seafaring, however, oceanic navigation was not coastal; it relied on astronomic observations to navigate in open waters. The Portuguese may have been the first to determine latitude by measuring the sun's and stars' declensions through astrolabes and compasses. But it was the Spaniards who in the *padrón real* first introduced Ptolemaic scales of latitude and longitude together with wind-compass rose lines typical of portolans. The first section also explores the contradictory tensions built into all *padrón* maps. While cartographic and instrumental technology responded to an increasing need for accuracy, geopolitical interests (post-Tordesillas) led to deliberate cartographic manipulations.

Sánchez devotes section two to an analysis of 16 surviving *padrón* maps created over the course of the sixteenth-century. He offers reproductions of these maps currently held at repositories in the Vatican, Florence, Turin, Modena, Weimar, Wolfenbüttel, New York, Paris, Seville, and Madrid. But since these are very large maps with abundant para-text it would have taken a separate coffee-table book for readers to appreciate the level of detail contained in each. Sánchez offers instead detailed textual descriptions and even verbatim transcripts of para-texts. Section two, therefore, reads like an encyclopedia of all extant *mappa-mundi* modelled after the ever-changing *padrón real*.

Three clear arguments emerge from this encyclopaedic description. First, the *padrón* constantly changed up until the 1530s, when the contours of new lands in South East Asia and America were finally established. Second, Philip II repeatedly ordered the *padrón* to be updated; yet paradoxically very few maps from his reign are known to have been produced. Third, *padrón* maps played a role in ceremonial diplomatic exchanges, allowing the Habsburgs, in particular, to make symbolic claims over ever greater expanses of the globe.

In the second part of the book, Sánchez devotes a chapter on the mid-sixteenth-century debate over the use of multiple latitude scales between two rival camps of pilots-cosmographers. This debate dramatically brought forth the constant tension between the two objectives of the *padrón*, namely, to offer sailors accurate solutions to navigation problems while bolstering the geopolitical agendas of the crown through the manipulation of scales. Multiple scales of latitude in the same map, some cosmographers argued, distorted cosmographical reality to such a degree that longitude scales could also be questioned. Such questioning, in turn, could lead to challenging the location of the Moluccas in the bitterly negotiated post-Tordesillas inter-imperial partitions.

Sánchez spends too much time offering a painstaking description of each *padrón* map. He does not offer, however, enough evidence to sustain his arguments on the symbolic uses of

the *padrón* as a representation of imperial sovereignty. What were the specific diplomatic contexts that caused most of the surviving *mappa-mundi* to end up in cities in Germany, Italy, and France? This erudite well-written book nevertheless fails to address many of the mysteries Sánchez himself identifies. Why did the *padrón* not change under Philip II, despite the many calls of the latter to update and revise it? What was the impact (both in terms of pragmatic cartographic accuracy and geopolitical manipulation) of transferring the responsibility for updating the *padrón* from the *Casa de Contratación* to the Council of Indies under Philip II?

Jaime da Costa Oliveira, *Memórias para a História de um Laboratório do Estado*. Santarém: O Mirante, 2013. 189 pp. ISBN 978-989-98799-0-4.

By *Júlia Gaspar**

The author of *Memórias para a História de um Laboratório do Estado* is a retired physicist and former administrator of the State Laboratory created under the name Laboratório de Física e Engenharia Nucleares (Laboratory of Nuclear Physics and Engineering) (LFEN). This book offers a first-hand account of this institution, since its creation in 1959 until its extinction in 2012, and provides historians of science with a perfect example to reflect upon the virtues and pitfalls of personal institutional histories.

The author offers an explanation for the vicissitudes the Laboratory endured through five periods of crisis — 1962–1963, 1973–1978, 1992–1994, 2000–2005, 2009–2011, and five mutations — 1968, 1979, 1985, 1995, and 2007. The identification of crises and mutations are Jaime Oliveira's own interpretation: the first as perceptions resulting from his experience; the second as the consequence of legislation issued by successive governments.

Built in the Lisbon's outskirts at Sacavém, the Laboratory was born out of a proposal of Junta de Energia Nuclear (Nuclear Energy Board), to António de Oliveira Salazar, the dictator and president of the ministers' council, in December 1955. The Board's relevance was due to its commitment to uranium oxide production, exported under a contract to the USA, until 1962. The Laboratory was constructed for the purpose of housing the nuclear reactor offered by US Atoms for Peace Program, investing the income from the uranium oxide export. Its history is, therefore, closely intertwined with the Board's, until its extinction in 1979, but despite the troubled life of the Laboratory its essential premises at Sacavém have been kept to this day.

In January 1959, the Board comprised two technical departments, the State Laboratory (LFEN) and another department devoted to the geological survey of uranium ore, and uranium oxide production. According to Jaime Oliveira, the cancellation of the US uranium oxide contract gave way to the first crisis period, 1962–1963. The first mutation, taking place in 1968 is associated with the creation of the third technical department of the Board to supervise the nuclear power plants program, depriving LFEN from one of its previous main goals, and confining it to personnel training, and applied and technological research.

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The author claims that the second (extended) period of crisis, 1973–1978, began at the end of the rule of office of Marcelo Caetano, who succeeded Salazar in 1968, and ended in the first years of the democratic regime. Once again the crisis was associated with the supervision of the nuclear power plants program, in the end of 1973, meaning the loss of its relevance and leading to its extinction, in 1979. Meanwhile, LFEN was split into various departments, which were incorporated into the new Laboratório Nacional de Engenharia e Tecnologia Industrial (National Laboratory of Engineering and Industrial Technology) (LNETI) in 1979, giving way to the second mutation. Jaime Oliveira associates the third mutation, of 1985, with the reassembling of two departments previously split, under the designation of Instituto de Ciências e Engenharia Nucleares (Institute of Nuclear Sciences and Engineering).

The Laboratory's unstable tutelage under LNETI lead Jaime Oliveira to identify a third period of crisis, 1992–1994, and a fourth mutation in 1995, emerging as Instituto Tecnológico e Nuclear (Technological and Nuclear Institute) (ITN), reintegrated most of the original departments of the Laboratory. ITN was put to the test in the fourth crisis from 2000 to 2005, coming out of it on a new track with the fifth and last mutation of 2007, when it was encompassed by a new law regulating the status of State Laboratories as public institutes, with indirect supervision by the State, and a specific juridical regime. Unfortunately, this arrangement did not survive the fifth period of crisis, 2009–2011, matching the financial, economic and social crisis which submerged Portugal.

Finally, on 1 March 2012, the autonomic status of ITN came to an end when the government, led by Pedro Passos Coelho, incorporated the once State Laboratory into Instituto Superior Técnico (Higher Technical Institute) of Technical University of Lisbon.

As a narrative on the life of LFEN based on the author's personal experience and recollections, this is not a book that one would expect to see reviewed in a specialized journal devoted to the history of science and technology. Addressed to the general public and younger generations, as well as to scientists and historians, its main virtue for the latter is undoubtedly its chronological data, the extensive compilation of primary sources and substantial transcription of documents and statements by politicians. Oliveira's book makes in this way easily accessible a considerable array of sources, which are an invaluable starting point for future fine-grained accounts based on more sophisticated interpretations of LFEN's institutional history.

Lino Camprubí, *Engineers and the Making of the Francoist Regime*, Cambridge MA: MIT Press, 2014. 320 pp. ISBN: 978-026-20271-7-5.

*Jaume Valentines-Álvarez**

Engineers and the Making of the Francoist Regime is a clear-cut contribution to the recent literature focusing on “the fascist construction of science” as well as the scientific construction of the European fascist regimes. In a special issue of *Historical Studies in the Natural Sciences* published in 2010, Tiago Saraiva and Norton Wise pointed out the need to address the complex co-evolution between fascism and science, and definitively challenge “the alleged special connection between science and democracy” (p. 420). Despite the fact that previous works on Nazi totalitarianism like the ones by Peter Weingart, Mark Walker and Szöllösi-Janze have already questioned this idea, the cases of Italy, France and Greece are comparatively understudied (see, for example, the special issues in *HoST*, vol.3, and *History and Technology*, 23:3), and little attention has been paid to the fascist or “fascistized” regimes in countries such as Hungary, Romania and Austria.

However, since most of these regimes lived and fell down before 1945–46, dealing with the long lasting Portuguese and Spanish dictatorships is all the more a more pressing task. In the same Europe which had defeated the Axis Powers, both Iberian fascist regimes survived for over forty years leaving to the current democracies a disturbing and huge scientific and technological legacy, in the form of technological objects, landscapes, institutions and people. The symposium “History of Physics in Spain in the 20th century” (Barcelona, December 1-2, 2011) was an attempt to look at the agency of scientists and engineers *in*, rather than “under” or “of”, the Francoist dictatorship (1939-1977). Alongside other participants of this event, such as Xavier Roqué, Néstor Herran and Albert Presas, Camprubí contested the master narrative that understands the role of science and engineering in Francoism as “subdued to” or “in spite of” a political regime categorized as irrational, anti-modern, backward and unscientific. Backed by the Cold War ideology as well as by the Mertonian understanding of science, this enduring view roughly stated that the dark-age of politics led to a decadent period for science and technology after having completely broken with the scientific “Silver Age” during the II Spanish Republic. In fact, the image of a Republican science and technology based on

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internationalist and democratic practices has been also confronted in recent literature. My own PhD dissertation has been an attempt to deal with the autarkic, techno-nationalistic and technocratic ideals prior to 1939.

Engineers and the Making of the Francoist Regime is organized in five independent but complementary chapters, in addition to a comprehensive introduction and a conclusion. The introduction (chapter 1) relates the fascist notion of “redemption” with technology and national construction. This is particularly novel, as historiography has mainly highlighted the destructive dimension of this ideological construct. In the other chapters, Camprubí follows thick things and laboratory objects throughout the national landscape (in line with the approaches by Ken Alder and Tiago Saraiva) in order to analyze engineering and agronomic institutions that shaped the Francoist political economy. For example, by looking through a concrete dodecahedron (a coal silo), chapter 2 analyzes the role of the Technical Institute for Construction and Cement in the new nationalist programme of industrialization; chapter 3 focuses on the symbiotic relationship between science and National Catholicism by examining churches in laboratories as well as the geographies of the inner colonization; chapter 4 deals with the politics of agronomy and with the “rice of victory” as the minimum unit to maximize production and control; chapter 5 deals with the Noguera Ribagorçana River as a fluid battleground in which two autarkic and totalitarian projects fostered different commodities and experts. Finally, chapter 6 shows how scientific standards were used in Spain in the process of turning a managerial-state into a regulatory-state in the “hidden integration” of Europe.

Camprubí absolutely reaches his historiographical goal: science and engineering were at the core of the cruel and “holly” Spanish dictatorship. However, other issues could be reconsidered or further developed in order to obtain a deeper understanding of the technological construction of the regime: for example, the role of non-state engineers and low-rank engineers, the technocratic politics of the engineers, the professional training in economics beyond the engineering schools, the masculine construction of technology, the “imperial” colonization in Morocco, Western Sahara and Guinea, the destruction of “truly autarkic” rural communities and the making of the forest and the city, and social resistances.

In the conclusion, Camprubí suggests that the study of fascist science and technology might throw light “on the meanings and limitations of contemporary democracies.” His book is a big step forward to understand more comprehensively the early Francoist regime, as well as the post-Francoist standard views on science and technology. Beyond providing relevant local case-studies to the international historiography of science and technology, *Engineers and the*

Making of the Francoist Regime shows how international perspectives on history of technology can turn around national histories entangled in (or in the service of) current economic and political regimes.



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